

Unpacking The Black Box of Medical Leadership in Complex Adaptive Systems: A Co-operative Inquiry in a National Rehabilitation Hospital

HENLEY BUSINESS SCHOOL

THE UNIVERSITY OF READING

A thesis submitted in partial fulfilment of the degree of
Doctor of Business Administration

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August 2023

Declaration

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

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Acknowledgements

Undertaking a substantive piece of empirical research and generating a doctoral thesis whilst a solo undertaking and labour of love, requires a support network in the background who encourage, nurture and guide. I wish to acknowledge this co-creative collaborative company.

I would like to take this opportunity to express my gratitude to my supervisors Prof Claire Collins and Prof Jane McKenzie for their wisdom, guidance and advice. My thanks also to the DBA team at Henley for their practical support

My sincere thanks to Prof David Coghlan and Prof Mary Casey for their friendship and guiding hands as I navigated a new research paradigm and to UCD School of Medicine librarian Diarmuid Stokes who's assistance with my literature reviews was invaluable.

My thanks also to the CEO of the NRH Mr Derek Greene who had faith in me in allowing me to undertake the inquiry in the hospital and to Ms Janette Hamill for her vital support and advice.

Thank also to the complexiteers who listened and shared and explored. Our numbers grow.

Finally, my thanks to my co-inquirers. Thank you for your trust and wisdom. It is a privilege and honour to work alongside such dedicated clinicians. You are an inspiration.

And to my mum, my eternal love and gratitude. Without you I wouldn't be.

Dedication

This thesis is dedicated to my family, my husband John and my children Aisling and Callum (and Buffy) without whose love and support this research would not have been possible.

I also dedicate this thesis to the memory of my father Dr John Carroll who nurtured my curiosity.

Abstract

This thesis embraces a participatory and complexity perspective to further understanding of complexity leadership in a healthcare organisation during a period of turbulent change. It uses the co-operative inquiry articulation of action research to create an adaptive space to facilitate the adaptive process of complexity leadership development in medical consultants.

Using the Shani and Pasmore (1982) complete theory of action research (context, quality of relationships, quality of the action research process and dual outcomes) the transcontextuality of the research was explored through global, national, local and personal perspectives.

Through preunderstanding activities and analysis of multiple sources of data, it was revealed that medical consultants felt isolated and disenfranchised and desired to collaborate together for change. Colleagues transitioned to become co-researchers who then participated in six cycles of action research through a dynamic, emergent process of change and knowledge production, where data were generated through action and reflection-in-action and reflection-on-action.

The co-operative inquiry created the rich connections necessary to explore areas of mutual concern and share ideas and information and take action to solve some of the problems identified. By creating the necessary structures, processes and events, adaptive outcomes of new complexity leadership skills and behaviours with an enhanced experience emerged.

Through the inquiry, it became apparent that consultants' basic needs were not being met, a form of organisational injustice. There were four inquiry outcomes that corresponded with the four forms of knowing: experiential, presentational, propositional and practical. Personal transformations occurred through engagement with the focus and process of the inquiry. Co-researchers presented insight about leading in complexity through oral and verbal modes of presentation. The co-created propositional report which was generated at the conclusion of the inquiry was informative about leading in complexity and what it meant for us as a group (and me in my dual roles as researcher and organisational member) and it provided commentary on the inquiry outcomes and described the method of inquiry. Co-inquirers demonstrated the practical skills of transformative action and complexity leadership skills.

Through the subsequent integrative meta-cycle, two overarching themes were identified as necessary for leading in complexity in our organisation: the development of communicative space and the enactment of teamwork.

Using the themes and subthemes that emerged from the reflexive thematic analysis, a dynamic framework for the creation of adaptive space to enable complexity leadership development emerged.

The co-operative inquiry process enabled co-researchers to recalibrate perspectives concerning the nature of our organisation and our world. This research challenges the characteristic reductive thinking of healthcare improvement. Whilst in complex healthcare organisations the impact of an intervention may be unpredictable, this inquiry opened the communicative adaptive space in a complex system and allowed new leadership skills and behaviours to emerge. The findings of this research may help scholars and practitioners to effectively engage with, explore and intervene in a complex system and enhance our understanding of complex systems and leadership.

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List of Abbreviations

AL:	Action Learning
AI:	Action Inquiry
AR:	Action research
AS:	Adaptive space
BPR:	Business process reengineering
BSP:	Biopsychosocial model
BSRM:	British Society for Rehabilitation Medicine
CALTM:	The Complex Adaptive Leadership Organisational Capability Questionnaire (OCQ)
CAR:	Critical action research
CARF:	Commission for the accreditation of rehabilitation facilities
CHO:	Community Health Organisation
CEO:	Chief Executive Officer
CI:	Co-operative inquiry
CL:	Complexity Leadership
CLT:	Complexity leadership theory
COVID-19:	Coronavirus disease 2019
CQI:	Continuous quality improvement
CRMS :	Clinical Rehabilitation Management System
CRT:	Community rehabilitation team
DBA:	Doctorate in Business Administration
DOH:	Department of Health
EMC:	Executive management committee
FMEA:	Failure modes and effects analysis
HG:	Hospital group
HRB:	The Health Research Board
HSE:	Health Services Executive
IARM:	Irish Association of Rehabilitation Medicine
IDT:	Interdisciplinary team
IOM:	Institute of Medicine

IRG: Independent Review Group

MCRN: Managed Clinical Rehabilitation Network

MDT: Multidisciplinary team

MSW: Medical social worker

NCD: Non communicable disease

NCHD: Non-consultant hospital Doctor

NCPRM: National Clinical Programme for Rehabilitation Medicine

NHS: National Health Service

NRH: National Rehabilitation University Hospital

OMC: Operational management committee

PAR: Participatory action research

PDOC: Persistent disorder of consciousness

PDCA/PDSA: plan-do-check-act/plan-do-study-act

POLAR: Prosthetic, Orthotic and Limb Absence Rehabilitation programme

PWEG: Positive Working Environment Group

QI: Quality improvement

RCA: Root cause analysis

SQC: Statistical quality control

TQM: Total quality management

UNCRPD: United Nations Convention on the Rights of Persons with Disabilities

WHO: World Health Organisation

YHCW: International Year of Health and Care Workers

Chapter 1: Introduction

'The major problems in the world are the result of the difference between how nature works, and the way people think'.

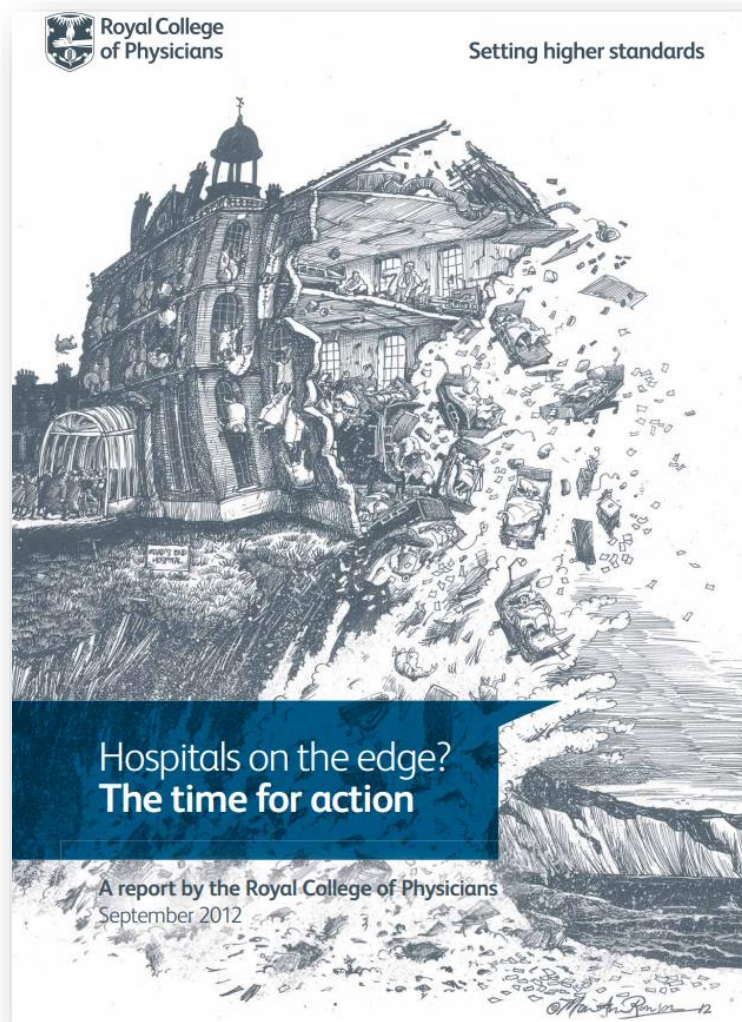
Gregory Bateson (2000 p 4)

One of the greatest challenges we face as human beings on this planet is breaking free from our current stuck patterns of thought and behaviour. Gregory Bateson, a philosopher, anthropologist, photographer, naturalist, and poet, spent his career seeking patterns which connect nature and human thinking and similarly through this thesis I seek patterns to connect theory and practice in complex systems leadership in healthcare.

This introductory chapter provides a brief discussion of the background to the study followed by the conceptual thinking that informed, framed, and underpinned the nature of the inquiry. It will introduce a narrative thread of *complexity leadership* that will draw together the different chapters of this thesis to share the story of a complexity leadership intervention during a period of unprecedented challenge in our organisation. Our organisation will be presented as a *complex adaptive system* and the thesis will seek to unpack the black box of medical leadership in a National Rehabilitation University Hospital during a period of major change, the transition to a new hospital. The thesis then interrogates the literature on *complex systems theory* and also *participatory action research* approaches and will share the research questions and aims and objectives. This thesis will argue that although this was a small group intervention in one institution, the *co-operative inquiry* approach for engaging with complex systems was an effective mechanism for establishing new patterns of connection and behaviours. The process of co-operative inquiry acted as mechanism for the creation of the structures and processes necessary for the creation of adaptive space, in which participants understanding and practice of complexity leadership emerged by engaging in an 'extended epistemology' of four interdependent ways of knowing: experiential, presentational, propositional, and practical. The thesis will demonstrate that the method is valid and that the findings will have value in other groupings, organisations, and areas. Finally, the structure of the thesis is presented.

1.1 Background

As the character Captain Boyle famously comments in the concluding line of Seán O'Casey's 1924 play *Juno and the Paycock* '*th' whole worl's in a terrible state o' chassis!*' [sic] (O'Casey et al., 1988 p. 61). Those words seem particularly poignant and relevant today. Around the world, health and social care systems are under extreme stress and teetering on the brink of collapse. The Royal College of Physicians in England produced a report in 2012 called *Hospitals on the Edge? The time for action*, with a most evocative image on the front shown in Figure 1 (Physicians, 2012). The image shows a hospital bursting at the seams, falling off a cliff with patients falling with the debris into the ocean below. As a healthcare professional, this image resonates strongly with the experience of providing healthcare in the current healthcare crisis.



Reproduced with permission, RCP 2012. Artist Martin Rowson.

Figure 1: Front page of 'Hospitals on the Edge?'

These challenges are not new. It has been well documented over many years that the failure to meet the challenge of increasing demand and reduced capacity is resulting in patients suffering unnecessary pain, indignity, and distress. This failure has been highlighted in numerous reports in the United Kingdom and Ireland (Ombudsman, 2011, Wood, 2013, Consulting, 2018). Heather Wood, author of the Healthcare Commission's 2009 report into Mid Staffordshire NHS (National Health Service) Foundation Trust wrote '*Management in the NHS in too many instances has become mismanagement of the NHS*'. (Wood, 2013 p. 25)

Since those reports have been published, things have deteriorated even further and dramatically with the advent of the COVID-19 pandemic. The increased pressures on the healthcare system caused by the COVID-19 pandemic have put enormous stress onto already fragile health and care systems and caused significant disruption in the delivery of vital health services across the continuum of care. This is not just a UK and Irish problem. Most health systems across the globe have been struggling for decades with the dual challenge of managing emerging and ever-increasing demands for services whilst at the same time managing system constraints. Emerging demands stem from unhealthy behaviours and lifestyle choices, the double burden of disease and multimorbidity (i.e., more complex patients), increasing citizen expectations, the increased requirement to self-manage care and the need for cost efficiency and accountability in an era when innovations in treatment options have risen exponentially (e.g., personalised medicine and genomics). System constraints stem from lack of community engagement and empowerment, insufficient and misaligned financing, a suboptimal workforce, service fragmentation and inappropriate service delivery models and limited intersectoral action. The pressures on acute services in particular have been relentless and intense. Whilst it must be acknowledged that there have been considerable improvements in life expectancy and general population health over the last number of years, these advancements have not been equal between and also within countries. There exists a phenomenon referred to as the inverse care law, where those individuals with the greatest healthcare requirements often receive the least adequate healthcare (Fiscella and Shin, 2005). This has significant implications for healthcare outcomes for vulnerable populations including persons with disabilities, low-income persons, racial and ethnic minorities, and the uninsured (in private insurance model healthcare systems e.g., USA) among others. The right to health as a fundamental human right is well established in principle but not yet in practice. According to the World Health Organisation (WHO) Global Monitoring Report 2021, globally, more than 400 million people lack access to essential health care (WHO, 2021). The COVID-19 pandemic has exposed and amplified the grim reality of these inequities

(Marmot and Allen, 2020), and further research has shown that the lower the socioeconomic position the greater the adversity (Wright et al., 2020). Persons with disabilities, older people and other marginalised groups have also been disproportionately affected by the pandemic (JUVVA et al., 2022).

In 2016, the WHO identified a number of key health system challenges; inequity of access, fragmented services, poor care quality, system inefficiencies, unaffordability and complexity (WHO, 2019). They concluded that an integrated, people-centred approach is crucial to the development of health systems that are responsive to emerging and wide-ranging health challenges, including urbanization, unhealthy lifestyles, ageing populations, the dual disease burden of communicable and noncommunicable diseases, multimorbidities, rising health care costs, disease outbreaks and other health-care crises (WHO, 2019). The framework sets forth a compelling vision in which:

all people have equal access to quality health services that are co-produced in a way that meets their life course needs, are coordinated across the continuum of care, and are comprehensive, safe, effective, timely, efficient and acceptable; and all carers are motivated, skilled and operate in a supportive environment. (WHO, 2019 p. 4)

Unfortunately, the report gives no recommendations as to how countries may achieve this.

More recently, WHO member states unanimously designated 2021 as the International Year of Health and Care Workers (YHCW) at the Seventy-fourth World Health Assembly, in recognition of the dedication and sacrifice that millions of health and care workers made over the course of the COVID-19 pandemic. It is well recognised that Healthcare employment in countries acts as an economic boost and multiplier. According to the High-level Commission on Health Employment and Economic Growth, investments in health employment can result in up to a 9-fold return on investment and an estimated 4% growth in gross domestic product (GDP) (WHO, 2016). This means that investing in the health and care workforce benefits society as a whole.

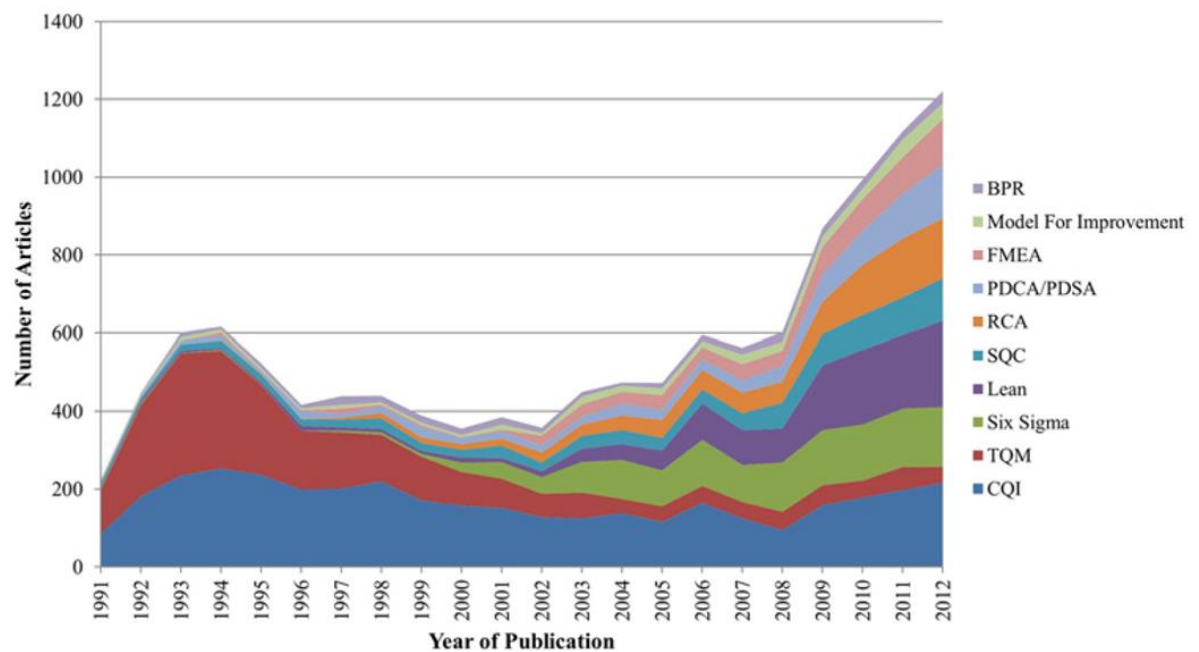
YHCW seeks to draw attention to the need for greater investments in the global health and care workforce. Important preconditions for the recruitment and retention of health and care professionals include education, continuing professional development, well-being, and occupational safety. It is essential to make health and care work a desirable career choice with a supported career path. Without this, countries will struggle to recruit new staff especially in rural areas which have long endured recruitment challenges and inequality.

Resolution WHA74.14 of the Seventy-fourth World Health Assembly in May 2021 requested the World Health Organisation Director-General to develop, in consultation with Member States, a global health and care worker compact. This global health and care worker compact was published in April 2022 and aims to provide comprehensive guidance on the obligation to protect health and care workers, defend their rights, and to guard against discrimination of any form (WHO, 2022). The care compact describes complementary management and policy actions structured around four domains: preventing harm; providing support; inclusivity; and safeguarding rights. The providing support domain specifically references an enabling work environment with opportunities for learning, and the equipment, supports, and other technologies to effectively carry out responsibilities. Although the compact is not legally binding, it draws on existing international legal instruments, labour laws and regulations and member States' obligations. Staff health and wellbeing was an important motivator for the development of the report in recognition of the disruption to health and care services by the pandemic. Health worker wellbeing is an important concept, however the COVID pandemic has also brought into focus another emerging phenomenon, burnout. Burnout is defined as a state of exhaustion in response to chronic organisational stress, which results in feelings of work-related exhaustion, depersonalisation, and reduced personal accomplishment (Hartzband and Groopman, 2020). The pandemic, in combination with stressful working conditions, has resulted in high numbers of health and care workers infections and deaths as well as increased stress, burnout and other serious mental health issues. This in turn has resulted in reduced productivity, performance and retention, with dissatisfaction, labour protests and increased numbers of health and care workers expressing intention to leave and/or resigning from service (WHO, 2022). The work in this thesis is relevant to the domain area in the compact, providing support.

1.2 Quality Improvement

For many years quality improvement methods have been proposed as a mechanism to address these challenging issues. Although seen as a relatively new phenomenon, healthcare quality improvement has been a principle of care since the time of Hippocrates (Tountas, 2009). Since then, there have been various waves of advances in systems of healthcare, including Walter Letterman who developed a triage system for casualties in the American Civil War, Ignaz Semmelweis, who championed the importance of hand washing and Florence Nightingale

introducing Listerean principles of infection control in hospitals. Ernest Codman, a surgeon, pioneered the concept of hospital standards and healthcare outcomes. Since then, the modern quality improvement movement has evolved to embrace an ever-increasing assortment of stakeholders, approaches, and goals. In 1966, Avedis Donabedian, considered by many to be the founding father of the contemporary health care quality movement, published *'Evaluating the Quality of Medical Care'*, a model for improvement that uses the elements of structure, process, and outcomes to examine the quality of care delivered (Hines et al., 2020). Then in 1970, the Institute of Medicine (IOM) was established by the National Academies of Science to evaluate, inform, and improve the quality of healthcare (Hines et al., 2020). The growth in healthcare improvement methods is summarised in Figure 2.



Abbreviations: BPR, business process reengineering; FMEA, failure modes and effects analysis; PDCA/PDSA, plan-do-check-act/plan-do-study-act; RCA, root cause analysis; SQC, statistical quality control; TQM, total quality management; CQI, continuous quality improvement.

Reprinted with permission from Sun, G.H. et al (Sun et al., 2014)

Figure 2: Annual Publication Volume for Healthcare Quality Improvement Methodologies, 1991-2012.

The methods used for healthcare quality improvement are mainly derived from industrial settings and the work of Fredrick Taylor. These methods, whilst generating improvements at a local level, have so far failed to live up to their expectations and not resulted in any meaningful sustained improvement (Dixon-Woods, 2019, Dixon-Woods and Martin, 2016, Walshe, 2009).

Leaders and managers in healthcare organisations have traditionally been trained in a command and control, mechanistic, hierarchal model of leadership. However, research has shown that healthcare professions have a hugely important role to play in improvement efforts (Martin et al., 2015). Healthcare professionals can work as improvement advocates, create alliances with patients and families, provide training, education and supervision, contribute knowledge and expertise, coordinate and champion improvement efforts, and give political voice for problems that need to be solved at system level (Dixon-Woods, 2019).

Over the decades, the provision of health and social care has changed significantly. As mentioned previously, overall life expectancy has improved, and many citizens are living with chronic illnesses and long-term conditions from which previous generations would have perished. These changes together with the failure of standard quality improvement methods to deliver change at scale, demand of us a paradigm shift in how we design, deliver, evaluate, and lead our healthcare systems.

The provision of healthcare largely remains hospital orientated episodic and curative in nature. As the WHO advocate, person centred, coordinated, comprehensive care in the community across the continuum of care from primary prevention to end of life is required. Many countries have enshrined the right to integrated care in legislation (Lennox-Chhugani et al., 2021) however, how best to effect this remains a conundrum. People-centred and integrated health services have been demonstrated to confer benefits for people and health systems in countries across the world. Integrated care, increases patient satisfaction, increases perceived quality of care, and increases access to services (Baxter et al., 2018, Robertson, 2011). Current evidence suggests that people-centred and integrated services are essential components of building universal health coverage and can improve health status (WHO, 2015).

Following on from quality improvement methodologies, implementation science approaches sought to take a scientific approach to the systematic uptake of research findings and other evidence-based practices into standard practice (Eccles and Mittman, 2006). More recently, in line with recent revisions of the Medical Research Council's guidance for developing and testing complex interventions (Skivington et al., 2021a), implementation science has also matured with the emerging recognition that complex interventions (interventions made up of various interconnecting parts) in increasingly complex care systems (e.g. integrated care systems) where patients and the delivery of care is increasingly complex (multiple disease states linked to social determinants of health, coordination of care, mental health, family, and environmental situations) require new methods of development, evaluation and leadership

(Braithwaite et al., 2018, Besharov and Smith, 2014, Greenwood et al., 2011). There has therefore been a move away from linear reductionist mechanistic thinking to more flexible approaches that appreciate the need for adaptability and that are sympathetic to local context. This necessitates having multiple logics, views and perspectives to enable multiple frames of approach and analysis and a change in the kinds of logics applied to leadership development and decision making. These pluralistic approaches include more qualitative and mixed methods approaches to investigate structures, processes, and outcomes in real world settings. This move away from a positivistic and reductionist mindset to a more pluralist approach, resonates with complexity science and theory (Plsek and Wilson, 2001a, Skivington et al., 2021b).

The majority of health systems around the world are pluralistic, comprised of a broad range of eclectic, diverse organisations, from both public, private and voluntary sectors, with many different healthcare professionals, clinical and non-clinical, who work in organisational and disciplinary siloes providing health and social care that is fragmented and difficult to navigate. Often the work environment (particularly in urgent and emergency care) is complex, dynamic, and uncertain, requiring healthcare professionals to engage in paradox with a requirement to both practice in accordance with evidence-based policies procedures guidelines and protocols yet also flex, improvise and adapt when required (Roberts and Coghlan, 2011). External stakeholders such as governmental agencies and regulators, also exert significant pressure on service providers to comply with ever rising standards of quality and quantity of episodes of care delivered, while at the same time reducing costs (Ramanujam and Rousseau, 2006a) and the requirement to collaborate whilst at the same time compete. Additionally, it has been recognised that there are gaps and misunderstandings in how we imagine how we work in our places of work and how we actually act in reality (tension between expectations and reality), and this is now the subject of intense study (Berg et al., 2018). In exploring these tensions, complexity and adaptive systems have been proposed as a meta-theoretical principle to explore the dynamics of paradox from a process perspective (Schad et al., 2016).

If our health and social care systems are to provide for the needs of our citizens successfully, safely, and adequately, tinkering around the edges of the problem is not the solution. Dramatically different ways of viewing, designing, implementing, and evaluating solutions are required. As Chadwick stated, *'health-care organisations can no longer function under the traditional view of 'the machine model' where standardization and control are the primary drivers'* (Chadwick, 2010 p. 154). Such new ways of thinking and leading may reside in complexity theory and leadership in complexity.

1.3 Complexity Theory and Healthcare

Although there is no unifying theory of complexity, complexity scientists acknowledge that there are common patterns of behaviour that occur in many disparate systems. These patterns of behaviours include self-organisation, systemic phenomena, path dependency, sensitivity to context, emergence of new patterns and episodic change (Boulton et al., 2015). This worldview is now being reflected in healthcare literature with the recognition that healthcare systems are living systems with many interacting components that require new behaviours by those delivering or receiving interventions or have a variety of outcomes (Anderson, 2008, O'Cathain et al., 2019, Skivington et al., 2021b). A more detailed discussion of the literature is provided in Chapter 2. In order to unravel the current crisis in healthcare, there is an urgent need to engage with complexity theory and such an appreciation is emerging in recent years. Rusoja and colleagues in their 2018 systematic literature review entitled, *'Thinking about complexity in health: A systematic review of the key systems thinking and complexity ideas in health'*, identified 3982 titles on systems thinking and complexity concepts in health from 2002-2015 (Rusojä et al., 2018). This increased interest has been advanced through an increased appreciation that modern healthcare is complex and turbulent and therefore needs to be studied and understood through the lens of complexity science. Interventions need to be viewed as complex events within complex systems and examined by methods that are complexity informed rather than the traditional linear and reductionist methods (Burns, 2001, Fraser and Greenhalgh, 2001, Greenhalgh and Papoutsis, 2018, Plsek and Wilson, 2001a, Braithwaite et al., 2019, Rusoja et al., 2018, Sturmberg et al., 2012, Sturmberg and Martin, 2013, Wheatley, 1994). Leaders in healthcare systems need to embrace complexity thinking and paradox and exhibit complex behaviours (Schad et al., 2016). Such behaviours can be developed through complexity informed interventions (Uhl-Bien and Arena, 2018, Uhl-Bien and Arena, 2017b). To effect the necessary change in mindset, there is a need to find ways to build adaptive and transformative capacities and capabilities in healthcare and find practical ways to engage with complexity and create nurturing and enabling conditions for developing creative and adaptive responses. Effective leadership has also been identified as a key attribute to successful outcomes in major change (Yukl, 2012).

1.4 Complexity Theory and Leadership

Leadership is often identified as a key catalyst of change (Davenport and Mattson, 2018, Gill, 2002) and should be the underpinning foundation upon which any change is supported and optimised. Research has shown that physicians in leadership positions are associated with better organisational performance and outcomes, however, how best to develop this leadership has yet to be shown (Goodall, 2011). In his call to action on developing physician leaders, Stoller asserts that these challenges demand greater leadership from within healthcare (Stoller, 2009).

There is an increasing body of literature that draws on complexity theory to address leadership development and practice, often referred to as complexity leadership (Northouse, 2021, Hazy and Uhl-Bien, 2015, Varney, 2021). According to a recent review by Rosenhead and colleagues, complexity theory has value in encouraging thinking about how leadership can be applied creatively and effectively (Rosenhead et al., 2019). A literature review by Crabtree and colleagues on leadership in primary care from a complex adaptive system perspective, identified eleven leadership attributes: motivating others to participate in change, dealing with misuse of power and social influence, creating psychological safety, improving communication and information sharing, creating a learning organisation, formation of a collective mind, developing teamwork, nurturing emergent leaders, stimulating boundary spanning, developing formal processes and anticipating the future (Crabtree et al., 2020). One theory that has generated a lot of interest and which links complexity theory and leadership is complexity leadership theory (CLT) (Uhl-Bien et al., 2007). Developed by Uhl-Bien and colleagues, CLT provides a theoretical framework and conceptual model to enable adaptability in complex systems (Uhl-Bien and Arena, 2018). In CLT three entangled modes of leadership are identified: (1) administrative leadership; (2) enabling leadership and (3) adaptive leadership reflecting *'a dynamic relationship between the bureaucratic, administrative functions of the organisation and the emergent, informal dynamics of CAS'* (Uhl-Bien et al., 2007 p. 298). With the emergence of new evidence and experience in practice, these have been reviewed and renamed in recent years as operational leadership, enabling and entrepreneurial leadership (Uhl-Bien and Arena, 2018). Uhl-Bien and colleagues encourage organisations to intentionally develop context-appropriate leadership skills that enable the creation of adaptive space and therefore learning, innovation, and new ways of working (Uhl-Bien and Arena, 2017a, Uhl-Bien and Marion, 2007). What methods that should be employed

to create this adaptive space is unfortunately not well articulated and is a substantial gap in the literature.

1.5 Action Research

Action research has emerged in recent years as an appropriate and effective participatory approach to examine social ecological systems including healthcare and leadership with the dual outcomes of co-produced knowledge and system change (Biggs et al., 2021, Zuber-Skerritt, 2011, Brydon-Miller et al., 2003). Action research approaches enable the discernment of the heterogeneous complex ways in which people and processes act together and in which change happens and patterns emerge or disperse (Boulton et al., 2015b). It has emerged as a valid method for exploring complex systems and leadership and is an effective mechanism for exploring leadership through a practice orientation (Carroll et al., 2008, Zuber-Skerritt, 2011, Bartunek and McKenzie, 2017, Bartunek, 2014). This is explored in more detail in Chapter 3.

Originally defined as ‘...a method that enabled theories produced by the social sciences to be applied in practice and tested on the basis of their practical effectiveness’, (Carr, 2007 p. 423), action research is the term given to a well-established and articulated family of approaches, methods and values with a rich history (Reason and Bradbury, 2001, Torbert, 2013a, Gustavsen, 2020). Co-operative inquiry is a democratic and emancipatory approach to action research where all participants are co-researchers and co-subjects, who share a common concern (Heron, 1996) . Action research approaches, including co-operative inquiry, have been used in many different settings but are generally used to study how people interact with and respond to their environment and offer a practical and empirical approach to investigating the complex world of healthcare. It is rooted in a view of the world as ‘systemic, participative, radically interconnected and evolutionary’, (Reason and Bradbury, 2001 p. 12) and a life philosophy that finds expression in collective modes of relating and inquiring into issues that matter to people.

When action researchers are involved in an academic programme, typically two action research projects co-exist in parallel. Firstly, there is the core action research project which is the project the practitioner scholar is working on within the organisation. This project has a discrete identity and may proceed, regardless of whether or not it is being studied. Secondly, there is the thesis action research project which involves the practitioner scholar’s inquiry into

the organisational project (Zuber-Skerritt and Fletcher, 2007). This duality fitted well with my own role duality as a medical Consultant in the NRH and researcher for a DBA.

1.6 Motivation for the Research

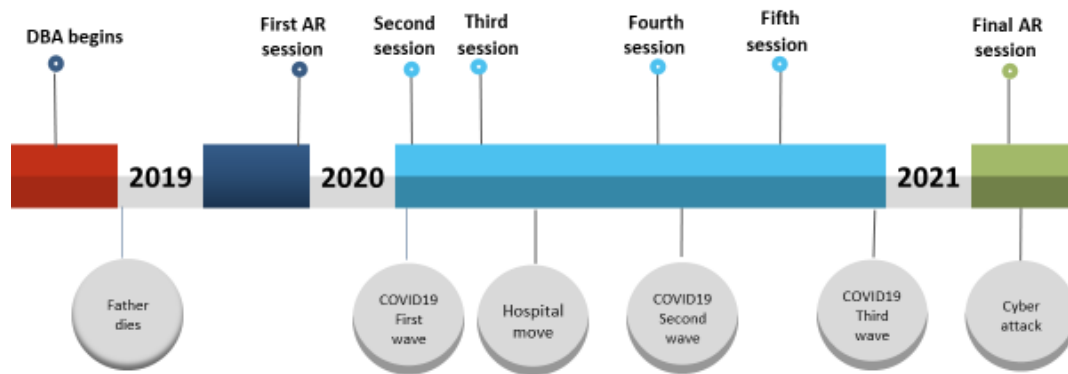
Throughout my 30-year career in medicine, I have sought to effect change in the many different healthcare systems I have worked in. I have been fortunate to work in different jurisdictions from developing countries to high reliability organisations. I have also been fortunate to hold a number of senior leadership positions at meso and macro level. As a highly trained improvement advisor, I found myself becoming increasingly disillusioned with the lack of progress being made with prescribed quality improvement methodologies and found myself on a journey of exploration to discover alternative viewpoints and approaches. Part of these investigations led me to undertake this research which was motivated by a desire for change, to explore new theories and approaches, to immerse myself in new ways of thinking and alternative research methods, but also, as an academic medical Consultant in the hospital, and Chair of the hospital medical Board, as a way to take action with medical colleagues to navigate a particularly challenging period of change. There can be few greater change challenges than the move to a new hospital. Significant preparation is required not only to plan and build the new building but also to prepare staff and patients for a new physical environment and new ways of working. Stichler and Ecoff (2009) described moving into a new hospital as the ultimate change project. Such ultimate change projects require leadership that encompasses both transformational and transactional leadership with stakeholders focused on a shared need and vision for the project (Ecoff and Thomason, 2009, Porter-O'Grady and Malloch, 2010). Such leadership is embraced in complexity leadership theory (Arena and Uhl-Bien, 2016). I was motivated by the opportunity that this once in a lifetime opportunity presented. I therefore wished to contribute to a successful transition to the new hospital, contribute to theory and practice and make a contribution to knowledge on leadership in complexity, that had significance beyond the local context as required in an action research thesis (Coghlan, 2019).

1.7 Context

Context has been identified as an important consideration for improvement efforts. As Johnathan Lomas has stated *'This overriding influence of context may go a long way towards explaining why the latest systematic review of clinical behaviour change interventions ...continues to offer no clear advice for managers on how to improve the quality of care'* (Lomas, 2005 p. 59).

A rich description of the context for this research is provided in Chapter 2. Although context is referenced in many publications about action research, Shani and Pasmore's complete theory of action research (Shani and Pasmore, 1982) includes the most detailed description. In their complete theory of action research, they detail four separate components of context: the overall general business context at global and national level; the local organisational context, as well as the individual context. The context in which this research unfolds occurs against a backdrop of global crisis, national upheaval, local transformation, and personal turmoil. The perturbations that occurred over the course of the research are shown in Figure 3. Shortly after the commencement of my DBA my father was diagnosed with terminal lung cancer and died within 6 months. I was a primary carer for much of this time but particularly during the terminal phase of his illness. Soon after the first action research session, the COVID-19 pandemic was announced with a public health response that affected the plans and execution of the research that required a pivot to virtual meetings and a more flexible approach to the inquiry. Additionally, during the thesis writing, the Irish healthcare system was affected by a cyber-attack which resulted in a complete shutdown of all computer systems and communications. Access to software, data and communications were severely affected by this.

DBA Scheduled Events



Unprecedented Events

Figure 3: DBA Timeline and Unexpected Events

This thesis will detail research undertaken with medical consultant colleagues, during a period of turbulent change in a National Rehabilitation Hospital in Ireland. The National Rehabilitation University Hospital (NRH) provides Complex Specialist Rehabilitation services to patients who are living with the consequences of life altering injury as a result of an accident, illness or injury, and have acquired a physical or cognitive disability that requires a specialist programme of rehabilitation.

An action research project can be challenging at the best of times, but the challenges faced by our organisation in the timeline of the research project were unprecedented and therefore this thesis contributes to the evolving process of the movement of complexity from a metaphor to a practice.

1.8 Research Aims

The aims of this thesis are twofold:

- 1) To evaluate the value of co-operative inquiry as a vehicle for supporting leadership development and learning in a complex adaptive system during a period of change.
- 2) To establish how participants can work together to identify strategies for improving staff and patient experience.

The specific research questions to be addressed were:

- How can we, as medical leaders within the NRH facilitate transition to the new hospital and effectively manage staff and patient experience?
- How do we develop the leadership skills to do this?

The outline and timeframe for the phases of the study are outlined in Figure 4. This outline embraces the two action research cycles that operate in parallel as described by Coghlan and other authors as a requirement for academic accreditation (Coghlan, 2019). These two action research cycles are the core action research project and also the thesis action research cycle (Zuber-Skerritt and Fletcher, 2007). This meta learning is described in more detail in Chapter 4.



Figure 4: The Outline and Timeframe of the Study

1.9 Significance of the Research

This research actively and practically engages with the logic and theory of complexity, and in particular Complex Adaptive Systems theory. It identifies our organisation as a complex adaptive system and uses co-operative inquiry as a participatory and democratic method for co-researchers to explore, make changes and lead during a period of major change. Co-operative inquiry was an effective tool for creating the adaptive space that allowed adaptive

processes to occur and through these processes, leadership practices changed so that co-researchers were able to successfully engage with and navigate complexity and paradox.

1.10 Thesis Overview

The structure of this thesis takes into account the recommendations of many authors for writing an action research dissertation/thesis (Zuber-Skerritt and Fletcher, 2007, Herr and Anderson, 2014, Coghlan, 2019, Coghlan et al., 2019a, Coghlan and Pedler, 2006, McNiff, 2015). The thesis consists of seven chapters which will now be briefly outlined.

1.10.1 Chapter One: Introduction

This chapter provides an overview of the research including a brief introduction to the rationale approach, context and timeline. It offers the aims and research questions and also provides an outline of the structure of the thesis.

1.10.2 Chapter Two: Context

This chapter presents a detailed discussion of the context in which this research occurred. The context for the research, as presented in Shani and Pasmore's Complete Theory of Action Research, includes the overall general business context at global and national level; the local organisational context, as well as the individual context (Shani and Pasmore, 1982). These four contextual factors set the stage for the development of relationships, and each can have a positive or negative effect on the action research outcomes.

1.10.3 Chapter Three: Literature Review

Chapter three illustrates the state of the science as it pertains to complexity theory and healthcare and also the use of action research in healthcare. The first part of the chapter explores the literature on complexity theory and details a scoping review of the literature on the use of complexity theory in healthcare. The research question was: *How has complexity theory been used in health and social care research?*

The scoping review followed the Arksey and O'Malley (2005) six steps for carrying out a scoping review and had the following objectives:

- a) To map definitions and descriptions of complexity theory used in health and social care research.
- b) To investigate the different methodologies utilised as well as the extent to which complexity theory has been employed in health and social care research.
- c) To consider the settings and disciplines and professions examined in these studies.
- d) To analyse the impact of the application of complexity theory.
- e) To appraise if the research findings, conclusions and recommendations can provide evidence of knowledge/capacity building and change.
- f) To determine if there are any gaps in research and make recommendations for future research.

The chapter then outlines how this literature contributed to the design of the research and also how this information was utilised to generate an appreciation and model of the NRH as a complex adaptive system.

The second part of the chapter provides a detailed account of action research and details a scoping review of the use of action research, in its various articulations, including co-operative inquiry, in healthcare. The scoping review aimed to identify, explore and map the literature regarding the application of action research methods in healthcare with the research question: *In action research studies undertaken in healthcare settings, how do researchers address the four factors outlined in Shani and Pasmore's 1982 Complete Theory of Action Research?*

The scoping review again followed the Arksey and O'Malley (2005) steps for carrying out a scoping review and had the following objectives:

1. To identify the degree to which contextual factors are addressed.
2. To ascertain how the quality of co-researcher relationships were maintained.
3. To determine how the dual focus on both the inquiry process and the implementation process was addressed.

4. To distinguish how the dual outcomes of co-generated actionable knowledge are reported.

The chapter concludes by examining how this information and analysis justifies the methodological approach utilised in this thesis.

1.10.4 Chapter Four: Methodology

Chapter four presents the rationale for the methodological approach adopted for this research which is an articulation of action research referred to as co-operative inquiry. The chapter describes in detail the methods used in the thesis to explore leading in complexity including ontology, epistemology, and methodology, which encompasses data collection and analysis. This chapter clearly demonstrates the use of multiple cycles of action and reflection, the multiple data sources and methods of analysis, how assumptions and interpretations were interrogated continuously throughout the project yet remained collaborative. The chapter uses the Shani and Pasmore (1982), four interconnected factors throughout to describe a complete theory of the action research process that supported the research process in achieving the research objectives.

1.10.5 Chapter Five: Findings

Chapter five presents the results of the research in three parts; preunderstanding; the findings of the co-operative inquiry and the meta-cycle of action research. The preunderstanding section presents the results from: the patient experience mapping, a retrospective analysis of patient experience data, an inductive thematic analysis of the semi-structured interviews, qualitative deductive Content Analysis of senior board and executive minutes and Affinity diagramming. The co-operative inquiry results are presented using a process folio approach (Smith, 2017) with a ten-step framework of data collection and reflexive analysis and the results of the questionnaires, including the workforce dynamic questionnaire, the Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ) and the Cognitive Edge SenseMaker® tool. The results of the meta-cycle are then presented with the patterns identified through reflexive inductive thematic analysis.

1.10.6 Chapter Six: Discussion

Chapter six discusses the findings as they relate to the extant literature and the organisation as a complex adaptive system, and also discusses the research's contribution to theory and practice. The chapter supports the interpretations and outcomes of the thesis by drawing on extant literature sourced and critiqued in the literature reviews, and both compliments and challenges that literature through the thesis's interpretations and outcomes, both practical and theoretical. The chapter also discusses unexpected ethical issues that emerged over the course of the research.

1.10.7 Chapter Seven: Conclusion

Chapter 7 concludes the thesis with a reflective discussion that considers the integrity of the research by engaging the first-, second- and third-person practice as described by Coghlan (Coghlan, 2007a): on the co-operative inquiry approach to working in partnership with others to achieve change and also to advance practical knowing (second- person); on learning about self (first- person); and also reflections on contribution of the research to practice and scholarship (third- person). The chapter discusses the study limitations, and also gives recommendations for further research. It closes with a note of optimism for the future.

1.11 Conclusion

This chapter has provided an introduction to the thesis and exposes the real and long-standing practical problem of quality improvement in healthcare and its failure to deliver meaningful sustained system change. It argues that solving this pernicious problem requires challenging some deeply embedded assumptions. It does this by offering a brief overview of complexity theory as it relates to health care and leadership in such institutions and arguing that the problem is best addressed through action research as a methodology that can create change in the participants and the context. In addition, action research, and in particular co-operative inquiry, fits with the author's motivation in the circumstances of change prevailing in the specific context in which the research took place. Details of the setting are provided in order to illustrate the significance of the research. To orient the reader a short summary of what can be found in each chapter of the thesis is provided.

By investigating healthcare systems and leadership from the perspective of Complexity Theory it is anticipated that this research will elicit interest in an aspect of leadership that has heretofore received much theoretical and conceptual discussion but limited empirical examination.

Chapter 2: Context

‘For those who intend to discover and to understand, not to indulge in conjectures and soothsaying, and rather than contrive imitation and fabulous worlds plan to look deep into the nature of the real world and to dissect it — for them everything must be sought in things themselves.’ (Quote attributed to Sir Francis Bacon).

2.1 Introduction

This chapter details the context in which the research took place. Shaw and colleagues state that *‘context can shape human action by generating changes to team culture’* (Shaw et al., 2018 p. 11). Although often cited as an important factor that influences, positively or negatively, the nature and implementation of behavioural change programs, in the literature there is conceptual and terminological confusion (Greenhalgh and Manzano, 2022). Whilst every context is unique and therefore there cannot be a definitive formulation of context, as context is fundamental to underlying explanations of the effects of interventions, there is a requirement to understand the role of context in action research (Eden and Huxham, 1996). Morrison and Ilford contend in their unique context tenet that an action research project must take into account the unique social context in which the project is performed (Morrison and Lilford, 2001). This chapter describes the concept and influences of context for this thesis and describes the overall context at global and national level; the local organisational context, and the individual context and concludes by advising that these areas should be seen as a dynamic interactive adaptive whole rather than individual factors.

2.2 What do we Mean by Context?

The word ‘context’ has its etymological origins in the Latin *‘contexere’* meaning to weave or join together. As discussed briefly in Chapter one, context has been identified as an important consideration for improvement and implementation initiatives. As Johnathan Lomas commented in his 2005 paper, *‘This overriding influence of context may go a long way towards explaining why the latest systematic review of clinical behaviour change interventions ... continues to offer no clear advice for managers on how to improve the quality of care’*, (Lomas,

2005 p. 59). Examining and understanding the context in this research is fundamental to providing explanatory explanations of the effects of the intervention (co-operative inquiry).

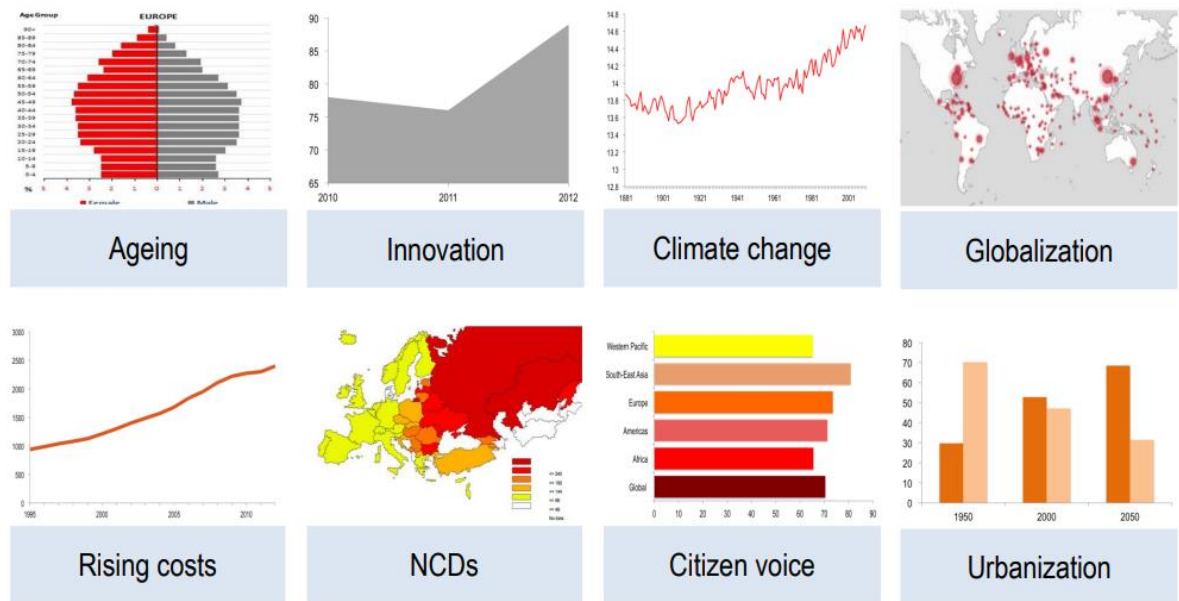
In their systematic review, Rogers et al (2020 p18) define context as *'a multi-dimensional construct encompassing micro, meso, and macro level determinants that are pre-existing, dynamic, and emergent throughout the implementation process'*. Micro, meso and macro are levels or scales that can be used in social analysis and consist of clinical (micro), organisational/service (meso) or health system (macro) levels. Pawson and Tilley describe context as *'the culture, resources, and opportunity structures which enable certain actions and constrain others'*, (Pawson and Tilley, 1996 p. 575). It is increasingly being appreciated that context influences outcome in improvement efforts but how to account for and conceptualise context is unclear. As stated in Boudon (2014 p. 43) *'The question as to 'What is context?' has actually no general answer, but answers specifically adapted to the challenging macroscopic puzzles the sociologist wants to disentangle'*.

Context has been identified as an important area for consideration in action research literature. However, as Coghlan and Shani (2005) have observed, accounts of action research seldom describe the rigorous reflection on choices that are made in relation to contextual analysis (Coghlan and Shani, 2005). In 1982, Shani and Pasmore presented a complete theory of the action research process in which context is described. This model was developed by the authors in recognition that action research (AR) publications up to that point, whilst acknowledging the complexity of the AR process, had not given this complexity sufficient attention. The authors felt that these oversights resulted in a lack of emphasis on understanding of the factors and their interrelationships that might enhance or impede the AR process and its outcomes. They proposed a model comprising four factors: context, quality of relationships, quality of the action research process itself and outcomes of the action research. Context, in their model, consists of four sub factors that set the context of the action research project which are discussed. The authors do not provide a definition of context but describe four kinds of contextual factors which are the factors necessary for the formation of relationships. Context in action research refers to the business, social and academic perspectives of the research. This conceptualisation of context in action research has been supported by Coghlan and Shani (Coghlan and Shani, 2014). There are three main areas of context: the overall general business context at global and national level; the local organisational context, and the individual context.

In keeping with Shani and Pasmore, each of these contextual factors will now be explored.

2.3 Global Context

As indicated in the introduction to this thesis, health and care organisations around the globe are struggling to provide equitable accessible and affordable services to citizens and residents. It is estimated that by 2030, the number of people over the age of 60 will increase by 56 percent, from 900 million to 1.5 billion (UN, 2019). In addition, some 60% of those aged over 50 report having at least one chronic health condition (Ipsos, 2021). The WHO has identified a number of key areas of challenge: inequity of access, fragmented services, sub optimal care quality, system inefficiencies, unaffordability and increasing complexity (WHO, 2015, Plsek and Wilson, 2001b). The WHO has also identified other global challenges summarised in Figure 5, including the ageing population, innovation, climate change, globalisation, rising costs, non-communicable diseases, the rise in citizen voice and increasing urbanisation. With the recent events in Afghanistan and Ukraine, humanitarian crises and displacement and immigration are yet other areas of challenge. Countries continue to grapple with the effects of the ongoing pandemic with inequity in accessing vaccines particularly in developing countries. Until there is high vaccination coverage in all countries, infection rates will continue to rise, and new variants will emerge. The pandemic has uncovered fundamental weaknesses in pandemic preparedness and response at both national and global levels. It has also exposed other shortcomings that are true of the management of other global issues; complex and fragmented governance, inadequate leadership; insufficient financing; and inadequate systems and tools.



Source: Global Health Observatory Data Repository, 2021 (Vardell, 2020)

Figure 5: Global Health Challenges.

More recently, the WHO designated 2021 as the International Year of Health and Care Workers as a mark of appreciation for their work during the COVID-19 pandemic. Part of this work is the development of a global health and care worker compact, which aims to provide comprehensive guidance on the obligation to protect health and care workers, defend their rights, and to guard against discrimination of any form (WHO, 2022).

In recent years, advances in medicine have been staggering and evolving at pace. The advent of genomics and personalised medicine together with the pandemic driven explosion in digital health and other technological solutions all add greater complexity to already complex healthcare systems. The need for effective leadership in this increasingly complex environment has never been more urgent.

Most health and social care systems consist of many individual and groups of organisations and professionals who operate in institutional and disciplinary siloes providing health and social care that is disjointed and difficult to navigate. The task environment is dynamic, complex, and at times ambiguous, requiring professionals to comply with standard operating policies and procedures (see Appendix A for the myriad of clinical policies, procedures and guidelines [PPGs] at the NRH) yet at the same time maintain the flexibility to improvise and adapt when the situation calls for it (Roberts and Coghlan, 2011). External stakeholders such

as governmental agencies, also exert significant pressure on service providers to adhere to higher standards of quality while reducing costs (Ramanujam and Rousseau, 2006a, Ramanujam and Rousseau, 2006b). If healthcare systems are to respond to the challenges articulated above, dramatically different ways of working are required. Key to the successful implementation of any change is leadership. Leadership has been highlighted by the World Health Organisation (WHO) as essential for strengthening health systems and improving health outcomes (WHO, 2007).

The global context with regard to disability has also been changing. Ever since the 1970s, there has been increasing awareness that persons with disabilities are particularly vulnerable to discrimination, exclusion and inequality, and that disability is a human rights issue. In recognition of the rights of people with disabilities and to encourage countries to take appropriate measures to reduce discrimination against persons with disabilities, in 2006 the United Nations adopted the Convention on the Rights of Persons with Disabilities (UNCRPD). The UNCRPD is a treaty which exists to protect and reaffirm the human rights of persons with disabilities. The Irish Government signed the Convention in 2007 and ratified the Convention in March 2018. Following the publication of the UNCRPD, the World Health Assembly invited the World Health Organisation to produce a World Report on Disability . In collaboration with the World Bank, the WHO developed the World Report on Disability to inform world governments about the importance of disability, analyse scientific information, and offer recommendations for action at the national and international levels. Following on from this, in 2017, WHO launched the Rehabilitation 2030 initiative, which emphasizes the need for health system strengthening, and calls for all stakeholders worldwide to come together to work on different priority areas, including: improving leadership and governance; developing a strong multidisciplinary rehabilitation workforce; expanding financing for rehabilitation; and improving data collection and research on rehabilitation (Gimigliano and Negrini, 2017).

Finally, the WHO also calls for the embedding of research into health systems processes in their report, *'Changing mindsets: strategy on health policy and systems research'* (WHO, 2012) which advocates for close collaboration between researchers and decision-makers to work as one community and proposes actions that both can take in order to strengthen the performance of health systems.

The composite implications of this global context on healthcare systems are intimately and profoundly entangled with the development of healthcare policy and practice in Ireland, which is not immune from any of the external complexity.

2.4 National Context

2.4.1 History of the Irish Healthcare System

The evolution of the Irish Healthcare, with its chequered history, adds another layer of complexity to the context of this research. The tension between politics and voluntary and state provision that satisfies social/religious values has never quite been resolved and has shaped the way policy has evolved. This tension complexifies the demands on institutional compliance and performance, affects patient trust, the standard of care provided and the ability to effect change. The possibilities and challenges for change in the Irish Healthcare System are deeply rooted in this history and complexity. The history of the development of the Irish healthcare system is complex. According to the 1987 Barrington report, in the early 18th century the sick and poor were treated in infirmaries and by dispensary services funded by philanthropists, doctors and religious orders.

Government in these islands had not yet accepted a general responsibility for the health of the population, nor a duty to make medical facilities available to all at little or no cost to the patient...Only the medical care of the very poor and the control of infections associated with poverty were considered to warrant public intervention (Barrington, 1987 p. 4).

According to the 2018 Day report, through the Poor Relief (Ireland) Act 1851 the Poor Law bodies took over these dispensaries and provided free services for those who were unable to pay for them (Day et al., 2018). The charitable and religious groups who provided medical services to the sick and poor became known as voluntary organisations (i.e., funded through voluntary contributions). Other voluntary institutions were established and funded by benefactors. As a result of this evolution, Ireland currently has a three-strand health and social care system with voluntary, statutory, and private hospitals. Over the course of the 19th century, following Catholic emancipation, a number of Catholic religious orders established large healthcare organisations. In addition, during the 20th century, voluntary organisations were also set up to meet the needs of local communities including disability services. Whilst voluntary organisations had provided care during a period when the State did not, in the 20th century State funding and provision of services increased significantly and the State and voluntary systems began to work more closely together.

The Health Act 1970, set out in legislation the design for the modern Irish healthcare system. This Act provided for eight regional Health Boards (RHBs). Responsibility for the development and implementation of health policy shifted from local authorities to the Department of Health (DoH). These health boards provided health and personal social services through three core programmes: general hospitals, special hospitals, and community care programmes. Then, in 2000, the Eastern Health Board was decommissioned and replaced with three smaller Health Boards. Then opinion migrated from a decentralized RHB model to more centralized national structures. Following a number of national health scandals, three government commissioned reports (Hanly, 2003, DOHC et al., 2003, WW Worldwide, 2003) were published. These reports were highly critical of the decentralised model and recommended a more centralised accountable system. This resulted in the creation of a single centralised national entity, the Health Services Executive (HSE) in 2005. Government allocated annualised funding to the HSE and agreed a service plan that set out the quantum and nature of services to be provided. However, this new entity did not succeed in restoring trust in the Irish healthcare system and in 2013 there was further restructuring with the establishment of seven Hospital Groups and nine Community Healthcare Organisations. The current organisational structure is shown in Figure 6. The NRH is part of the Ireland East Hospital Group. These recurrent restructurings and over regulation place rigid constraints on an organisation and inhibit its leadership to adapt to changing circumstances, requiring multiple level sign off for any innovation.

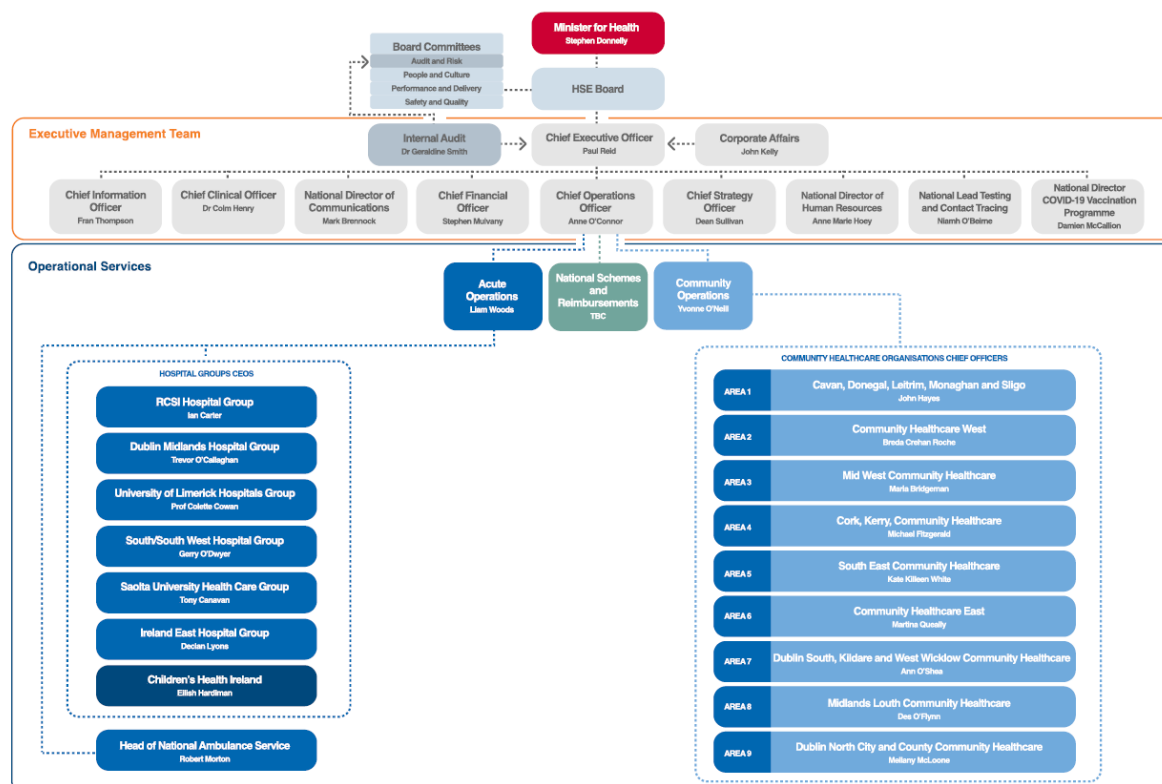


Figure 6: HSE Executive Management Team and Operational Services Structure April 2022

2.4.2 National Policy: Sláintecare

In 2017 the Irish Government through The Oireachtas Committee on the Future of Healthcare, published Sláintecare, a ten-year strategy for health care and health policy in Ireland (HOTO Committee, 2017). It was the first time that cross-party consensus had been reached on a new model of healthcare to serve the Irish people over the next ten years. The report set out a very high-level policy roadmap to deliver whole system reform and universal healthcare with an emphasis on a shift left to integrated primary and community care.

Sláintecare has five interrelated components: population health; entitlements and access to healthcare; integrated care; funding; and implementation. The implementation of the Sláintecare report has major implications for health care professional teams and their institutional organisations across Ireland. The Sláintecare Action Plan 2019 identified four work programmes of importance; (1) service re-design & supporting infrastructure (2) safe care, coordinated governance and value for money, (3) teams of the future and (4) sharing progress, as summarised in Figure 7.



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Figure 7: Sláintecare Work Programmes 2019

The first workstream; Service Redesign, involved restructuring. The Hospital Groups and Community Healthcare Organisations were not co-terminus, and it was felt that this would impede integrated planning and care delivery. Through Sláintecare, the new plan was to align Hospital Groups and Community Healthcare Organisations into Regional Integrated Care organisations with the HSE organisation changing to be a national centre with responsibility for national planning, strategy and standard setting as shown in Figure 8.



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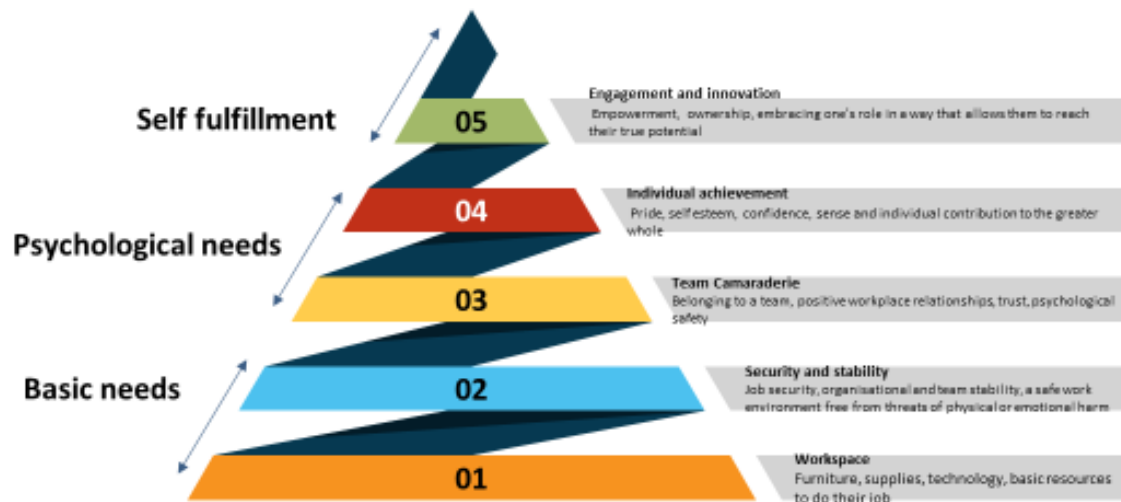
Figure 8: Map of the Six New Regional Health Areas (NRH will be in area C)

Work stream 3: Teams of the Future, is centred on planning, building, and supporting a health and social care workforce which can deliver on the Sláintecare reform programme, as well as initiatives promoting innovation, participation, and the creation of a supportive work environment.

Supporting implementation of the Sláintecare report, the HSE People Strategy (2019-24) sets out actions to support implementation of Sláintecare and the HSE Corporate Priorities (HSE, 2019) with priority 1 focussed on leadership and culture. The strategy also focuses on the delivery of Sláintecare Strategic Action 9: Build a Sustainable, Resilient Workforce that is Supported and Enabled to Deliver the Sláintecare vision.

Building on the document '*Improving our services: A users guide to managing change in the Health Services Executive*' (HSE, 2008), in 2018 the policy '*Peoples Needs Defining Change – Health Services Change Guide*' was launched (HSE, 2018). In section 1: People and Culture

Change Platform, the Borysenko hierarchy (adapted from Maslow's hierarchy) of employee needs is shown and is summarised below in Figure 9 (Borysenko, 2017).



Adapted from Peoples Needs Defining Change – Health Services Change Guide

Figure 9: Hierarchy of Needs Aligned to Personal Engagement.

The People Strategy 2019-2024 is also fully aligned to 'Our Public Service 2020: The Irish Government's framework for development and innovation in Ireland's public service'. Pillar 3 prioritises the development of 'our people and our organisations' (DEPR, 2017).

There are other global and national policy initiatives in Ireland that have a bearing on the NRH and its future direction. These are summarised in Figure 10 and reflect the complex national context within which the hospital is operating. The two key national policy documents that impact on rehabilitation services will now be discussed; *The National Policy and Strategy for the Provision of Neuro-Rehabilitation Services in Ireland 2011–2015* and *The National Trauma Strategy 2019*.



Figure 10: Key Policy Milestones for NRH and Rehabilitation

2.4.2.1 The National Policy and Strategy for the Provision of Neuro-Rehabilitation Services in Ireland 2011–2015

The National Policy and Strategy for the Provision of Neuro-Rehabilitation Services in Ireland 2011–2015 set out a policy framework in terms of developing neuro-rehabilitation services in Ireland for the period 2011–2015. The report recognised that given the current economic climate, the focus in the short to medium term had to be on reconfiguration of services, structures and resources and the enhancement of the skills and competencies required to meet the changing context. In this context, the Clinical Strategy and Programmes Directorate of the HSE, as part of its development of clinical care programmes, established a Rehabilitation Medicine Programme, led by a team of national experts. The three main objectives of the Rehabilitation Medicine Programme were to improve the quality of care; improve access to services and improve cost effectiveness.

The focus for the initial period of service development was on: network development; integration of services; development of protocols that would have mandatory compliance across the delivery system; reconfiguration of existing resources; achieving greater cost-effectiveness through the development of greater competencies by those tasked with

delivering services; increased teamwork and using interdisciplinary approaches; more interagency collaborative working.

The HSE National Clinical Programme for Rehabilitation medicine subsequently published the model of care in 2018. The model of care describes the framework for the development of specialist Rehabilitation Services in Ireland. In developing the model of care, the latest evidence base was collated and existing recommendations for organisation of specialist rehabilitation services across English-speaking OECD countries was considered.

A three-tier model of complexity was proposed with 3 levels of specialist rehabilitation service provision:

1. National complex specialist rehabilitation service: provides services for a complex care load and serves the national population (60-70% have complex needs).
2. Local/Regional specialist rehabilitation service: which serve a population of up to 1 million and manages fewer complex cases (up to one third will have complex needs).
3. Community based rehabilitation services: which serves a CHO population (approximately 500,000) with a less complex case load.

The NRH is a complex specialist rehabilitation service.

The main premises underpinning all rehabilitation service delivery were as follows: a person-centred approach to patient care, the development of appropriately resourced interdisciplinary specialist rehabilitation teams across Ireland supported by education and training; case management of patients and the development of Managed Clinical Rehabilitation Networks (MCRN). Managed clinical networks facilitate re-design, quality improvement, strategy and planning across pathways with teams working across department boundaries, teams, units and divisions. Results are achieved through consensus and collaboration.

[2.4.2.2 The National Trauma Strategy 2019](#)

The National Trauma Strategy 2019 details the development of a trauma network in Ireland and points to the need for a comprehensive pathway of care for major trauma patients. The first of these is the Trauma System for Ireland. The aim of the System is to ensure that people who suffer traumatic injuries have quicker access to the services best able to meet their specialised and often multiple needs and that more patients survive with lower levels of

disability as a result. The Trauma System is being implemented in three phases with the first phase underway.

The trauma report highlights the importance of specialist post-acute rehabilitation and the role that NRH plays in this nationally. The report also acknowledges the limited capacity of the NRH to meet the growing need for specialist rehabilitation as one of the critical dependencies in delivering the Trauma System. The report highlights the effect that this constrained capacity can have on acute hospitals unable to discharge patients to NRH for some time. Two recommendations from this report have particular relevance to NRH:

Recommendation 29: The HSE should ensure that rehabilitation services in both acute and community settings adopt a person-centred approach, which empowers the patient and the family to participate actively in the process. This process includes the provision of timely information, education, and a range of supports on the rehabilitation journey.

Recommendation 30: The HSE should ensure coordinated development of regional and community rehabilitation services and long-term support, to meet the needs of all trauma patients within a Trauma Network. This should include appropriately resourced and skilled community rehabilitation teams (CRTs), co-ordination with disability services and the appointment of case managers.

As part of Sláintecare developments, in 2017, The Minister for Health established an Independent Review Group (IRG) to examine the role of voluntary organisations in the provision of health and personal social services and to make recommendations on the future evolution of their role. The IRG published its report in 2018. The report looked at voluntary organisation ownership, governance, ethos, and relations with the State. The report noted strained relationships between the voluntary sector and the Health Services Executive (HSE) with a breakdown in mutual trust and respect (Day et al. 2018) and made a number of recommendations to support a new partnership between the voluntary and public sectors. These recommendations fitted with the policy direction outlined in the Sláintecare Implementation Strategy.

2.5 Local Context: The National Rehabilitation University Hospital

The National Rehabilitation University Hospital (NRH) is the only hospital in Ireland providing comprehensive, complex specialist rehabilitation services to patients following acquired brain injury, spinal cord injury or amputation. The NRH is a voluntary hospital also referred to as a 'section 38'. Section 38 agencies are organisations that are publicly funded under section 38 of the Health Act 2004. They provide services on behalf of the HSE, and employees are classified as public servants. According to the hospital constitution: *'The NRH is a charitable institution. It is a Catholic, voluntary, publicly funded hospital, under the care of the Sisters of Mercy and jointly held in trust with the Minister for Health and Children'.*

2.5.1 History of the NRH

The hospital can trace its origins back to 1916. Originally a private residence called 'The Cedars', the house along with 60 acres of land, was bought by the Reverend Mother M. Malachy of the Sisters of Mercy. The Sisters of Mercy is a religious congregation established by Catherine McAuley (1778-1841) in 1831 when she inherited a substantial estate from her adoptive father.

The Sisters arranged to build a hospital for the treatment of Pulmonary Tuberculosis, and after extensive alterations of the house, it was opened and blessed by Monsignor O'Donnell on 11th February 1918. The Archbishop of Dublin at the time made an unofficial visit to the Sisters and expressed a wish that the Hospital should be renamed Our Lady of Lourdes Hospital. At that time the hospital was in open countryside overlooking the Dublin and Wicklow mountains and Dublin Bay and the Hospital grounds incorporated a farm. A hospital brochure from that time commented *'From the windows of every ward there is afforded an uninterrupted view of the Dublin and Wicklow Mountains. Whilst the exquisite panorama of the whole County Dublin, from Howth Head to the Vale of Shanganagh, can be enjoyed by the patients from the roof of the Hospital.'* (NRH Archive 2021)



Photo from NRH Archive

Figure 11: NRH circa 1920

At that time the hospital had bed capacity for 60 patients. Sister M. Xavier O'Reilly was the first Mother Superior appointed as administrator. Together with a team of other sisters they employed nursing, paramedical and household staff to develop the work of the hospital. At that time, all the consultant medical staff came from the Mater Misericordia Hospital in Dublin, one of the largest hospitals in Ireland. The Hospital at that time is shown in Figure 11.

By 1933, the hospital received recognition as a training school for nurses. Probationers who passed their preliminary examination (equivalent to first year general training) were transferred to a general hospital for the completion of their training.

In 1935, the hospital was expanded with the addition of a further ten rooms and, according to the Sisters of Mercy archive, *'the lighting, heating, and cooking for the entire establishment is done through the medium of electricity. The new hospital laundry was completed with the most modern machinery'*. (Sisters of Mercy Archive 2020)

In 1942, the Sisters further developed the site and bought adjacent land known as Wood Park. The land around the house was developed as a small urban farm with a herd of milking cows and a poultry farm, and home-grown vegetables which supplied the hospital kitchen.

Between 1940 and 1949 there were a number of new developments. A new doctors' residence was built on eastern extremity of the grounds; an X-ray unit and Operating Theatre were built on the roof of the existing hospital and a third floor was added - St. Gabriel's and St. Camillus' Wards.

In 1949, a lift was added to facilitate access to all floors. A special service lift was also constructed to convey clinical, and household waste out of the hospital in as hygienic a fashion as possible, to minimise the risk of infection.

In 1953, nursing accommodation was constructed on the hospital site. At that time, any hospital providing training for student nurses were expected to provide accommodation.

When effective antibiotics were developed to treat Tuberculosis, the Sisters identified a gap in services for spinal cord injured patients. The Sisters undertook additional training and recruited specialist rehabilitation staff and in 1961, the hospital reopened to provide specialist adult spinal rehabilitation services and became known as the National Medical Rehabilitation Centre (NMRC) and was officially opened by Tánaiste (Deputy Prime Minister) and Minister for Health Mr Seán MacEntee. The Archbishop of Dublin, Sisters of Mercy and the Minister for Health signed an indenture declaring that the hospital maintain and carry on the hospital for the provision of rehabilitation. The first patient admitted was a traumatic spinal cord injured patient who had sustained their injury in a Road Traffic Accident.

From 1961, as the original hospital building had not been designed to cater for the new purpose, various additions were made to support the provision of rehabilitation services. Departments of Physiotherapy, Occupational Therapy including Metalwork and Woodwork areas were added, with a sports gymnasium, a Day Room, a Therapeutic Pool, a Prosthetic Department and Workshop, a Dental Suite, and a dedicated Outpatient Department.

In 1962, the school in the hospital was established. There were initially about 20 pupils, some were inpatients of the hospital, and some were children with disabilities from the local area. In the early days, the school was the subject of much scrutiny with many visits from Department of Education inspectors.

In 1963, the first School of Occupational Therapy in Ireland was opened on the hospital grounds.

In 1973, Mr Erskine Childers, (then Tánaiste and Minister for Health) opened the Hydrotherapy Pool, a Prosthetic Clinic and a Children's Gym.

In 1974, a course in Rehabilitation Nursing was sanctioned by the Department of Health and approved by the Nursing and Midwifery Board of Ireland (Bord Altranais) and was established in the hospital. This was the first of its kind in Ireland and proved invaluable training for the General Trained Nurses, especially in Casualty Departments and Public Health Nursing Service at the time.

In response to the increasing demand for in-patient beds, in 1983, the Sisters of Mercy moved from their convent accommodation which was based within the Hospital to the Nurses' Home which was then almost unoccupied by nursing staff.

In 1994, a decision was taken by the Hospital Board, to change the name of the hospital to the National Rehabilitation Hospital (NRH) as, by virtue of its complex history, it was referred to by many different names such as: the Cedars, the Lourdes, the National Medical Rehabilitation Centre and NMRC.

As the Sisters became aware of the growing incidence of brain injuries, they arranged for a proleptic appointment of a brain injury rehabilitation consultant and opened their doors to the first brain injured patients in 1995. Such forward thinking is still rare in Ireland today. Medical, Nursing and Therapy staff received additional specialty training to provide complex specialised rehabilitation treatment to patients with severe brain injury and a Complex Neurobehavioural Unit (St. Patrick's Ward) was opened.

In 1998 a Pre-Vocational Training Unit facilitating Brain Injured Patients to train, re-learn or learn new skills for returning to work and reintegration into the community was opened and in 2002, this was further developed with the opening of the Rehabilitative Training Unit (RTU) and Corofin Millennium Lodge. These services provided training for people with an Acquired Brain Injury who needed to explore their vocational options or develop their skills for independent living; to bridge the gap between clinical rehabilitation and further training, educational options, or existing employment.

In short, the sisters exhibited entrepreneurial, adaptive and operational leadership skills as they adapted services and buildings to respond to a changing environment.

2.5.2 Current NRH

The hospital is overseen by a Board of Management which reports to the Provincial Leader of the Sisters of Mercy and is funded by the HSE through a service level agreement which is agreed annually.

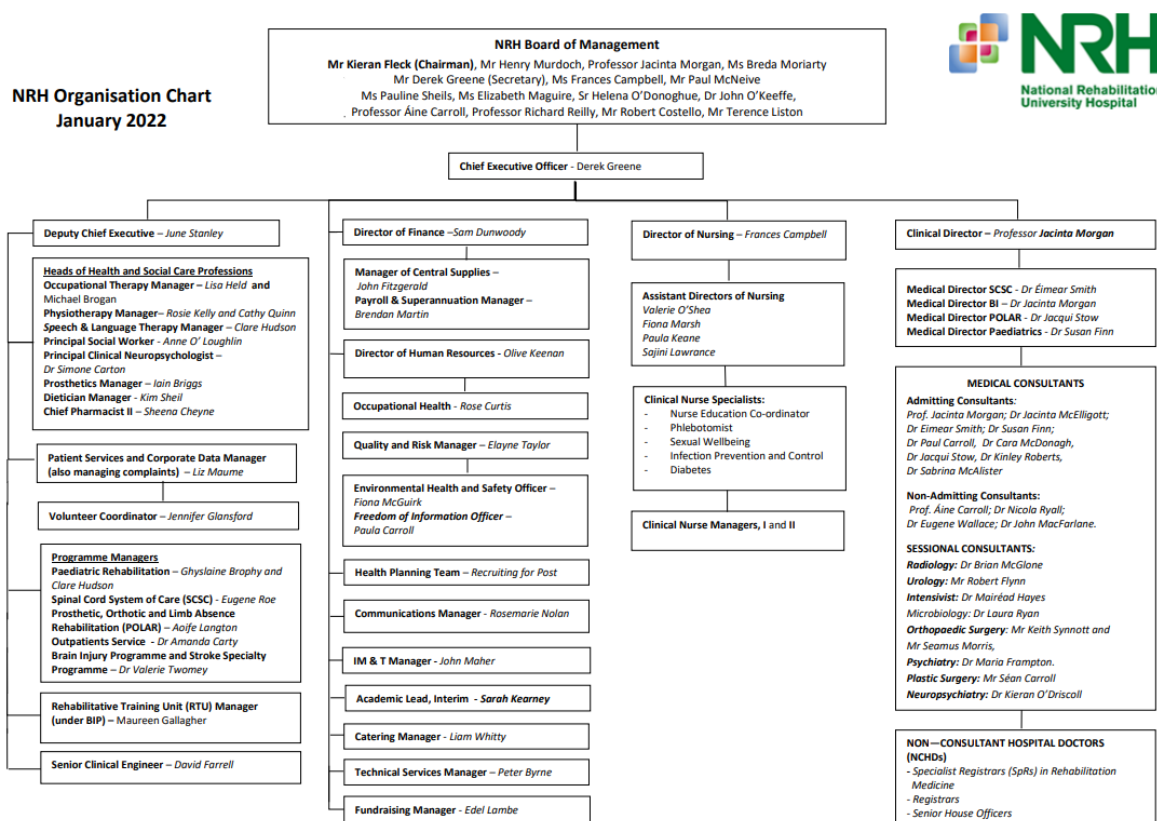
All service providers in the area of health and social care are subject to regulation by sector-specific regulators. The hospital has a complex regulatory environment with many frameworks with which it must comply as a charity, as a provider of healthcare services, and as a public body. These statutory bodies with responsibilities for regulating healthcare include:

- a. Charities Regulator**
- b. Regulator of Occupational Safety and Health**
 - i. Health and Safety Authority
- c. Regulators of Services**
 - i. Health Information and Quality Authority
 - ii. Mental Health Commission
- d. Regulators of Professionals**
 - i. Dental Council
 - ii. Health & Social Care Professionals Council (CORU)
 - iii. Medical Council of Ireland
 - iv. The Nursing and Midwifery Board of Ireland (NMBI)
 - v. Opticians Board
 - vi. Pharmaceutical Society of Ireland (PSI)
 - vii. Pre-Hospital Emergency Care Council (PHECC)
- e. Regulators of Products**
 - i. Food Safety Authority of Ireland (FSAI)
 - ii. Health Products Regulatory Authority (HPRA)
 - iii. Radiological Protection Institute of Ireland (RPII)

As part of a HSE wide initiative to improve governance arrangements for the funding of Non-Statutory Agencies, a national framework was developed to link funding provided to a quantum of service and provided for these services to be linked to quality standards, with continuous monitoring to ensure equity, efficiency, and effective use of available resources. An annual compliance statement is required from services annually and this is monitored by a Compliance Unit. In addition, the hospital must also comply with the Code of Practice for the

Governance of State Bodies which is designed to ensure that both commercial and non-commercial State bodies meet the highest standards of corporate governance.

The organisation structure of the NRH as of April 2022 is shown in Figure 12.

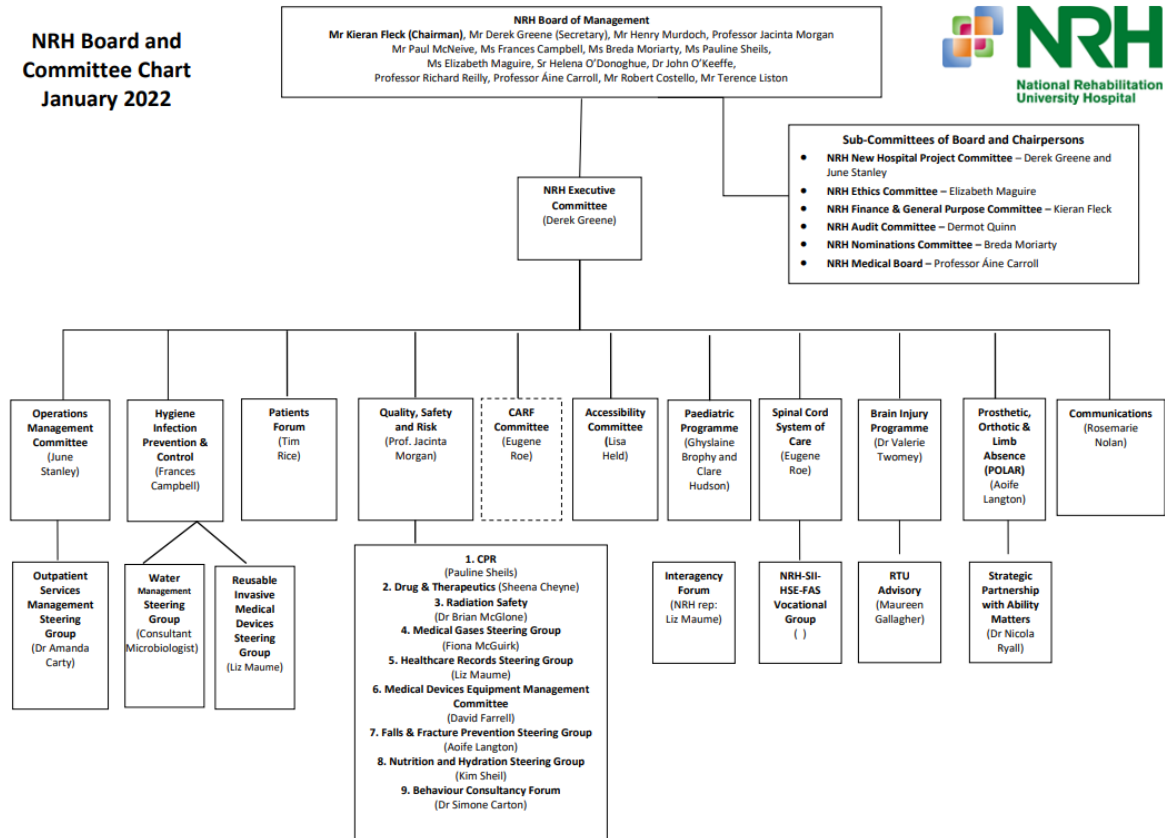


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Figure 12: Organisational Chart NRH 2022

The NRH Board and Committee chart is shown in Figure 13.

NRH Board and Committee Chart January 2022



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Figure 13: The NRH Board and Committee Chart.

As is shown in Figure 13, The Hospital Board of Management (hereafter referred to as the Hospital Board) and Executive management committees are the senior decision-making groupings in the hospital. This is important for the preunderstanding activities which are described in detail in Chapter 4.

The hospital has a statement of purpose which details the aim, objectives, and ethos/mission statement of the organisation (NRH, 2023a) .

The NRH Mission Statement is as follows: *‘The NRH espouses the value established by the Sisters of Mercy by providing high quality care and treatment to patients on the basis of need and irrespective of background, creed, or status. The NRH, in partnership with the patients and their families, endeavours to achieve health and social gain through the effective treatment and education of patients who, following illness or injury, require dedicated interdisciplinary rehabilitation services. The NRH aims to achieve this in a manner that is equitable and*

transparent in its service delivery, sensitive and responsive to those availing of its service, and supportive of the staff entrusted with its delivery' (NRH, 2023b)

On studying the history of the hospital, it seems that the management of the hospital have had great insight into the health needs of the population and have adapted their purpose proactively to be ahead of healthcare evolving needs. It has become the primary site and teaching hospital for the education and training of undergraduate and graduate medical, nursing and health and social care students in the principles and practices of interdisciplinary rehabilitation. The hospital has evolved with the everchanging landscape of rehabilitation and disability. From the biomedical model in the 1960s to the biopsychosocial (BPS) model in the late 90-s and 2000s, the hospital has adjusted and adapted to meet the changing needs of the people it serves. Although first coined by Grinker in 1964, Engel applied the term biopsychosocial to medicine to emphasize the need to take into account the psychologic and social aspects of medical practice (Engel, 1960, Engel, 1977a, Engel, 1977b, Engel, 1978, George and Engel, 1980). The BPS model is based on the General Systems Theory (GST), in which the sciences are organised around a hierarchy of systems (Von Bertalanffy, 1972). Each system level is interdependent on the others, and none has, theoretically, functional priority over the others. The GST perspective applied in medicine and psychiatry holds to the idea that all the three levels, biologic, psychologic, and social processes, must be taken into account in every healthcare task (Engel, 1978). Philosophically, it is a way of understanding how suffering, disease, and illness are affected by multiple levels of organisation, from the societal to the molecular. At the practical level, it is a way of understanding the patient's subjective experience as an essential contributor to accurate diagnosis, health outcomes, and humane care. It is acknowledged that there is conceptual overlap between GST and complexity theory but there are subtle differences (Phelan, 1999, Turner and Baker, 2019) including system holism, open and closed systems, linear and non-linear systems, and the application of the concept of irreducibility.

With the emergence of the global disability movement in the late 20th century, persons with disabilities have striven to achieve full participation and equalization of opportunities with the central motto of '*nothing about us, without us*'. The nothing-about-us-without-us principle expresses that persons with disabilities know what is best for them and their community, and that persons with disabilities must be valued as integral and essential contributors to every sector, industry and community worldwide (Charlton, 2000). Similarly, when seeking methods to support organisational change and development, particularly in the area of disability, staff

should also be valued as integral and essential contributors and methods should be utilised that take this perspective.



Figure 14: The Old Hospital and the New Building

The next stage of the evolution of the hospital dawned with the building of the new hospital, the building transition shown in Figure 14. However, this was not the only transition over the course of this research. As mentioned previously, an intertwined and complex relationship has existed between the voluntary and statutory sectors for many years. Originally managed through the regional health authority, the hospital has transitioned many times to an integrated service area, a community healthcare organisation, the HSE Acute hospitals division and as of March 2022, the Ireland East Hospital Group. However, throughout that time, the hospital has been governed by an independent Board.

In 2010, as part of the reparation for historical child abuse, the Sisters of Mercy handed over the land on which the hospital sits to the state and currently the hospital is in an interregnum while a new company and Board of Directors is established to manage the hospital.

As described earlier in this chapter, the hospital provides complex specialist rehabilitation services. The NRH has a national remit, serving a population of approximately 5 million. Services are organised into 5 specialty rehabilitation programmes. These are: 1) Acquired Brain Injury programme (including traumatic and non-traumatic brain injury), 2) Stroke Specialty Programme, 3) Spinal Cord System of Care (including, traumatic and non-traumatic spinal cord injury), 4) Prosthetic, Orthotic and Limb Absence Rehabilitation programme (POLAR) and 5) the Paediatric Family-Centred Rehabilitation programme. Each programme is led by a programme manager, assistant director of nursing and medical director. Since 2008, the

hospital has been accredited by the Commission for Accreditation of Rehabilitation Facilities (CARF). CARF is a Canadian based organisation that sets standards of quality by which an organisation providing rehabilitation services is assessed and measured on all the clinical and business work practices involved in its delivery and development of those services.

CARF 'Standards' are written measures of performance used to assess how well the hospital is serving its patients and to see how it can improve. The standards are reviewed and revised each year with new standards keeping pace with changing conditions and patient needs.

Accreditation is the 'recognition of quality' awarded to an organisation when these appraisals are found to have met established standards. The NRH chose this accreditation path as a mechanism for continuous improvement and has been awarded the maximum Three-Year Accreditation.

The NRH transitioned to its new state-of-the-art and bespoke building in June 2020 providing the most up-to-date services for its patients and service users. The development of the new hospital presented a once in a lifetime opportunity to investigate and understand team dynamics (roles & responsibilities of participants in working groups), relationships within and between teams (interdisciplinary) and decision-making practices of senior management teams for successful ways to enhance team effectiveness and successfully navigate transition to a new hospital. For the purposes of this DBA, my study and intervention were confined to the Medical Board. The Medical Board is a subcommittee of the Hospital Board (shown in Figure 13) and consists of the senior medical staff in the hospital, each of whom leads at least 1 interdisciplinary team.

2.6 Personal Context

At the commencement of this DBA, I was National Director of Clinical Strategy and Programmes in our healthcare system. My original plan as I embarked on this DBA was to undertake an investigation into leadership for integrated care within the senior leadership team of the HSE. There was, however, an unanticipated restructuring at the top level of the HSE and I transitioned to a new role as a clinical academic. Whilst this had been planned, the rapidity of the transition was unexpected and unsettling. This entailed a change in organisational context from the highest levels of the health system to a relatively small National service hospital and academia. As part of that transition, I was invited by the

Chairman of the hospital board to take over as Chair of the Medical Board of the hospital. The Medical Board is a subcommittee of the Hospital Board and is responsible to the Board of Management for clinical care, standards, and practice in the Hospital, including audit reviews. The Medical Board report to and advise the Board of Management on all matters relating to clinical practice and any changes to that practice. The Medical Board is composed of all the members of the Consultant Medical Staff. As Chair, I am also an ex-officio member of the Board of Management. As a former Consultant and former Chair, I was very familiar with the internal hospital politics.

After recommencing in the role, I recognized that there had been a significant deterioration in relationships between medical colleagues and a breakdown in relationships between the Consultants and senior management. Whilst initially being frustrated and disappointed that there had been such a decline in relationships, I was able to reframe the situation and realized that there was a real opportunity to assist this group as my case for the DBA research project. I wanted to perform meaningful research, but I also wanted to make a difference to the colleagues I cared about.

Around the same time, in July 2018, during the restructuring in the HSE, my father was diagnosed with terminal lung cancer. Having to manage a significant career transition and cope with the decline and ultimate death of my father, as a daughter and carer and clinician was immensely difficult. In January 2019 my father died. The death of my role model and hero hit me unexpectedly hard and made me question many of my beliefs, but also my meaning and purpose. All my career choices up to that point had been made for my father, and now I felt rudderless and lost at sea. Also, for the first time in my life I didn't feel safe.

As I struggled to restore balance in myself, the new methods I was learning about in the course of the DBA helped me find methods to explore my experience and make sense of it. I wanted to find a method to help me express my own context and inspired by the photo voice participatory action research method (Baker and Wang, 2006), I created this photo montage (Figure 15) made up of significant periods and events in my life. This reflects my life; the various milestones of my life to date; as a baby, child, youth, student, junior doctor, specialist registrar and consultant, wife and new mother, sister, and aunt and also the different leadership roles I have held. It also includes me in my action researcher role. This is a visual metaphor for my own transcontextuality; the word 'transcontextual' being first used by Gregory Bateson in his book Ecology of Mind. It was first used in the following passage:

Let me coin the word 'transcontextual' as a general term for this genus of syndromes. It seems that both those whose life is enriched by trans-contextual gifts and those who are impoverished by transcontextual confusions are alike in one respect: for them there is always or often a 'double take.' A falling leaf, the greeting of a friend, or a 'primrose by the river's brim' is not 'just that and nothing more.' Exogenous experience may be framed in the contexts of dream, and internal thought may be projected into the contexts of the external world. And so on. For all this, we seek a partial explanation in learning and experience, (Bateson, 2000 p. 272)

My interpretation of this is that every action, including this research, occurs in a blend of contextual stories and describes the ways in which multiple interdependent contexts coalesce to form complex systems. My personal transcontextuality is shown in the photo montage shown below in Figure 15.



Figure 15: Personal Transcontextuality

2.7 Conclusion: The Shifting Sands of Context and Transcontextuality

This chapter has summarised the global, national, local and individual contexts of this thesis in accordance with the contextual factors outlined in Shani and Pasmore's complete theory of action research. An appreciation of these spanning contexts or transcontextuality is important if we are to understand the world in which we live, and also for the purposes of this thesis, the world in which this research takes place. These multiple contexts are interrelated, entangled and dynamic and in positioning this thesis within this transcontextuality, a richer understanding of our complex system and our place within it can emerge. Additionally, within a participatory action research inquiry process, participants need to be aware of the different contexts in which they are working and inquiring, in order to try to fulfil the demands of their role and have an awareness of how the complexity in the system affects their choices. This understanding of context has provided an understanding into where contextual overlap reinforces the status quo within the organisation (constant restructuring and the burden of regulation) but also where it is loose enough to initiate shifts (the freedom to act that exists with a section 38 organisation). As Alicia Juarrero has written *"recognizing that context changes everything reopens a path toward rehabilitating coherence, identity, and causation—from parts to coherent wholes and from emergent coherent wholes to parts, including intentional causation"* (Juarrero, 2023 p. 19).

This chapter sets the context for the thesis and helps provide a substantive comprehension of the choreography of the shifting sands of the different contexts within which this research took place. The shifting sands of context in healthcare came to feel more like a sandstorm at times and I use this still from The Mummy movie as a visual metaphor. I am trying to fly the plane.



Still from *The Mummy* Film 1999. Permission granted from Universal Studios.

Figure 16: Navigating the Shifting Sands of Complex Systems.

Context within this thesis, although presented as a separate chapter, should not be seen as a separate ‘thing’ but rather as a dynamic, integral, and integrated part of the whole in studying the intervention – part of an entangled system of people and place (Callon, 1999).

Chapter 3: Literature Review

'To read is to voyage through time'

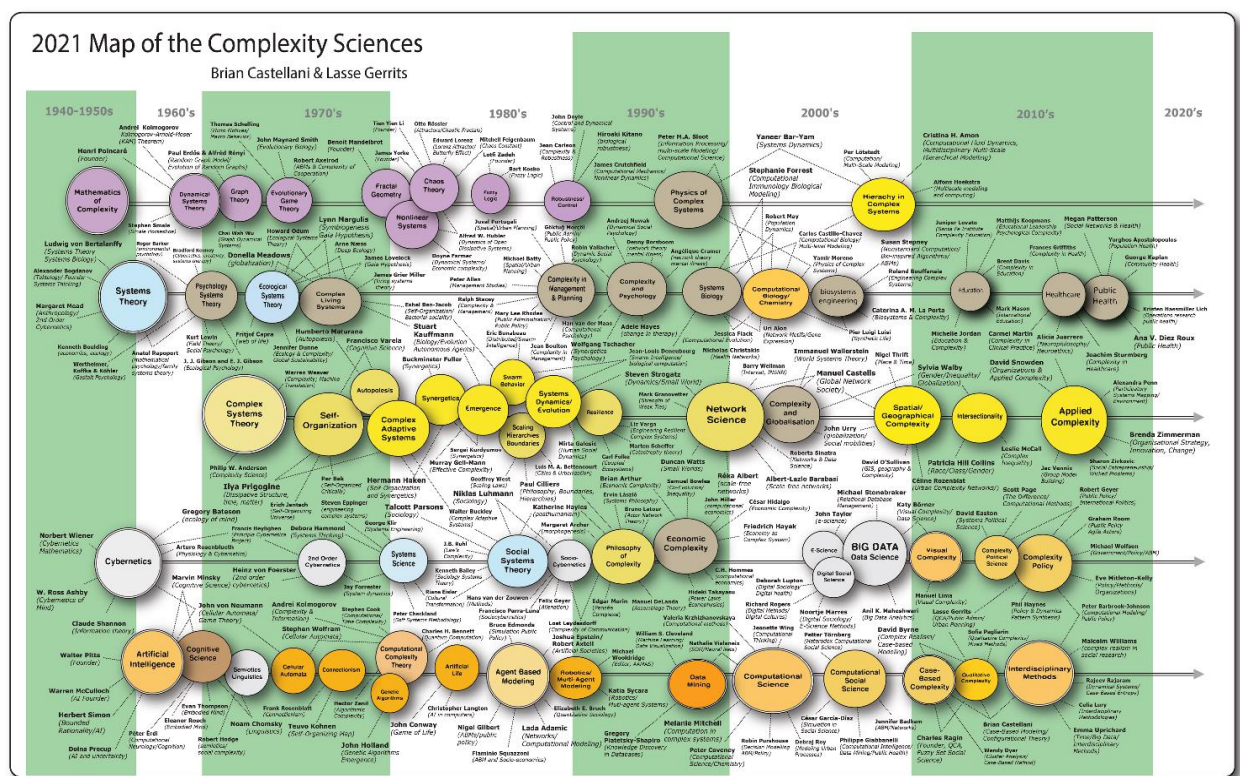
Quote attributed to Carl Sagan

Chapter 2, in studying the transcontextuality in which this research unfolds, brings to the fore a more enlightened and contextualized insight into the multiplicity of influences on and within our organisation, part of the necessary preparatory work in creating the conditions in which different conversations and new actions can occur. Any complex intervention in a complex system needs to attend to what is happening across and between contexts. Building on this knowledge, a comprehensive literature review on both how complexity theory and AR have been applied in healthcare is required to justify their value for leadership development and whether AR would be a culturally acceptable, as well as a methodologically relevant, approach to moving leadership closer to a complexity mindset during a period of major change. Chapter 3 builds upon the introduction in Chapter 1 and the exploration of context in Chapter 2. This chapter explores the literature as it pertains to complexity theory and action research in healthcare and thus lays the foundation for a contribution of this research that will extend beyond the immediacy of the organizational setting and the co-researchers. The chapter will detail these literature reviews in two sections: 1) Complexity theory and 2) Action research. Using the Arksey and O'Malley revised framework (Arksey and O'Malley, 2005), two scoping reviews were conducted which adhere to the Preferred Reporting Items for Systematic Reviews and Meta-analysis Protocols Extension for Scoping Reviews. The chapter concludes with a discussion on how the literature informed the design of the study.

3.1 Complexity Theory Literature Review

For many years, various philosophers and scientists have been challenging the current dominant positivistic and mechanistic worldview where the world is perceived as predictable with clear cause and effect (Prigogine, 1987, Boulton et al., 2015b, Cilliers, 2002, Lichtenstein, 1995, Holland, 2014). A complexity worldview challenges us to see the uncertainty in the world around us and see the social and natural world as organic and systemic, shaped by history and context (Boulton et al., 2015, Prigogine, 1987). Complexity as a term is vague and ambiguous in the literature and in the practice of healthcare. In healthcare, complexity as a

term is used to describe patients, with many terms used synonymously, such as multimorbidity, complex patient, patient with complex care needs, case complexity. There is no single conceptual framework or an operational definition (Safford et al., 2007, Schaink et al., 2012). This is quite different conceptually from complexity theory. There now exists an extensive body of literature on complexity science and theory from diverse scientific disciplines such as meteorology, economics, social science and science, technology, engineering, and mathematics (STEM). Since 2009, Brian Castellani, Professor of Sociology and Director of the Durham Research Methods Centre Durham University, UK and colleagues have been mapping the complexity sciences. The latest map published in 2021 and shown in Figure 17 shows complexity science mapped from the early 1900s to the present. Themes are placed roughly at the timepoint they became a major area of study and is a macroscopic transdisciplinary introduction to complexity science. Instructions on how to read the map is available (Castellani, 2023).



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Figure 17: 2021 Map of the Complexity Sciences

Complexity is challenging to define and although there is no agreed definition, Neil Johnson in his book *'Simply Complexity: A Clear Guide To Complexity Theory'*, offered a description of

complexity as ‘...the study of phenomena which emerge from a collection of interacting objects’ (Johnson, 2009 p. 15). Complexity science and theory can be a helpful framework for the study of real-life systems (Arthur, 1999, Boulton et al., 2015). It can provide a useful framework to provide new insights into the unpredictable behaviour of complex systems, a system being a set of interrelated elements that produce their own pattern of behaviour over time. Similar to Castellani’s map, Herbert Simon in 2019 attempted to put order on the chaos of complexity literature in his book, ‘*The Sciences Of The Artificial*’. In this book, he describes three different waves of theory; Holism; Cybernetics and General systems theory; Chaos and Adaptive systems (Simon, 2019). General systems theory has already been touched on in Chapter 2. John Holland describes two subfields of complexity studies: Complex physical systems and complex adaptive systems (Holland, 2014). Complex physical systems are systems where the elements or agents are constrained by fixed laws e.g., Newtons laws of gravity whereas complex adaptive systems are systems where the elements or agents are adaptive and change as they adapt e.g. financial markets.

Although there is no unifying theory of complexity, complexity scientists acknowledge that there are common patterns of behaviour that occur in these diverse systems. These patterns of behaviours include self-organisation, systemic phenomena, path dependency, sensitivity to context, emergence and episodicity (Boulton et al., 2015b). This worldview is now being reflected in healthcare literature with the recognition that healthcare systems are living systems with many interacting components that require new behaviours by those delivering or receiving interventions or have a variety of outcomes (Anderson, 2008, O’Cathain et al., 2019, Skivington et al., 2021a). Chandler and colleagues in their 2016 paper acknowledge the increasing interest in applying Complexity Theory to healthcare (Chandler et al., 2016). In order to address the current crisis in healthcare, there is an urgent need to embrace complexity theory. This adoption is thankfully underway. Rusoja and colleagues in their 2018 systematic literature review identified 3982 titles on systems thinking and complexity concepts in health from 2002-2015 (Rusoja et al., 2018). This increased interest has been advanced through an increased appreciation that modern healthcare is complex and therefore needs to be studied and understood through the lens of complexity science. Interventions need to be viewed as events within systems and examined by methods that are complexity informed rather than the traditional linear and reductionist methods (Burns, 2001, Fraser and Greenhalgh, 2001, Greenhalgh and Papoutsis, 2018, Plsek and Wilson, 2001a, Braithwaite et al., 2019, Rusoja et al., 2018, Sturmberg et al., 2012, Sturmberg and Martin, 2013).

3.1.1 Complex Adaptive Systems (CAS)

When examining the literature on complexity, the words systems, complexity, and Complex Adaptive Systems (CAS) are used interchangeably, however they are not synonymous. As indicated previously, Holland describes two major complexity theory subfields: Complex physical systems and complex adaptive systems. Complex physical systems are systems with fixed elements that follow the laws of physics and complex adaptive systems which Holland describes as *'systems that have a large numbers of components, often called agents, that interact and adapt or learn'* (Holland, 2006 p. 24). However, not all authors are in agreement with this thinking, with Stacey and colleagues arguing that concepts such as complex adaptive systems should not be applied to organisations or human action in general (Stacey et al., 2000) because *'unlike the agents in complex adaptive system simulations, human agents are conscious, self-conscious, reflexive, often spontaneous and capable of making choices'* (Stacey et al., 2005 p. 13). They propose an alternative theory – complex responsive process (Stacey, 2003). In my reading of the literature on complex adaptive systems, I believe that Complex Adaptive Systems theory accommodates the ability of human agents to make choices, adapt, and emerge together, however the relational aspect of complex responsive processes resonates with my understanding and experience of human systems. Other alternative viewpoints exist with quantum leadership and Quantum Caring Healthcare Leadership (Porter-O'Grady and Malloch, 2010, Malloch, 2017).

In one of the most cited papers on complexity in healthcare, Plsek and Greenhalgh define a CAS as

a collection of individual agents with freedom to act in ways that are not always totally predictable, and whose actions are interconnected so that one agent's actions change the context for other agents. Examples include the immune system, a colony of termites, the financial market, and just about any collection of humans (for example, a family, a committee, or a primary healthcare team), (Plsek and Greenhalgh, 2001 p. 625).

Many publications confuse the terms complex systems and complex adaptive systems and also the terms concepts, features, attributes, and characteristics. Many publications refer to or build upon the characteristics of CAS outlined in Paul Cilliers seminal work *'Complexity and postmodernism: understanding complex systems'* (Cilliers, 2002) which is adapted from the work of Nicolis and Prigogine (1989) These works include, Serra and Zanarini (2013) and Jen

and Holmes (1991). It is therefore challenging to decide which of these features are the most important when choosing methods or approaches for studying healthcare as a CAS. Braithwaite and colleagues in their publication in 2019 acknowledge the challenge of describing a CAS and recognise the need to delineate the characteristics (Braithwaite et al., 2019). In order to address this typological confusion, Rika Preiser and colleagues from Stellenbosch University in South Africa performed an evidence synthesis of prominent authors classifications of CAS features and characteristics and proposed a general typology of six organizing principles that underlie the observable attributes (or conceptual components (Wallis, 2008)) and features of CAS (Preiser et al., 2018) that allows a discernment of complex systems (Preiser, 2019). These principles were developed as a heuristic framework to identify methods and approaches for studying social ecological systems. The six principles are: (1) CAS are constituted relationally; (2) CAS have adaptive capacities; (3) CAS behaviour comes about as a result of dynamic processes; (4) CAS are radically open; (5) CAS are determined contextually; and (6) novel qualities emerge through complex causality. These principles incorporate many concepts and attributes of authors included in the synthesis but can also be applied to other authors whose work was not included in the synthesis. This is not an exhaustive list but acts to facilitate a more coherent conceptualisation of complex systems developed to assist researchers and practitioners in the field of health and care. The Preiser principles will be used in this thesis.

3.1.2 Complexity Theory and Leadership

As discussed previously, leadership is a topic of much research and touches all organisations and plays an ever-increasing role in healthcare organisational change and management. As discussed in the introductory chapter of this thesis, healthcare systems around the world are in crisis. They are struggling to deal with the conflicting demands of relentlessly increasing demand for services and ever diminishing resources. As has been considered in the introduction and noted in Chapter 2, leadership and teamwork can be considered as two sides of the one coin and it is important that both are performed in tandem as they have the potential to be symbiotic (mutually beneficial; mutualism), drawing inspiration for success from each other (Sohmen, 2013). Both are required when change is radical and the context is in flux, because leadership and teamwork combine to deliver sufficient diversity of perspectives to interpret the nature of a complex reality. Unfortunately, when not attended to, the relationship can be parasitic, where the relationship is detrimental to one party.

Current approaches to change in healthcare systems have thus far failed to yield the anticipated benefits which necessitates the exploration of new ways of thinking and new methodologies.

The delivery of healthcare services has evolved from single disciplinary isolated interventions to team-based approaches to complex care. Good team functioning has been shown to be associated with improved patient outcomes, heightened staff satisfaction, and reduced burnout (Rosen et al., 2018, Denning et al., 2021, Schmutz et al., 2019). Studies have shown superior clinical outcomes in patients with a range of disorders treated in units with interdisciplinary teams (IDT) compared with other settings (Clay-Williams et al., 2018). Failures in teamwork and communication have been identified as leading causes of adverse events in health care (Leonard and Frankel, 2011). Effective teamwork requires not only the education and practice of specific teamwork instruments and behaviours, but also **effective leadership** and an understanding of a safety culture. In addition, there is a clear and strong association between staff experience and patient satisfaction (Dawson, 2018) with research showing that effective teamworking is an important element of good staff experience. Recent research in healthcare has also shown that **leader support** influences patient satisfaction through the shaping of staff experience and recommended the need for **supportive leadership** that ensures clear direction for the future with a focus on meeting staff (need for autonomy and control) and patients' needs (West et al., 2022). Leadership and teamwork have been described as *'the warp and woof [sic] of the dynamic fabric of organizations. One cannot exist without the other in an organizational environment activated by a constellation of teams'*, (Sohmen, 2013 p. 1). Therefore, it is important to attempt to balance these two entangled phenomena to achieve an optimal outcome. Strong leadership promotes strong teamwork (Sohmen, 2013), and strong teamwork strengthens leadership as a phenomenon. Together they are associated with better patient outcomes in healthcare systems (Jacobs et al., 2015).

Leadership of teams has advanced as an important area of study. There are a number of leadership theories that can be applied in a team setting including situational and transformational leadership theory (Northouse, 2021) however these theories do not take into account the complexities of modern organisations. In complex systems, complexity theory views leadership as providing connections to emergent structures (Nicolis and Prigogine, 1989, McKelvey, 2003). As mentioned in Chapter 1, complexity leadership theory is a theory for adaptability. CLT regards leadership as a collective emergent process where individuals and teams work together and learn together to produce innovation and adaptation (Lichtenstein et al., 2006, Cullen-Lester and Yammarino, 2016). CLT describes how leadership can promote

team effectiveness in fast changing work environments and therefore could be a useful framework to guide the development of leadership skills and teamwork in an organisation undergoing change.

In practice, healthcare teams are very heterogeneous, varying dramatically in their structures and effectiveness and these variations can affect team processes and patient outcomes. Research has shown that many healthcare providers have not received sufficient training in team-based approaches leading to calls for increased emphasis on education on teamwork (Miller et al., 2018). To try and address this deficiency, a variety of models, guidelines, and trainings have been developed to support the development of effective healthcare teams in hospitals and other clinical settings. Many of these interventions are acute hospital and emergency care focused and derived from the aviation-derived principles of crew resource management or crisis resource management (Miller et al., 2018). There are relatively few interventions to enhance teamwork for non-acute or ambulatory care settings, where teamwork challenges may evolve over longer periods of time. Given that the long-term management of long-term conditions and chronic diseases and care of older persons represents an increasing problem for healthcare systems, as discussed in the opening chapter, team training and leadership development for non-acute settings represents an important gap to be addressed.

Transitioning to a new hospital is a rare, complex, and major event. There are few organisational activities that can compare to the change process associated with the transition to a new hospital facility (Collado, 2021). In addition to the complexities of the actual build itself, such transitions have been shown to create significant challenges for staff and also to be detrimental to operations (Slosberg et al., 2018). As has been mentioned above, there is a close correlation between staff and patient satisfaction. Research has shown that that a move to a new facility can have a negative effect on staff satisfaction and retention and therefore leadership and teamwork, planning and education are required to effect successful transition (Berry and Parish, 2008).

Teamwork has not traditionally been part of medical education (Lee, 2010, Stoller, 2014). On the contrary, traditional medical education has tended to choose train and value characteristics that are the very antithesis of teamwork. There remains a lingering attitude of the heroic lone healer as portrayed in the 1891 painting *'The Doctor'* by Luke Fildes (Barilan, 2007) shown in Figure 18, similar to old leadership theorists who viewed the leader as a heroic visionary leader on the top of a firm's command-and-control structure.



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Figure 18: *The Doctor* by Luke Fildes; 1890.

It is well recognised that the development of teams is a key leadership function for health care providers of all types (Lee, 2010). The paradox of the pressing need for high functioning teams in modern healthcare juxtaposed against the traditional heroic individualistic physician training approaches, generates a profound requirement to develop teamwork and leadership skills among physicians. How best to do this, however, is not clear. Most leadership development programmes are off the shelf offerings that are carried out through professional bodies or external organisations (Stoller, 2020) and very few consider complexity leadership as demonstrated in a scoping review by Belrhiti et al (Belrhiti et al., 2018). The Belrhiti review found that there was limited attention in the current literature to applications of complexity leadership in healthcare settings. Although they identified a number of seminal papers, the definitions of complexity leadership were heterogeneous. They recommended that future research should take a social complexity perspective to leadership in healthcare.

If we accept that health care systems are complex adaptive systems, we need to understand what this means for leadership within the system. In recent years, leadership has become an ever-increasing area of interest not only in healthcare but also organisational and

management theory. Indeed, it has become a highly sought after and valued commodity. Research into leadership has also grown exponentially with a google scholar search for leadership definition on April 25th, 2023, yielding 5,560,000 hits. As Stogdill commented in 1974, *'there are almost as many definitions of leadership as there are people who have tried to define it'*, (Stogdill, 1974 p. 7). Northouse in his book *'Leadership, Theory and Practice'*, identified certain central components to the phenomenon of leadership and offered the following definition: *'Leadership is a process whereby an individual influences a group of individuals to achieve a common goal'*, (Northouse, 2021 p. 5). Osborn et al have argued that:

leadership is embedded in the context. It is socially constructed in and from a context where patterns over time must be considered and where history matters. Leadership is not only the incremental influence of a boss toward subordinates, but most important it is the collective incremental influence of leaders in and around the system, (Osborn et al., 2002 p. 798).

Over recent years, traditional individualistic views of leadership have fallen out of favour with an emerging appreciation that traditional hierarchical and authoritative leadership is insufficient to meet the needs of increasingly complex organisations and that new models of pluralistic leadership that are context sensitive are required (Denis et al., 2012, Lord et al., 2017, McCauley and Palus, 2021, Lichtenstein et al., 2006, Parry et al., 2014). Uhl-Bien et al suggest that historical leadership models are the products of top-down, bureaucratic paradigms and *'whilst they are effective for an economy premised on physical production, they are not well-suited for a more knowledge-oriented economy'*, (Uhl-Bien et al., 2007 p. 298). They suggest that complexity science offers a different leadership paradigm that frames leadership as *'a complex interactive dynamic from which adaptive outcomes (e.g., learning, innovation, and adaptability) emerge'* (Uhl-Bien et al., 2007 p. 298).

Arising from the comprehensive literature on complexity theory is complexity leadership (Northouse, 2021). Rosenhead et al in their review refer to complexity leadership as the growing literature that draws on complexity theory to address leadership concerns and practices (Rosenhead et al., 2019). The study of leading in complexity has produced a range of titular approaches, each with its own characteristics but with some common features summarised in Table 1 with titular approach in order of year of first publication.

Approach	Author
Dissipative Processes Management	MacIntosh and MacLean (1999)
Cynefin	Kurtz and Snowden, 2003, Snowden and Boone, 2007
Leadership and Capabilities Model	Hazy (Hazy, 2006, September, Hazy, 2011, 2013)
Complex Systems Leadership Theory	Hazy and Goldstein (2007)
Emergent Leadership	McKelvey and Lichtenstein (2007)
Complex Adaptive Leadership	Hannah, Eggers, and Jennings (2008)
Micro-Enactment Theory	Silberstang and Hazy (2008)
Complexity Leadership Theory	Uhl-Bien and Marion (2011)
Rheo Leadership	Backström (2013)
Flock Leadership	Will (2016)

Adapted from Rosenhead et al 2019

Table 1: Titular Approaches to Complexity Leadership.

The most cited approach according to Google Scholar, is Complexity Leadership Theory. First proposed by Marion and Uhl-Bien in 2001, Complexity Leadership differs from traditional models of leadership in four ways. Firstly, complexity leadership argues that organisations and their leaders are products of interactive dynamics. Secondly, complexity leadership asserts that it is better to lead complex systems by indirect rather than direct leadership behaviours. Thirdly, complexity leadership is not necessarily embedded in a formal position and lastly, complexity leaders foster connectivity (Marion and Uhl-Bien, 2003).

In 2017, Uhl- Bien and Arena synthesized their learning into a model of Complexity Leadership (CL) (Uhl-Bien and Arena, 2017). They argue that when faced with complexity, organisations need to operate as complex adaptive systems and create Adaptive Space (AS). Adaptive Space is described as the relational, emotional, and physical or virtual space and conditions required to enable the adaptive process to occur i.e., the generation and connection of new ideas, innovation and learning in a system (Uhl-Bien and Arena, 2018). The adaptive process occurs when people and systems engage the tension between the need for change and innovation (entrepreneurial system) and the need for stability and delivery (organisational system), to generate adaptive outcomes.

According to Uhl- Bien and Arena, Adaptive Space is made up of two component parts: the conflicting element and the connecting element. The conflicting element involves engaging the

tension between the organisational and entrepreneurial parts of the system to trigger the emergence of innovation. This tension occurs when individuals with different backgrounds, skills, expertise, and perspectives are brought together to engage around the development of a solution to a complex challenge. Uhl- Bien and Arena propose that the conditions for both elements of AS can be created by establishing rich connections that facilitate the flow and interaction (including conflicting) of people, ideas, information, and resources thus enabling collective learning, responsiveness, and adaptation. The creation of an appropriate combination of structures, processes and events can allow novel adaptive outcomes to emerge (Uhl-Bien and Arena, 2018). Arena and Uhl Bien have identified four components necessary for the creation of an adaptive space; the '4D' connections: discovery, development, diffusion, and disruption (Arena, 2018). Discovery connections link different groups of people together in a way that encourages exploration and curiosity. Development connections are those that encourage the sharing and further development of ideas. Diffusion connections facilitate the amplification of ideas across the wider system and Disruption connections remove barriers and enable innovation within a system. Together these connections create a social construct that allows adaptation (Arena, 2021).

3.1.3 Complexity Theory in Healthcare

Even prior to the COVID-19 pandemic, Uhl Bien and Arena recognised healthcare as a particularly complex environment *'where volatile regulatory environments, evolving pay structures, changing patient relationships, and wearable technologies are combining to create tremendous uncertainty with respect to where healthcare will go'* (Uhl-Bien and Arena, 2017 Pg 10). A number of authors have performed evidence syntheses of complexity theory in healthcare. Brainard and Hunter's scoping review in 2015 looked for evidence of efficacy in results or processes within complexity theory informed interventions. They found that it was not feasible to confidently research and evaluate efficacy due to the lack of reflection of complexity theory in study design or evaluation processes (Brainard and Hunter, 2015). A scoping literature review performed by Thompson et al in 2016 investigating complexity theory in health services research, concluded that, although the application of complexity theory in healthcare showed potential, conceptual uncertainty and inconsistent application of theory hindered the practical application of this potentially useful perspective (Thompson et al., 2016).

Subsequently, in 2017, in a systematic literature review by Rusoja et al examining key systems thinking and complexity ideas in health, they also found that publications remained largely theoretical, indicative of a requirement for further research and practical application (Rusoja et al., 2018). Additionally, a number of papers examining various aspects of complexity in healthcare by Jeffrey Braithwaite and colleagues acknowledged the challenge of describing complexity and complex adaptive systems and also highlighted the need to define the characteristics (Braithwaite, 2018, Braithwaite et al., 2017a, Braithwaite et al., 2018, Churrua et al., 2019b).

Belrhiti et al in 2018 in their scoping review of complex leadership in healthcare reviewed thirty-seven papers and also found issues with definitions, this time in defining complexity leadership. They recommended further research into how complexity theories may offer researchers useful grounds to empirically test CL theories in health settings with specific attention paid to the multi-layered nature of leadership (Belrhiti et al., 2018).

Theory is important to research in that good theory informs the performance of high-quality research about important issues that advances the knowledge in the phenomenon of interest (Van de Ven, 1989). When theory is not used in appropriate ways, the benefit of using theory to inform high quality research is negatively impacted. Complexity theory offers a potentially useful perspective for the conceptualization and solving of problems in health and social care, but it needs to be utilised in manner that upholds its potential value. As can be seen from the discussion above, there are a number of research gaps particularly in the conceptualisation of healthcare as a CAS, leadership in a CAS and also gaps from a methodological point of view, i.e., how do we study and intervene?

3.1.4 Scoping Review

This provisional literature scan revealed significant knowledge gaps, inconsistencies, contradictions and conflicts about complexity theory and how complexity theory can inform the modelling, delivery and evaluation of health and social care services. In order to seek to address these gaps and inform the design of this research, a scoping review was undertaken to examine the most recent literature on complexity theory (including complexity leadership) in healthcare research. After considering the different forms of evidence synthesis informed by the guidance from Munn et al., (2018) it was concluded that a scoping review was the most appropriate approach to explore how complexity theory has been applied in healthcare

research. Similar to systematic reviews, scoping reviews have a structured process, however they tend to be performed for different reasons and have some important methodological distinctions. Scoping reviews are a relatively new evidence synthesis approach for researchers, clinicians, and policymakers across an array of different fields. Unlike systematic reviews, the main concern of scoping reviews is not to make analytical comparisons based on pooling results data from multiple primary sources of evidence, but rather to focus on assembling and describing the evidence in a particular area and presenting the summation in a clearly illustrated format (Peters et al., 2022).

In accordance with current best practice for scoping reviews, an *a priori* protocol was developed and published (Carroll et al., 2021).

3.1.4.1 Design

The framework for scoping reviews developed by Arksey and O'Malley in 2005 and refined by subsequent authors was used (Arksey and O'Malley, 2005, Levac et al., 2010, Peters et al., 2020a, Peters et al., 2020b, Munn et al., 2018). This framework consists of six stages: (1) specifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data and reporting the results (5) collating and summarizing and reporting the findings, and (6) consultation exercise.

This scoping review protocol followed the Preferred Reporting Items for Systematic Reviews and Meta-analysis Protocols Extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018).

Six Stages

Stage 1: Specifying the Research Question

The results from the initial literature scan helped inform the research question, and also the review scope. Furthermore, authors of previously published systematic reviews were contacted for guidance. This resulted in the following research question emerging: *How has complexity theory been used in health and social care research?*

The scoping review had the following objectives:

- a) To map definitions and descriptions of complexity theory used in health and social care research.

- b) To investigate the different methodologies utilised as well as the extent to which complexity theory has been employed in health and social care research.
- c) To consider the settings, disciplines, and professions examined in these studies.
- d) To analyse the impact of the application of complexity theory.
- e) To appraise if the research findings, conclusions, and recommendations can provide evidence of knowledge/capacity building and change.
- f) To determine if there are any gaps in research and make recommendations for future research.

Stage 2: Identifying Relevant Studies

Inclusion Criteria:

In accordance with the Arksey and O'Malley (2005) framework, the second stage of the scoping review process identified the inclusion criteria and the Population, Concept and Context (PCC) (Peters et al., 2020a).

- Population: Any health and social care professional involved in empirical research
- Concept: Any empirical studies using complexity theory in health and social care settings.
- Context: Any studies using complexity theory that were carried out in health and social care settings.

Building upon the evidence generated from previous evidence syntheses, this scoping review considered qualitative and quantitative primary research utilising complexity theory informed approaches, published in the English language between the years 2012 and 2021. It was decided to restrict the review to the last 10 years so as to concentrate on more recent findings which build upon original work before this.

Exclusion Criteria:

The following types of publications were excluded from the review: retrospective reviews, secondary research, conference abstracts, book reviews, commentaries or editorial articles, opinion papers, letters, and non-English articles.

Search Strategy:

The scoping review search strategy consisted of three steps:

1. An exploratory scoping search of the MEDLINE (the National Library of Medicine's (NLM) premier bibliographic database) and CINAHL (The Cumulative Index to Nursing and Allied Health Literature, one of the most common databases for finding journal articles on health-related topics) databases was undertaken with a review of the text contained in the title and abstract of retrieved papers, and of the index terms used to describe the articles. As recommended, a research librarian assisted with the development of the search strategy and ensured the strategy and results were transparent, auditable, and replicable. The final search terms are listed in Appendix B. The Boolean operators 'AND/OR' were used and the use of 'Truncation*' to reveal associated terms.
2. Using all identified keywords and index terms, a second search was performed across all included databases. These included the Cochrane Database of Systematic Reviews, MEDLINE, CINAHL, EMBASE (a biomedical and pharmacological bibliographic database), Web of Science, PSYCHINFO (the database produced by the American Psychological Association), The NHS Economic Evaluation Database (NHS EED) and the Health Economic Evaluations Database (HEED).
3. Thirdly, the reference lists of identified reports and articles were searched to identify additional resources.

Stage 3: Source of Evidence Selection

The selection of evidence was based on the inclusion and exclusion criteria identified in stage 2. Source selection (both at title/abstract screening and full-text screening) was performed by two reviewers (the author and a colleague) who reviewed independently of each other and were blinded to the decisions of the other reviewer. Any conflicts were resolved by consensus. A third reviewer was not required. Articles were retrieved from each database and imported into the reference management software *Endnote*, a bibliographic manager. Deduplication was performed using the Bramer method (Bramer et al., 2016). The systematic review software tool, Covidence (www.covidence.org), was used to conduct the screening of the retrieved literature (Kellermeyer et al., 2018). Originally developed by an Australian not-for-profit company, Covidence is the standard production platform for Cochrane reviews. In this software programme, citations progress through each reviewing stage based on votes received. At each stage in the process, reviewers can designate voting roles, including conflict resolution, while maintaining blinding, which helps to reduce bias.

To ensure consistent application of the screening criteria, a pilot test of the screening process was undertaken, using a random sample (n=25) of the discovered title and abstracts.

Stage 4: Data Extraction

All data relevant to inform the scoping review research question and objectives were identified. From each paper included in the review, the data were extracted using the form presented in Table 2.

Component	Data
Study Descriptives	Author(s)
	Title
	Year of Publication
	Location (Country in which research was conducted)
	Author Bibliometrics
Research Purpose	Aim of the research
Methodological Characteristics	Research design methodology (e.g., quantitative, qualitative, mixed methods)
	Application of complexity theory
	Research setting
	Participants (i.e., health or social care professionals)
	Interprofessional focus
	Data collection
	Data analysis
	Ethical considerations in the study
	Study Limitations
Application of Complexity Theory	How complexity was used (e.g., theoretical framework, data analysis)
	Definition/description of complexity theory used
	Author(s) referenced in definition/description of complexity theory
	Characteristics of complexity theory used
Study Outcomes	Key findings related to scoping review question
	Impact of research
	Knowledge mobilisation (i.e., activities undertaken to disseminate findings)

Table 2: Data Extraction Form

The extraction framework was piloted by two team members on a sample of the included studies to ensure that the coding framework was consistently applied (N=10). This pilot step ensured that the authors were transparent and clear in their methods regarding what and how the data would be extracted.

Stage 5: Collating, Summarising, and Reporting the Results

The results of the data extraction process adhere to the guidelines of the PRISMA Extension for Scoping Reviews checklist. Included articles were collated and summarised. Charted data were presented in graphic and tabular form that aligned with the study's objectives. Research gaps and recommendations for future research were made. In addition, we used the Preiser framework as an analytic tool for the descriptors identified to map the stated features and attributes in the articles to the Preiser framework principles of a CAS. Synonyms were grouped against the most aligned principle.

Stage 6: Consultation

The patient forum of the National Rehabilitation Hospital participated in the design and interpretation of the results of the scoping review. The patients' forum (chaired by a former patient) provides a platform for dialogue and exchange of information relevant to patients regarding the hospital.

3.1.4.2 Results:

A total of 2021 articles were initially identified. Of these 676 were duplicated and were excluded from analysis. The titles and abstracts of 1345 articles were screened and at this stage 1108 were deemed not to meet the inclusion criteria and irrelevant to the research question and were therefore excluded.

The remaining 237 articles were full text screened. In 167 articles, it was not clear how complexity theory had been used in the research and they were therefore excluded.

There were 9 systematic reviews identified which were hand searched with references cross referenced. The PRISMA flow chart is shown below in Figure 19.

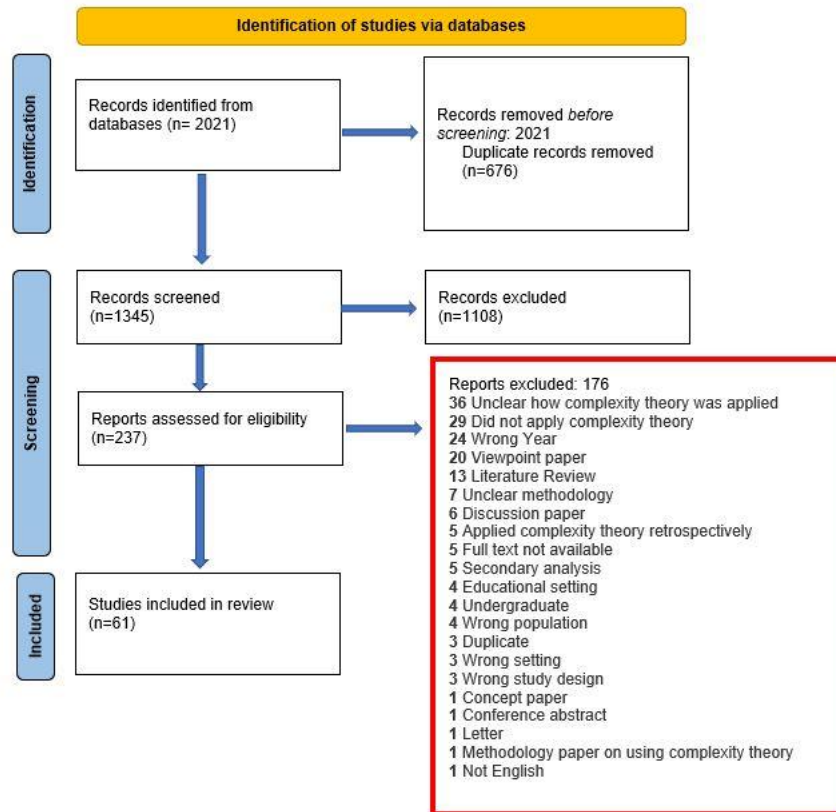


Figure 19: The PRISMA Flow Chart for the Complexity Theory Scoping Review

As shown in the PRISMA flowchart in Figure 19, a total of sixty-one papers were included for data abstraction. The characteristics of all sixty-one articles are shown in Appendix C.

Descriptive Data

Most articles were published in 2018, 2019 and 2020, with eight publications in each year. The fewest publications were in 2015 when only two were published followed by 2021 when only three were published. The distribution of year of publication of the articles considered is shown in Figure 20.

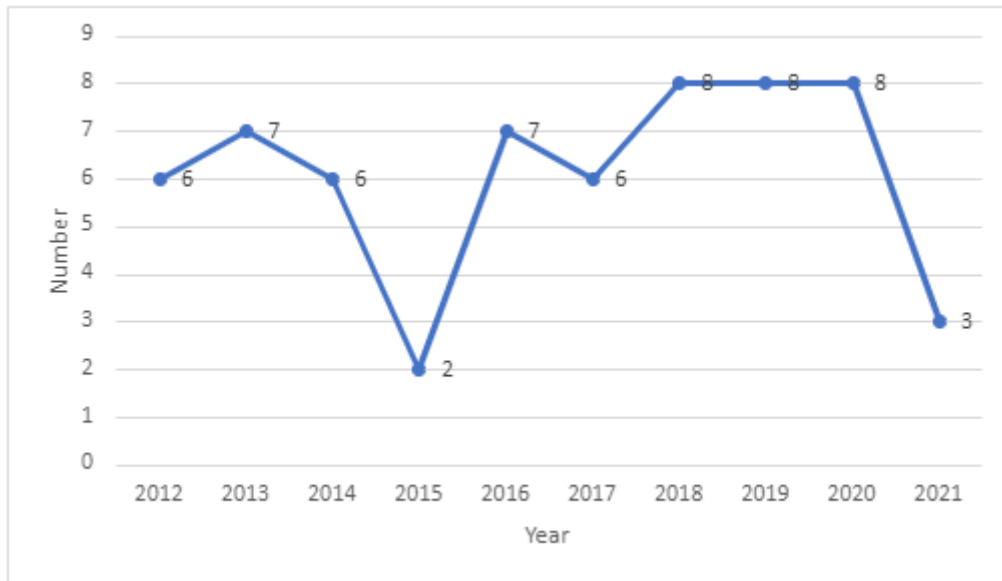


Figure 20: Distribution of Year of Publication

The journal of publication of the selected papers are summarised in Figure 21. The most common journals of publication were Social Science and Medicine (n=7) followed by BMC Health Services Research (n=4).



Figure 21: Journal of Publication

Of the sixty-one articles, eighteen studies were set in the USA, twelve in Canada and eight in the United Kingdom. Figure 22 shows all the countries where the studies were performed.

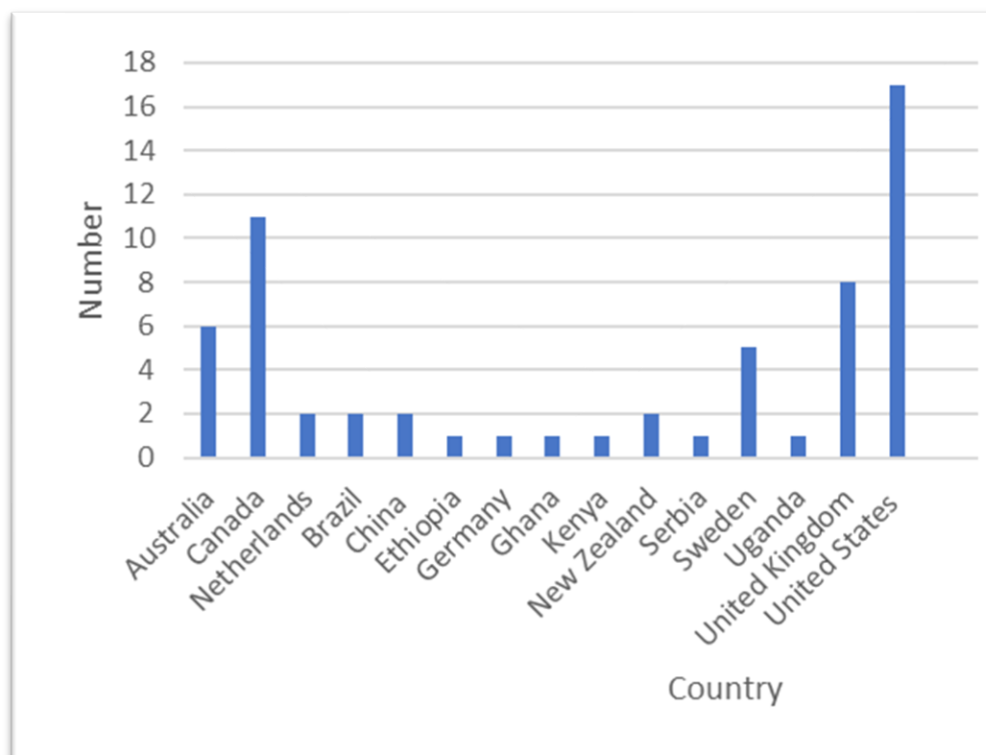
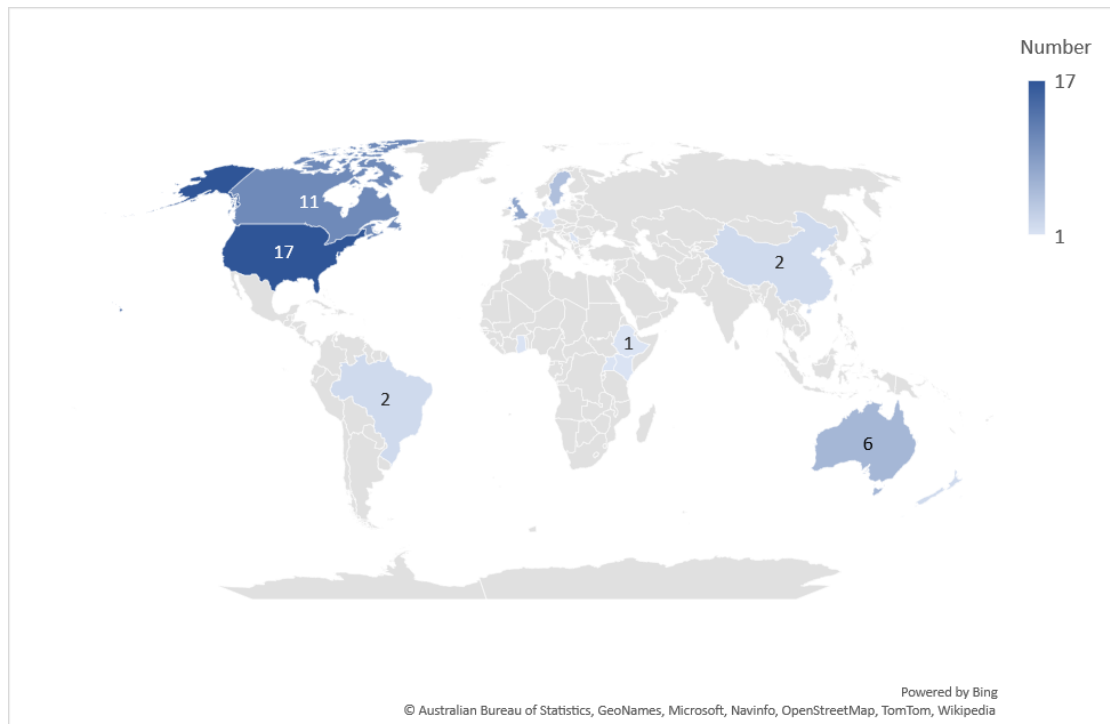


Figure 22: Country of Study Setting

Objective 1: Definition of Complexity Theory and Key Authors

The first objective of the scoping review was to map definitions and descriptions of complexity theory used in health and social care research. Thirty-six papers (59%) provided a definition of complexity theory. Twenty-three (38%) gave no definition or description. Two papers gave descriptions and three defined complex adaptive systems. There was great variation in the definitions used.

Over one hundred authors were cited when defining or describing complexity theory with the top ten authors shown in Table 3.

Authors	Number of Papers citing
Plsek and Greenhalgh	12
Cilliers	10
McDaniel and Driebe	8
Anderson	8
Plsek	6
Zimmerman	7
Stacey	7
Braithwaite	4
Sturmberg	3
Plsek and Wilson	2

Table 3: Top Ten Most Cited Complexity Authors In Papers Considered.

Characteristics and Features

There were many different terms used to describe complex systems summarised in Table 4. Ten papers used the term characteristics, nine used concepts, eight used the term principles but twenty papers were unclear. There were no papers citing Preiser's 2018 typology.

Descriptive term	Number of papers
Attributes	3
Behaviours	2
Characteristics	10
Concepts	9
Constructs	1
Dimensions	1
Domains	1
Features	4
Parameters	1
Principles	8
Properties	1
Tenets	4
Unclear	20

Table 4: Terms Used to Describe Complex Systems

After identifying all the terms used in the papers and summarised in Table 5, these terms were mapped against the features and attributes in the Preiser framework as shown in Table 5. Synonyms have been grouped against the most aligned principle.

Organising Principles of Complex Systems	Key Features and Attributes	Features And Attributes extracted from papers
Constituted relationally	Process-dependent interactions on multiple scales result in networks of interactive relations. CAS are defined more by the interactions among their	Interactive elements (Ferreira and Saurin, 2019, Ciemins et al., 2016, Caffrey et al., 2016, Gear et al., 2018, Burrows et al., 2020, Gremyr et al., 2020, Pye et al., 2018); Interdependencies (Lanham et al., 2018, Yu et al., 2021, Long et al., 2021, Boustani et al., 2012, Grady, 2016, Tsasis et al., 2012, Provost et al., 2015);

Organising Principles of Complex Systems	Key Features and Attributes	Features And Attributes extracted from papers
	constituent components than by the components themselves.	Interconnections (Grudniewicz et al., 2018, Gordon et al., 2016, Björkman and Salzmänn-Erikson, 2019, Escrig-Pinol et al., 2019, Grady, 2016, O'Sullivan et al., 2013, Bungay and Stevenson, 2013)
Radically open	All systems exhibit hierarchy in that every system is part of a wider system and is made up of sub-systems. How we describe (or identify) systems is a function of our individual points of view. Systemic interactions generate effects that have impacts across scales and domains.	Open system (Pype et al., 2018, Righi et al., 2012); Boundary permeability (Roussy et al., 2020)
Contextually determined	The identity and functions of CAS are defined by the context in which they exist.	Contextuality (Hodiamont et al., 2019, Ward et al., 2018) History (Righi et al., 2012, Boustani et al., 2012, Pype et al., 2018)
Adaptive capacities	CAS have self-organising capacities and can adjust their behaviour as a	Self-organisation (Ferreira and Saurin, 2019, Mohrman and Kanter, 2012, Xiao et al., 2013, Tang et al., 2017, Barasa et al., 2017, Hodiamont et al., 2019, Tsasis et al., 2012, Ciemins et al., 2016, Lindberg and Schneider, 2013, Yu et al.,

Organising Principles of Complex Systems	Key Features and Attributes	Features And Attributes extracted from papers
	response to changes in their environments	2021, Caffrey et al., 2016, Gear et al., 2018, Lalley, 2014, Trenholm and Ferlie, 2013, Long et al., 2021, Augustinsson and Petersson, 2015, Lim et al., 2019, Anku et al., 2020, Burge et al., 2014, Colón-Emeric et al., 2017, Escrig-Pinol et al., 2019, Roussy et al., 2020, O'Sullivan et al., 2013); Adaptive (Xiao et al., 2013, Tang et al., 2017, Jolley, 2014, Hodiamont et al., 2019, Björkman and Salzmänn-Erikson, 2019, Gear et al., 2018, McKechnie et al., 2020, Roussy et al., 2020, O'Sullivan et al., 2013)
Dynamic processes	Non-linear dynamic processes bring about the behavioural patterns of CAS. As a result of non-linear feedback loops that can dampen or amplify perturbations, small changes can have significant, cascading effects resulting in multiple modes of system-wide re-organisation or regime shifts.	Dynamic (Ferreira and Saurin, 2019, Xiao et al., 2013, Jolley, 2014, Sawyer et al., 2021, Fitzgerald and Biddle, 2019, Augustinsson and Petersson, 2015, de Bock et al., 2018) Non-linear (Ferreira and Saurin, 2019, Xiao et al., 2013, Righi et al., 2012, Jolley, 2014, Barasa et al., 2017, Tsasis et al., 2012, Burge et al., 2014, Ciemins et al., 2016, Asefa et al., 2020, Lindberg and Schneider, 2013, Björkman and Salzmänn-Erikson, 2019, Gordon et al., 2016, Long et al., 2021, Trenholm and Ferlie, 2013, Fitzgerald and Biddle, 2019, Sawyer et al., 2021, Horvat and Filipovic, 2018, Burrows et al., 2020, González et al., 2017, Boustani et al., 2012, Ghazzawi et al., 2016, Pye et al., 2018, Roussy et al., 2020, Ssengooba et al., 2012, Provost et al., 2015); Feedback loops (Asefa et al., 2020, Björkman and Salzmänn-Erikson, 2019, Long et al., 2021,

Organising Principles of Complex Systems	Key Features and Attributes	Features And Attributes extracted from papers
		<p>Boustani et al., 2012, Grady, 2016, Burge et al., 2014, Provost et al., 2015)</p> <p>Unpredictability and uncertainty (Pype et al., 2018, Boustani et al., 2012, Burge et al., 2014, Ciemins et al., 2016, Jolley, 2014, Lanham et al., 2018)</p>
Emergent phenomena are the result of complex causality	<p>Through the interaction of the individual components, novel qualities and phenomena emerge. Hence, the whole is more than the sum of its parts, meaning that systems cannot be understood, nor their behaviour predicted based solely on information relating to the individual parts.</p>	<p>Emergence (Righi et al., 2012, Barasa et al., 2017, Hodiamont et al., 2019, Jolley, 2014, Tsasis et al., 2012, Asefa et al., 2020, Caffrey et al., 2016, Ciemins et al., 2016, Grudniewicz et al., 2018, Lindberg and Schneider, 2013, Björkman and Salzmänn-Erikson, 2019, Long et al., 2021, Sawyer et al., 2021, Trenholm and Ferlie, 2013, Escrig-Pinol et al., 2019, Boustani et al., 2012, Ghazzawi et al., 2016, Roussy et al., 2020)</p> <p>Co-evolution (Tsasis et al., 2012, Jolley, 2014, Grudniewicz et al., 2018, Gear et al., 2018, Grady, 2016, Bungay and Stevenson, 2013, Ghazzawi et al., 2016)</p>

Table 5: Terms Mapped against the Features and Attributes in the Preiser Framework

As can be seen from Table 5, the most frequently used terms were self-organisation (23), non-linearity (22) and emergence (18). The least utilised features were radically open (3) and contextually determined (5).

Objective 2: Research Method and Extent of Application

The second objective of the scoping review was to investigate the different methodologies utilised and extent to which complexity theory has been applied in health and social care. Of the sixty-one papers reviewed, twenty-eight (46%) had a qualitative research design mainly involving interviews and thematic analysis. None of the papers used an action research approach. Seventeen studies (28%) were case studies and nine (15%) used mixed methods. All methods are shown in Figure 23.

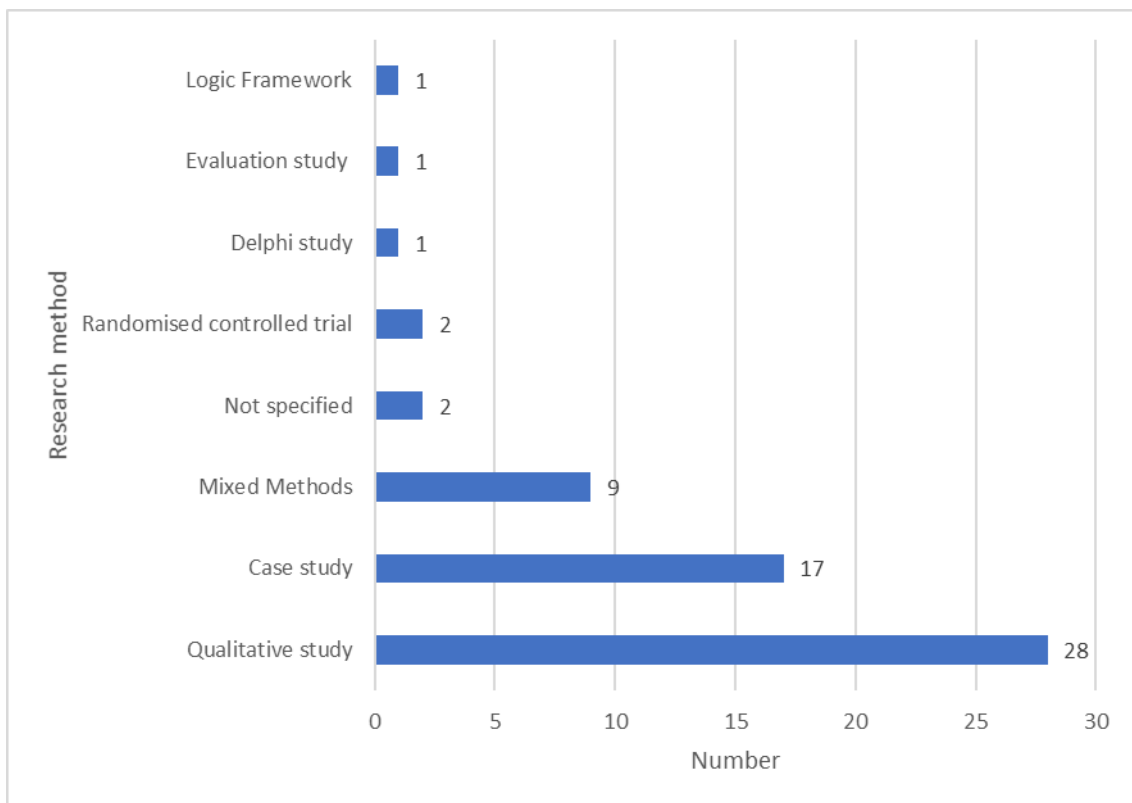


Figure 23: Research Methods Employed

Impact of Publications

The impact of a publication is defined as the number of lead authors that have been influenced by it (Aragón, 2013). In order to assess the impact of the publications included in this scoping review, the number of citations of the sixty-one papers included in our review was used as a measure of impact as per Martin 1996. As of 1st April 2022, the most cited papers were O'Sullivan et al (2013), Ssengooba et al., (2012), and Tsasis et al (2012). The numbers of

citations for all papers is shown in Appendix D. The most cited papers used complexity theory as a theoretical framework for analysis., O’Sullivan (2013) for disaster management, Ssengooba (2012) to analyse failed performance-based contracting and Tsasis (2012) to reframe the challenges of integrated care.

Objective 3: Setting and Participants

The third objective of the scoping review was to examine the settings and professions studied using complexity theory. All the settings in which the research took place are shown in Figure 24. Of the sixty-one publications, ten studies were hospital based, ten were based in a healthcare system and nine in a primary care setting.

Two were based in a rehabilitation setting.

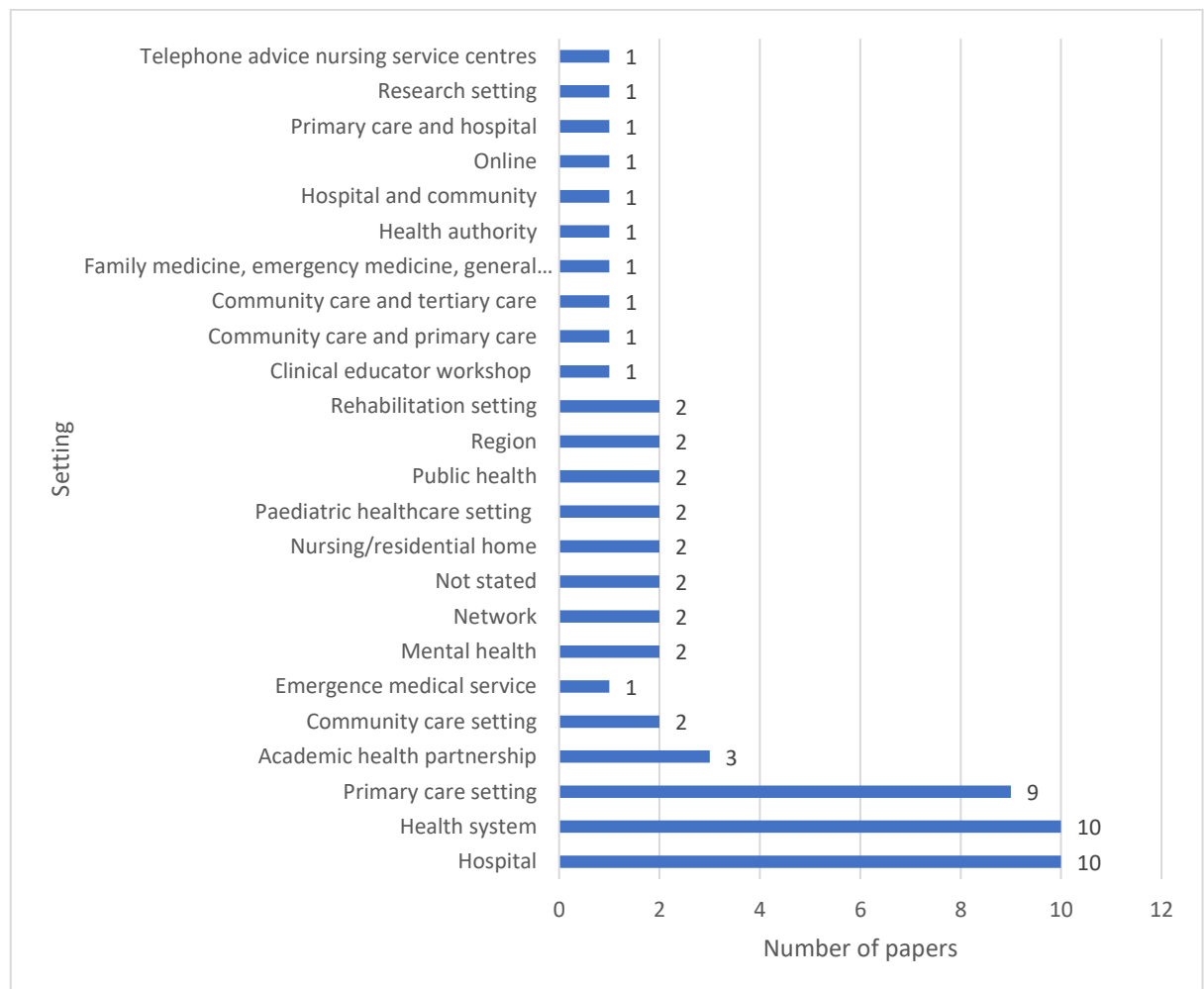


Figure 24: Setting

It was clear on reviewing the papers that many different terms were used to describe the collaborative working arrangements between professionals involved in the studies. We have used the term multidisciplinary team (MDT) as a generic term to describe a range of health and social care service workers, both professionals and non-professionals described in the studies when more than two types of professionals have been stated. Where patients were specifically mentioned as part of the MDT, we have included that as a separate category, and also where non-traditional MDT members were specifically mentioned.

Of the sixty-one studies, twenty-one (34%) involved MDTs, six (9%) involved nurses, five (6%) involved MDTs where patients were included. All participants are summarised in Figure 25.

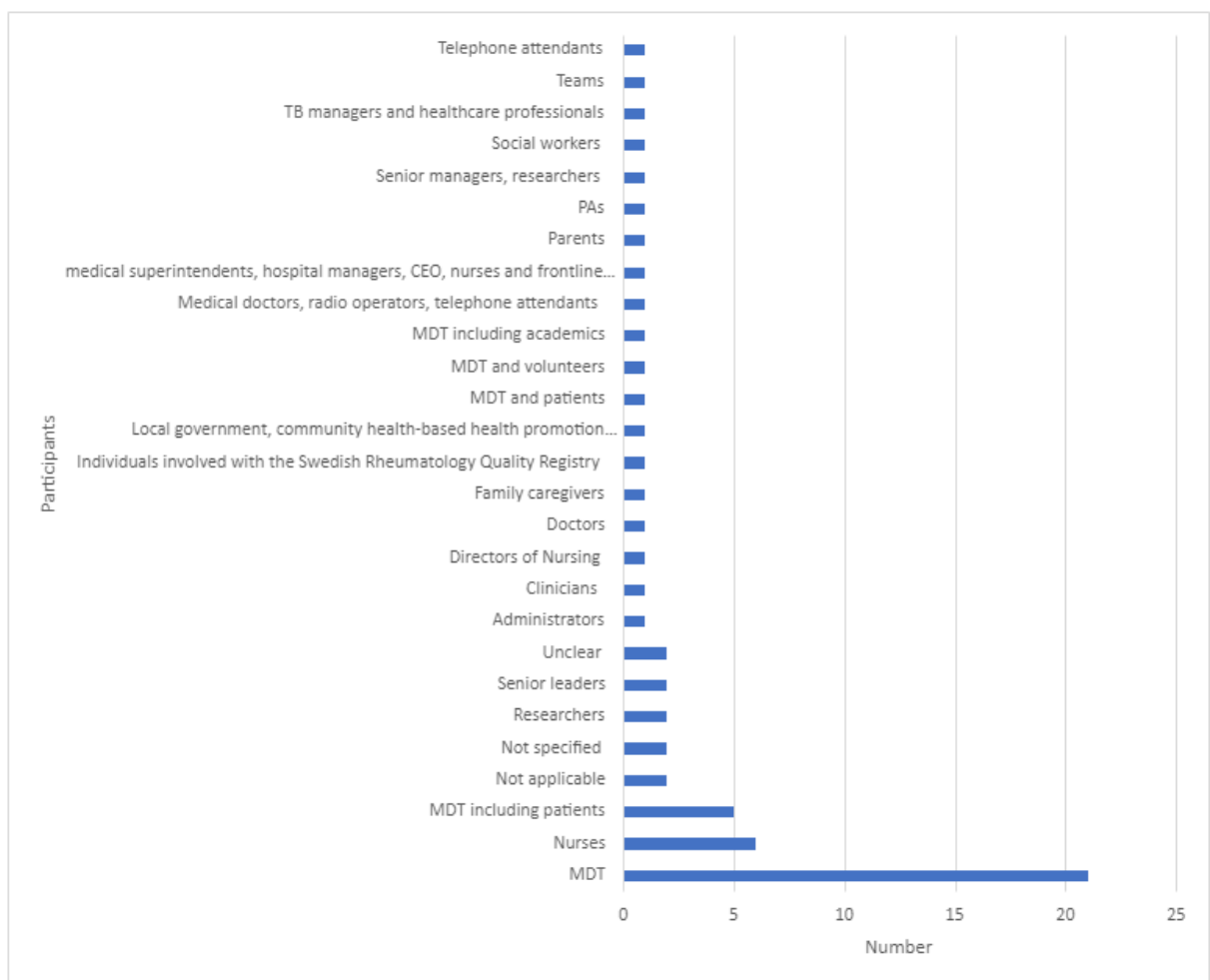


Figure 25: Participants

In two studies, there were no participants as the study involved documentary analysis and in two the participants were not specified.

Objective 4: Impact of the Application of Complexity Theory

The fourth objective of the scoping review was to investigate if papers commented on the impact of the application of complexity theory. Impact is the effect of research after it has been adopted, adapted for use, or used to inform further research. No papers specifically commented on the impact of their research.

Objective 5: Knowledge Mobilisation

The fifth objective of the scoping review was to identify if research findings, conclusions and recommendations can provide evidence of knowledge/capacity building and change. None of the papers made reference to any knowledge mobilisation in the text.

Areas of Focus

There were nine areas of focus identified in the papers which will be discussed in order of frequency. These were implementation, working environment/context, interactions/relationships, leadership in complexity, change, working practice, organisational response, evaluation, and communication.

I. Implementation

Sixteen papers explored or examined the use of complexity theory to assess the implementation of various initiatives. Interesting examples included Dickinson et al (2014), compared the effectiveness of 3 approaches for implementing and sustaining the Chronic Care Model, using artificial intelligence based systems to improve diabetes care. Caffrey et al (2016) investigated the challenges of implementing apparently simple strategies to support the development of a health research system. Bungay (2013) examined change and implementation in their paper on the experiences of implementing regulatory changes in sexual health nursing practice in British Columbia.

II. Working Environment/Context

Sixteen papers sought to describe phenomena related to working environment and the context in which the research was undertaken. These included the development of a dementia network (Boustani, 2012), decision-making processes within an intensive care setting (DeBock, 2018) and the context of telenursing as a complex adaptive system (Bjorkman, 2019).

III. Interactions/Relationships

Eight papers were concerned with understanding the nature of interactions or relationships through the lens of complexity theory. Xiao (2010) utilised a complexity lens to identify relevant actors, their different relationships and policy responses and a new framework to better understand heterogeneous pathways and outcomes. Burge (2016) explored intimate partner violence using the lens of complexity theory. Ciemins (2016), in their study of interdisciplinary teams as complex adaptive systems, identified key individual (self-awareness, spirit of inquiry, humility, and comfort with dying) and team attributes (relational coordination, shared purpose, holistic thinking, trust in the process, and respect for patient autonomy), which were mutually reinforcing to create a positive team experience. Grudniewicz (2018) found that a complexity-compatible policy design successfully stimulated local dynamics of flexibility, experimentation, and learning and that important mediating factors included leadership, readiness, relationship-building, role clarity, communication, and resources. Hilts (2013) in their case study, identified the importance of leadership, changes to practice environment, changes to communication, an increased understanding of team roles and relationships, strengthened teamwork, flattening of hierarchy through empowerment, changes in clinical care and clinical impacts, challenges and rewards and sustainability. Lanham (2018) in their study of a secure messaging system, identified complexity science as a useful lens through which to study relationships among primary care providers, care improvement in nursing homes and collaboration in intensive care units. Burrows (2020) in their case study of physician assistants role revealed patterns of team behaviour, non-linear interconnections, open relationships, dynamic systems, and the legacy of role implementation as defined by complexity theory. Khoo (2020) in their exploration of transactional complexity in social work found transactional complexity described the interactive relationship in and between complex needs, relational complexity and organisational complexity with blurred boundaries between

these three domains, and the interconnectivity and complexities occurring in and between them.

IV. Leadership in Complexity

Six papers looked at leadership in complexity and are now examined in more detail. Gordon et al (2017), explored using video-reflexive ethnography to capture the complexity of leadership enactment in the healthcare workplace. Lindberg and Schneider (2013) examined combating infections at Maine Medical Center looking at insights into complexity-informed leadership from positive deviance. Horvat and Filipovic (2018), studied service quality and maturity of health care organisations through the lens of Complexity Leadership Theory assessing if there are differences in maturity within various levels of leadership function (administrative, adaptive and enabling). Grady (2016) examined if complexity science could inform physician leadership development. McKinney et al (2016) investigated nursing home director of nursing leadership style and director of nursing-sensitive survey deficiencies and McKechnie et al (2020), explored adaptive leadership in parents caring for their children born with life-threatening conditions which utilised the Heifetz Adaptive Leadership Framework to chronicle the adaptive challenges and adaptive work, including emerging leadership behaviours, recounted over time by the parents of very young children diagnosed before birth with life-threatening conditions (Heifetz et al., 2009).

In these papers, complexity theory was used as a data analytical framework, however, the framework proposed by Uhl-Bien and Arena was not utilized in any of the papers (Uhl-Bien and Arena, 2018) although Horvat (2018), did reference the three leadership types described in the Uhl-Bien and Arena paper.

V. Change and Improvement

Six papers explored the topic of change and improvement. Of these, Essén and Linblad (2012) explored unpacking change from within and Fitzgerald and Biddle (2019), investigated whether using a change framework grounded in systems thinking could be of help to system leaders. Reed et al (2018), sought to advance empirical and theoretical understanding of the reality of making and sustaining improvements in complex healthcare systems. Hilts et al

(2013), explored the views of staff regarding changes in the clinical practice environment at two academic primary care clinics.

VI. Working Practice

Three papers examined working practice. Ward et al (2018), examined context matters for primary health care access: a multi-method comparative study of contextual influences on health service access arrangements across models of primary health care (Ward et al., 2018). Provost et al, (2015) examined health care huddles in three health care organisations (Provost et al., 2015). Van Roode et al (2020), carried out a qualitative study identifying critical elements for prioritization of health equity in health systems (van Roode et al., 2020)

VII. Organisational Response

Two papers explored organisational response. Gear et al (2018), explored the complex pathway of the primary health care response to intimate partner violence in New Zealand (Gear et al., 2018). Trenholm (2013), used complexity theory to analyse the organisational response to resurgent tuberculosis across London.

VIII. Evaluation

One paper took an evaluation approach to the use of complexity theory. Jolley (2014) used complexity theory to explore the evaluation of complex community-based health promotion.

IX. Communication

One paper, Khan et al, (2017), explored current practices, barriers and facilitators at the local level for communicating public health guidance to emergency department clinicians in

emerging public health incident (Khan et al., 2017) with complexity theory used to inform data analysis.

Ethics:

Complexity studies present particular ethical challenges as unpredictability means research will be done and decisions taken based on an incomplete understanding of a phenomenon. Therefore, research should be open and transparent about this and reflect critically on the decision-making processes (Cilliers and Preiser, 2016). Most studies reviewed, reported on standard ethical approval procedures to conduct their study with no particular reference to how the authors addressed, or reflected on, the particular ethical challenges of undertaking research in a complex system.

3.1.4.3 Discussion

This scoping review has found that many of the previously described limitations in the literature persist and that recommendations from previous reviews have not had a major impact.

Many studies referred to primary studies or discussion papers in the definition or description of complexity theory without referencing the theory underpinning their preferred definition or description. This may be due to the complexities of complexity theory clearly demonstrated in Castellani's map (Figure 17) which has some significant omissions (Lichtenstein's work on Emergence for example) making the current complexity theory landscape even more complex. It may be that more recent authors are presenting a more accessible language that helps researchers understand its underlying logic.

These findings concur with Thompson and colleagues' 2016 findings regarding the lack of a universally agreed upon approach of how to use this theory in health services research (Thompson et al., 2016) and show that in the intervening years no further clarity has been forthcoming in the literature.

Many studies were found which used complexity theory as a data analytical framework within qualitative research as a means to analyse their data. This may be due to the nature of

complexity in that it focuses on the subtleties of interactions between entities and therefore lends itself to the creation of a narrative regarding the phenomenon of study.

The review also identified several case studies in which authors sought to understand a setting or service using a complexity-informed lens.

Although heterogeneous and diverse, the literature on complexity theory and healthcare does support the view of healthcare systems as CAS. Healthcare systems are complex social systems made up of numerous actors and settings where people's knowledge of the dimensions of the system affects how they apply the plurality of what they know to create change at the same time as maintaining system coherence. To enable this, engaging the tension between these two conflicting demands is a critical role of leadership, however if actors are unaware of and fail to recognise their system as a CAS, or do not have the connections and opportunity to communicate, interact and adapt, then unhelpful patterns of behaviours persist and the system gets stuck, hence the need for participatory approaches to change.

3.1.4.4 Limitations

In the initial protocol, it was originally planned to include literature from 2000 to present day (Carroll et al., 2021). It was decided to restrict the review to the last 10 years so as to concentrate on more recent findings which build upon the previous reviews. While the current review provides a comprehensive understanding of the application of complexity theory in the last decade, the inclusion of previous years may have facilitated a further historical understanding of its use in research. The decision was taken to exclude education settings within healthcare as the area of focus for the research was patient focused care.

3.1.4.5 Conclusion

Complexity theory has increasingly been adopted to conduct research in the areas of health and social care. Despite the increase in its application, huge divergence exists in the evidence-base regarding how it can be applied and what constitutes its application. As there is currently no definitive procedure for reporting such studies, the following guidance was developed for the performance of this research:

1. Present a clear definition of complexity with an explanation of the theoretical underpinnings of the research so that the ontological and epistemological stance are clear.
2. Provide an explanation of why complexity theory is relevant to the phenomenon under investigation.
3. State the principles and characteristics of complexity theory that were explored.
4. State how complexity is applied regarding the various stages of the research process i.e., theoretical underpinning, data collection, data analysis.
5. Provide a description of the outcome of the research in terms of direct change in health and social care setting.
6. Provide an explanation of the ethical components of applying complexity theory and reflexivity to the specific phenomenon of study.
7. Provide a statement on what the research is to inform or improve from the outset

The outcomes of this review have provided guiding principles that have informed the conduct of this research, in particular the framing of the organisation as a complex adaptive system (as discussed in the next section 3.2) and also approaches to leading in complexity. Although the literature considered in the scoping review did not consider complexity leadership theory (apart from Horvat by inference) the review did assist in my interpretation of the leadership observed and developed over the course of the research.

3.2 National Rehabilitation University Hospital as a Complex Adaptive System

Using the outputs of the literature and scoping review, the National Rehabilitation University Hospital can be viewed as a complex adaptive system. These principles, features and attributes are applied from a hospital perspective in Table 6.

Organising Principles of Complex Systems	Key Features and Attributes	Application to NRH
1. Constituted relationally	Process-dependent interactions on multiple scales result in networks of interactive relations. CAS are defined more by the interactions among their constituent components than by the components themselves.	Individuals within disciplines that work in teams within programmes within the NRH within the health system. Also, other agents including patients and families/carers and managers. Each individual agent can act autonomously but their actions influence other agents and vice versa, through their interactions.
2. Radically open	All systems exhibit hierarchy in that every system is part of a wider system and is made up of sub-systems. How we describe (or identify) systems is a function of our individual points of view. Systemic interactions generate effects that have impacts across scales and domains.	Although we work in teams, there is boundary spanning and connection to teams within and outside the hospital, in the community and other hospitals. Our work also spans the continuum of care and life from prevention and pre-natal care to end of life care. Although agents and subgroups may have strong professional identities, there is interdependence and collaboration across boundaries, allowing flow of information, people, and learning.
3. Context dependent	The identity and functions of CAS are defined by the context in which they exist.	As the context changes, we change. We change in response to new evidence, new building, restructuring within the HSE and feedback from staff/patients
4. Adaptive	CAS have self-organising capacities and can adjust their behaviour as a response to changes in their environments.	Staff and non-staff in the hospital are in constant interaction with one another, learning within, between and across systems, resulting in changes to behaviour of individual agents or groups of agents which results in co-evolutionary adaptation
5. Dynamic	Non-linear dynamic processes bring about the behavioural patterns of CAS. As a result of non-linear feedback loops modest changes can have substantial effects resulting in re-organisation or regime shifts.	There are many sources of feedback in the hospital. Feedback from operational metrics and other sources of data, team meetings, patient feedback, peer review, adverse incidents results in changes that may be whole system
6. Emergence	Through the interaction of the individual components, novel qualities and phenomena emerge. Hence, the whole is more than the sum of its parts, meaning that systems cannot be understood, nor their behaviour predicted based solely on information relating to the individual parts.	Through the interactions of agents, novel phenomena occur. The cause and effect are often not clear. There can be unintended consequences and things can be unpredictable and uncertain. Flexibility important.

Table 6: The Preiser Framework as applied to the NRH

As can be seen from Table 6, the hospital conforms to Preiser's six organising principles of a CAS: (1) It is constituted relationally; (2) It has adaptive capacities; (3) Patterns of behaviour are a consequence of dynamic processes; (4) The hospital is radically open; (5) The hospital is determined contextually; and (6) Novel qualities emerge through complex causality. The NRH meets the criteria of a complex adaptive system as described by Holland and Plsek and Greenhalgh (Holland, 1992, Plsek and Greenhalgh, 2001).

By using these principles as a framework to investigate the nature of the hospital as a complex adaptive system it should be possible to gain a deeper understanding of the underlying mechanisms for leading in complexity.

Synthesising the information from the literature and scoping review, I proceeded to use this information to develop the following schematic to function as a communication aid for the study.

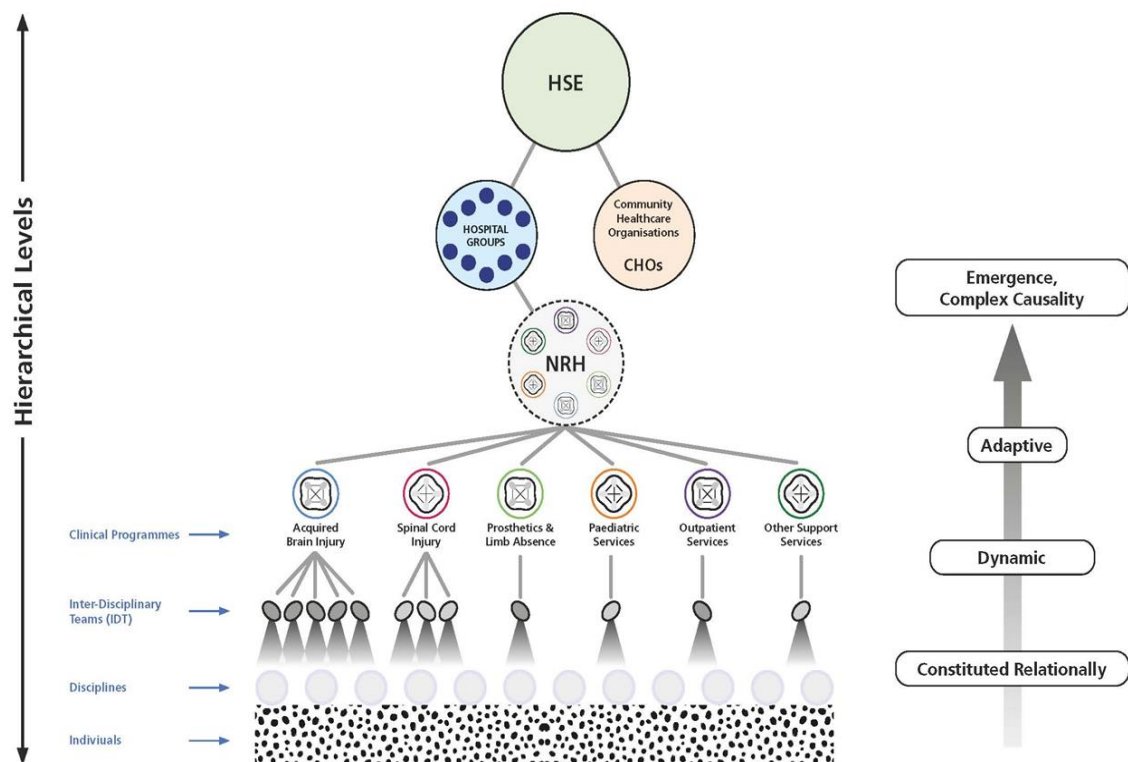


Figure 26: Schematic to show the NRH as a Complex Adaptive System.

3.3 Literature Review of the use of Action Research in Healthcare

As stated previously, action research has been identified as an appropriate and effective approach to examine social ecological systems including healthcare (Biggs et al., 2021, Zuber-Skerritt, 2011, Brydon-Miller et al., 2003). How it has been applied in healthcare needed to be explored to assist me in my decision making about methodology.

3.3.1 The Relevance of AR to Complex Change Settings

Evert Gummesson stated in 2003 that:

All research is interpretive! No ready-to-consume research results pop out like a soda can from a vending machine once we have inserted sufficient money and pushed the right button. There is interpretation all along, from the very start of a research project until the very end. (Gummesson, 2003 p. 482)

Action research as a term, was originally proposed by Kurt Lewin in his 1946 paper ‘*Action Research and Minority Problems*’ (Lewin, 1946) to provide a framework with which to solve practical problems through a research cycle involving planning, action, and investigating the results of the action. His view was in keeping with the tradition of collaborative utilization-focused research with practical goals of system improvement, sometimes referred to as the Northern tradition (Wallerstein and Duran, 2017). He rejected the positivist belief that researchers study an objective world separate from the meanings understood by participants as they act in their world. This tradition emanates from the sociological theory of Talcott Parsons (also represented on the Castellani map of complexity sciences; Figure 17), functionalism, which provided a bridge between classical and modern sociology (Parsons, 1980), and his predecessors and Lewin’s view was inspired partly by John Dewey’s work on thinking, and learning from experience (Dewey, 1938, Dewey, 1997).

Over recent decades, there has been a global epistemological shift with regard to what counts as knowledge (how it is produced, where, and by whom) as a result of the social and scholarly activities of many people, including action researchers. Michael Gibbons in his essay ‘*The New Production of Knowledge*’, identified 2 modes of knowledge: Mode 1 and Mode 2. Mode 1 refers to traditional knowledge that has been produced in a disciplinary, primarily cognitive,

context. Mode 2 knowledge is created in broader, transdisciplinary social and economic contexts and is practical knowledge (Gibbons, 1994). Mode 1 is seen as purely academic and mono-disciplinary, while Mode 2 is multidisciplinary and seeks to solve complex and relevant field problems. Mode 2 knowledge production has been suggested to be the mode to follow in academic management research that seeks to bridge the research practice divide. (Van Aken, 2005). Other authors like Schön (Schön, 1987, Schön, 1991), make the case that practice-based practical knowledge is relevant to everyday lives and should be awarded status equal to that of Mode 1 (Schön, 1995, Schön, 1991). Action research is one such approach to bridging the divide.

There are many different approaches, taxonomies and definitions of action research. Reason and Bradbury define action research as:

a participatory, democratic process concerned with developing practical knowing in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging at this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and their communities, (Reason and Bradbury, 2001 p. 1).

It is a practical and empirical method to examining the complex, interconnected and emergent social-ecological world.

Shani and Pasmore further define action research as:

...an emergent inquiry process in which applied behavioural science knowledge is integrated within existing organisational knowledge and applied to address real organisational issues. It is simultaneously concerned with bringing about change in organisations, in developing self-help competencies in organisational members and adding to scientific knowledge. Finally, it is an evolving process that is undertaken in a spirit of collaboration and co-inquiry. (Shani and Pasmore, 1982 p. 208)

Key features of complexity theory can be identified within this definition: that, as an emergent inquiry process, agents engage in an unfolding narrative, where adaptation happens as a consequence of intervention and where the outcome is unpredictable. The focus is on real organisational issues, rather than research specific issues. It happens in the real world of work and applied behavioural and organisational knowledge (e.g., teamwork and leadership) are

both engaged with and utilised. Action research addresses the dual tasks of effecting change in organisations and generating robust actionable knowledge that can be transferred to other settings. This occurs in an evolving process that is undertaken in a spirit of collaboration and co-inquiry, where research is created with, rather than on, or for, people. Additionally, action research seeks to contribute to practical knowing with the intention of improving situations and that it entails researching in the present tense (Coghlan, 2011).

There have been a number of typologies proposed over the years (Elden and Chisholm, 1993, Hart and Bond, 1995), but the central tenets of action research can be expressed as follows (Argyris, 1983, Argyris et al., 1985, Coghlan, 2007b):

1. It involves tests of change on real issues in social systems. It focuses on a particular issue and seeks to resolve the issue.
2. It involves iterative cycles of identifying a problem, planning, acting, and evaluating and learning.
3. The intended change in an action research project typically involves re-education, a term that refers to changing patterns of thinking and action that are presently well-established in individuals and groups. A change intended by change agents is typically at the level of norms and values expressed in action.
4. It challenges the current situation from a participatory viewpoint, which is consistent with the conditions for effective re-education.
5. It contributes simultaneously to basic knowledge in social science and to social action in everyday life. High standards for developing theory and empirically testing propositions organised by theory are not to be sacrificed nor the relation to practice be lost.

3.3.2 Quality in Action Research

Whilst these central tenets are alluring, the actualisation of them is neither easy nor assured. In seeking to address these challenges, many authors have produced quality principles and guidance for action researchers to adhere to. The notion of validity evolved from individuals such as Bacon, Descartes, Galileo and others who argued for the need to have empirical evidence to support, or validate, conclusions in research (Passmore, 1953). As science has

developed, this has increasingly meant numeric data and perhaps, since then, qualitative researchers have been struggling to find ways to validate their methods and findings. Validity, according to Ellis & Kiely in 2000, is based on the degree to which the research is useful and relevant in triggering a discussion about improvement (Ellis and Kiely, 2000). Morrison & Lilford (2001) have suggested that the search for knowledge can be considered scientific

...if it leads to the development of theories that are explanatory: telling us why things happen as they do in that domain, comprehensively applying to the whole domain, and falsifiability: giving rise, via testable hypotheses, to empirical predictions whose persistent failure counts against the theory, (Morrison and Lilford, 2001 Pg 441)

and proposed five key tenets of an idealised version of action research. Reason & Bradbury (2001) use the term quality rather than validity in action research as a means of expressing and assessing rigour. They suggest that the assessment of quality in action research should be on the basis that it develops a praxis of relational knowledge, and that knowledge generation is reflective of the co-operation between the researcher and participants. They also suggest that the research should be guided by a reflexive concern for practical outcomes and that the process of iterative reflection is readily apparent (Reason and Bradbury, 2001).

It is therefore important that action research acknowledges multiple realities and a plurality of knowing evident in the inclusion of various perspectives from the participants without attempting to find an agreed common perspective (Casey et al., 2021). This supports its use as a research method to explore complex adaptive systems.

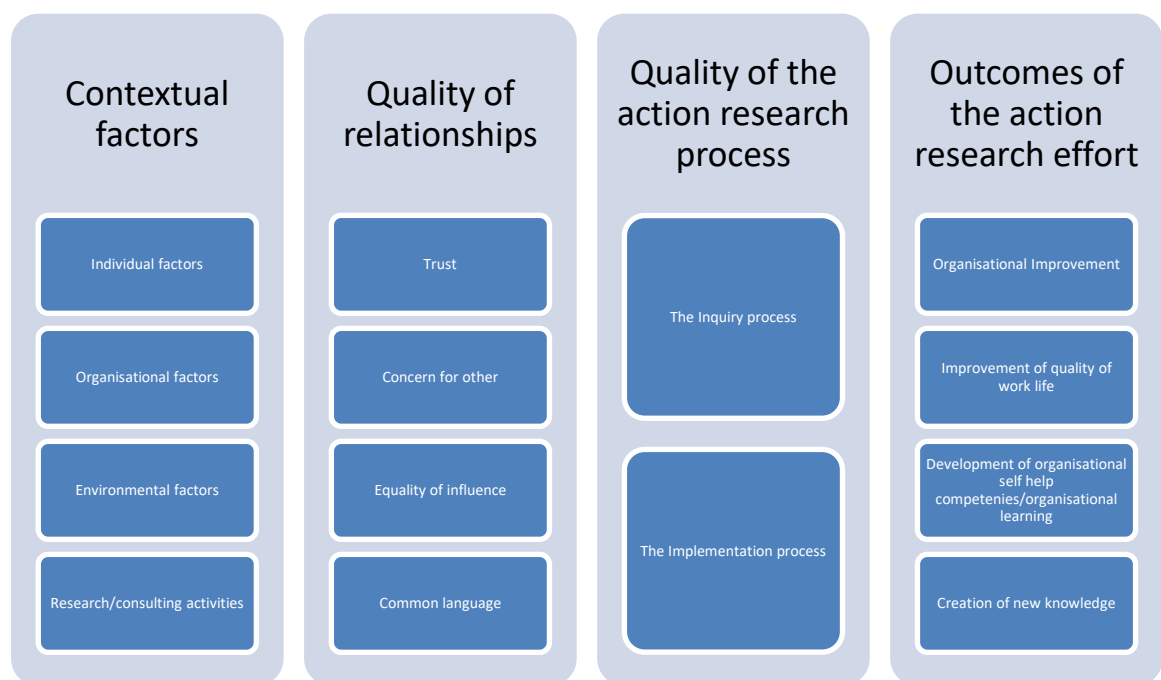
The importance of the project is also a critical aspect of quality criteria and whether the project results in new advancements such as a sustainable change. Heikkinen et al., proposed five quality criteria for action research: historical continuity, reflexivity, dialectics, workability, and evocativeness (Heikkinen et al., 2007) but this was mainly in relation to narrative.

Ultimately, the most rigorous test of knowledge creation is the creation of actionable knowledge.

With the increasing diffusion and diversification in the field of action-oriented research, Coghlan sought to identify common ground across the manifold modalities of action research and collaborative management research and proposed a general empirical method (Coghlan, 2010). The general empirical method is the enactment of the knowing process including: attention to observable data (experience); envisaging possible explanations of that data (understanding) and deliberating and choosing between alternative actions and taking action

(judgment) (Coghlan, 2019). Engaging with this method necessitates the inclinations to perform the operations of attentiveness, intelligence, reasonableness and responsibility which requires authenticity. Authenticity is characterised by four process imperatives: be attentive (to the data); be intelligent (in inquiry); be reasonable (in judging); and be responsible (in decision making and taking action) (Coghlan, 2010).

In recognition of the complexity of the AR process, in 1982 Shani and Pasmore published a complete theory of the action research process, with four interconnected factors to assist action researchers fulfil their objectives as shown in Figure 27. (Shani and Pasmore, 1982).



Adapted from Shani and Pasmore (1982)

Figure 27: Complete Theory of the Action Research Process

Each of these four factors will now be discussed.

3.3.2.1 Contextual Factors

As described in detail in Chapter 2, four factors (individual factors, organisational factors, environmental factors, and research/consulting activities) are contextual to the action research project as they set the scene for the formation of relationships. Each variable may

impact on the project positively or negatively. Individual goals may differ and impact the direction of the project, whilst shared goals enhance collaboration. Organisational characteristics, such as resources, history, formal and informal organisations, and the degrees of congruence between them, affect the readiness and capability for participating in action research. Environmental factors in the global and local economies provide the larger context in which action research takes place. Finally establishing a learning environment and modelling co-inquiry skills is important.

3.3.2.2 Quality of Relationships

Often seen as the quality that differentiates action research from other forms of research, the quality of relationship between members of the system and researchers is the foundation upon which action research is built. The quality of relationships also has the most significant impact on the outcomes of the action research project. Hence, relationships between participants need to be managed through trust, concern for other, equality of influence and common language and shared meaning to facilitate mutually agreeable outcomes. In this manner, common understandings can be negotiated concerning different perceptions of circumstances and events, leading to mutually agreeable outcomes of the action research effort.

3.3.2.3 Quality of the Action Research Process Itself

The quality of the action research process is grounded in the dual focus on both the inquiry process and the implementation process which are mutually influential. This requires a clear articulation in the thesis of the enactment of iterative cycles of collective planning of action, taking joint action and co-evaluation of action in the present tense and also an attentiveness to emergent learning.

3.3.2.4 Outcomes

The dual outcomes of action research are some levels of sustainability (human, social, economic ecological), the development of organisational improvement and self-help

competencies out of the action and the creation of actionable theory and learning through the shared action and inquiry. These outcomes and their quality are a result of the complex interactions and activities that occur throughout the action research journey.

According to Coghlan and Brannick, doing action research in one's own organisation involves managing three interlocking challenges: preunderstanding, role duality and organisational politics (Coghlan and Brannick, 2005). Preunderstanding requires the insider action researcher to exploit the knowledge they have about their own organisation, whilst at the same time distancing themselves to allow criticality. This role duality, as a staff member and an action researcher, can create challenges for the individual including role confusion, role conflict, and role overload. Action researchers also need to manage organisational politics and balance the requirements of their future career plans with requirements for the success and quality of their action research. Each of these three challenges makes demands on first-, second- and third-person voice/practice (discussed later in this chapter) and, through confronting them, insider action researchers can contribute to meaningful outcomes for the organisation. These challenges may alter and shift as the consequence of actions taken in the course of the inquiry or as unintended consequences of actions.

3.3.3 Action Research in Healthcare

Waterman et al in 2001 in their systematic review of action research in healthcare, identified 368 published studies (Waterman et al., 2001). They recognised AR as a promising strategy for promoting organisational change and high quality of care in health care settings through the implementation of evidence-based practices. Another more recent systematic review looking at implementing action research in hospital settings, identified AR as an optimal strategy in medical settings as it has the potential to optimize performance via its ability to focus staff toward a salutogenic (as opposed to pathogenic) approach to the organisation (Montgomery et al., 2015). Results from more recent studies, which implemented AR in health care settings show that it is a promising strategy to promote organisational changes, teambuilding and empowerment of health care professionals which resulted in better quality of care (Beringer and Fletcher, 2011, Moxham et al., 2010, Clark, 2009, Williams et al., 2008). AR allows for a bottom-up approach where health care staff in collaboration with researchers, or as co-researchers, identify the most important issues for change within the health care setting, develop, implement, and evaluate context-specific solutions. Action research is a mechanism to break down barriers and hierarchies between clinical and non-clinical colleagues and challenge power dynamics and also between work and 'formal' research, to see inquiry as part of a well-lived life, and of a healthy organisation and society (Reason, 2006).

3.3.4 Criticism

Despite the theoretical and organisational development promise of practical knowing, action research has remained a rather marginal activity in the academic and policy worlds. In certain academic circles, action research has been criticised as being unscientific and not research. These criticisms have focussed on a number of specific areas: the role of the researcher; the design and validity of the research, the measurement of outcomes and whether action research is, in fact, research (Greenwood and Levin, 2006). It has been argued that action research is anecdotal and subjective, and that it is inherently biased because the researcher is an insider and therefore lacks objectivity and independence (Waterman et al., 2001). Even within action research circles, action researchers have been criticised as having a combined sense of moral superiority over conventional researchers and general complacency about the fundamental issues of theory, method, and validity. Greenwood argues that doing good is not

the same as doing good social research and that action researchers need to aspire to higher standards (Greenwood, 2002). Stacey has also criticised action research and proposes an alternative in the form of emerging participative exploration (Christensen, 2005, Stacey et al., 2005, Stacey et al., 2000). This criticism seems to be predominantly based on a critique of Reason and Bradbury's expressions on action research (Reason and Bradbury, 2001) and fails to acknowledge the rich tapestry of action orientated approaches which, in my view, address many of Stacey's concerns (ideology, relating, reflexivity and paradox). Reason and Torbert also address many of Stacey's concerns in their paper; '*The Action Turn; Toward A Transformational Social Science*' (Reason and Torbert, 2005). They suggest that a fully-fledged social science after the action turn will not just describe an external reality but will support personal, social, and epistemological inquiry and transformation. Gustavsen (2020) suggests that the literature on AR would suggest that action research has won most of the epistemological debates but lost most of the research policy ones. What practitioners, managers and policy makers want is what action research can deliver to them and society and that is practical knowledge that makes a difference.

To examine these concerns in more detail, a scoping review was undertaken to explore the extant literature on action research studies in healthcare and assess if these publications clearly articulated the essential factors of the comprehensive action research framework.

3.3.5 Scoping Review

As mentioned earlier in Chapter 3 when discussing complexity theory, scoping reviews are a relatively new method for synthesising evidence. Similar to systematic reviews, scoping reviews have a structured process, however they tend to be performed for different reasons and have some important methodological distinctions (Munn et al., 2018). A scoping review was identified as the most appropriate approach to evidence synthesise for this thesis as it provides a mechanism to provide an overview of studies, clarifying concepts or contextual information (Pollock et al., 2021) and it can also be used to investigate research conduct (Munn et al., 2018, Tricco et al., 2018). It is also useful when the topic is complex or heterogeneous (Pham et al., 2014).

This aim of this scoping review was to explore the extant literature on action research studies in healthcare and assess how quality criteria were applied in the literature using the four factors outlined in Shani and Pasmore's Complete Theory of the Action Research Process to

inform my research design and thesis preparation thus avoiding the weaknesses identified in section 3.4.4.

3.3.5.1 Design

The iterative 'six-stage' methodological framework described by Arksey and O'Malley (2005) and subsequently refined by Anderson et al., (2008), Daudt et al., (2013), and Levac et al., (2010) was utilised. In accordance with best practice, the reporting of the scoping review was guided by Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) (Tricco et al., 2018, McGowan et al., 2020). This review complies with the JBI guidance for scoping reviews (Peters et al., 2015, Peters et al., 2022). The protocol for this scoping review was compiled using guidance from Arksey and O'Malley (Arksey and O'Malley, 2005), published on HRB Open and revised based upon feedback received from the HRB Open reviewers. The Health Research Board (HRB) is a State Agency under the Department of Health that supports and funds health and social care research and provides evidence to inform policy and practice. HRB Open Research provides all HRB-funded researchers with a place to rapidly publish any results they think are worth sharing. As a HRB grant holder, I was able to avail of this platform. All articles benefit from rapid publication, transparent peer review and editorial guidance on making all source data openly available. The protocol is available open access (Casey et al., 2021).

The Arksey and O'Malley six stages are:

- Stage 1: Specifying the Research Question
- Stage 2: Identifying Relevant Studies
- Stage 3: Study Selection
- Stage 4: Charting the Data
- Stage 5: Collating, Summarising, and Reporting Results
- Stage 6: Consultation

Stage 1: Specifying the Research Question

The scoping review sought to answer the research question: *How have action research methods been applied in healthcare?*

Aim:

The aim of the scoping review was to identify the extent to which the four factors outlined in Shani and Pasmore's Complete Theory of the Action Research Process has been addressed in the healthcare literature.

Objectives:

1. To identify the degree to which contextual factors are addressed.
2. To ascertain how the quality of co-researcher relationships were maintained.
3. To determine how the dual focus on both the inquiry process and the implementation process was addressed.
4. To distinguish how the dual outcomes of co-generated actionable knowledge are reported.

Peters et al recommend the use of the 'PCC' (population, concept, and context) mnemonic as a guide to construct a clear and meaningful title and inclusion criteria for a scoping review (Peters et al., 2020b).

- **Population** – Health and social care professionals, patients and service users' and clients who work in or utilise health care in any healthcare setting.
- **Concept** – empirical studies that use an action research approach in healthcare contexts.
- **Context** – Any healthcare setting and service in any country that healthcare professionals and patients or service users interact with.

Review Question

In action research studies undertaken in healthcare settings, how do researchers address the four factors outlined in Shani and Pasmore's complete theory of the action research process?

Inclusion and Exclusion Criteria

The inclusion and exclusion criteria for study selection are summarised in Table 7.

Criterion	Inclusion	Exclusion
Language	English language studies	Non-English language studies
Types of participants	Human Studies	Non-human studies
Types of studies	Empirical Action research studies from within the previous 5 years to capture recent research activity.	Non-Empirical studies or Studies that lacked information and descriptions on the core tenets of action research. This exclusion criterium was adopted because the lack of information on the entire action research process would prevent the analysis of the application of the core tenets of action research which could be achieved through data extraction.
Time period	January 2016 to December 2021(to concentrate on more recent findings that build on recent reviews).	Before January 2016 and after December 2021
Context	Any healthcare context worldwide	Non healthcare contexts
Types of publication	Published Peer Reviewed	Non-peer reviewed

Table 7: The Inclusion and Exclusion Criteria for Study Selection

Stage 2: Identifying Relevant Studies

Prior to commencing the scoping review, an initial exploration of systematic reviews on the use of action research in health and social care, assisted in identifying appropriate search terms (Waterman et al., 2001, Montgomery et al., 2015). A librarian provided his expertise in developing the search strategies. Using the PCC framework (population, concept, context) concepts were expanded using search terms and appropriate thesaurus terms. The search terms for the PubMed data base are available in Appendix E. An initial pilot search was conducted of the PubMed database to identify additional relevant keywords and subject headings. A comprehensive search strategy was then developed and adapted for each database (CINAHL PubMed and ABI/Inform) and specific Boolean operators, truncation markers, and MeSH headings were utilised. MeSH stands for Medical Subject Headings and is the National Library of Medicine's controlled vocabulary thesaurus used for indexing articles for PubMed.

After the initial search, it was noticed that although CINAHL and ABI/Inform claimed to include the Action Research Journal (a key action research publication), this was not the case. It was also identified that Educational Action Research Journal (another key action research publication) was omitted from the databases. Therefore, a manual search was performed of the Action Research Journal and the Educational Action Research for the past 5 years in keeping with the timeframe of the original search strategy.

Stage 3: Study Selection

All retrieved citations from the literature search were imported and managed in EndNote 20. All duplicate entries were removed. The references and papers were then imported into Rayyan (Ouzzani et al., 2016) for the screening of articles. Similar to Covidence used in the previous scoping review, Rayyan is a web-based tool designed to help researchers working on evidence synthesis projects. Unlike Covidence, which requires a paid license, Rayyan is free, and I was keen to see how it compared to Covidence.

To improve reviewer reliability, each reviewer undertook a short training course on the use of Rayyan and a pilot screening of 10 papers was undertaken to ensure consistent application of the criteria. Thereafter, all authors were blinded for each other's decisions. When there was

disagreement, conflicts were resolved through discussion with another reviewer, using the inclusion and exclusion criteria (Table 7). Two step screening was performed. In the first step titles and abstracts were screened and all articles not meeting the inclusion criteria were removed. In the second step full texts were screened by the same process.

Stage 4: Charting the Data

A data abstraction form was developed *a priori*, using Microsoft Excel 365 software, as recommended by Joanna Briggs Institute (JBI)(Peters et al., 2020b). The initial form was cross calibrated using a sample of ten studies. After this exercise, the data abstraction form was revised and data from all included studies were abstracted by two reviewers working independently. The data were abstracted and mapped in accordance with the specified evidence of the quality factors in accordance with the complete theory of the action research process (context, quality of co-researcher relationships, quality of the enactment of cycles of action and reflection in the present tense, the dual outcomes of co-generated actionable knowledge). In addition, the following variables were abstracted; Study title, Year of publication, study period, geographic region of conduct, study setting, study aims, and type of action research utilised.

Stage 5: Collating, Summarising, and Reporting Results

The results of the data extraction process adhere to the guidelines of the PRISMA Extension for Scoping Reviews checklist. Included articles were collated and summarised. Charted data was presented in graphic and tabular form that aligned with the study's objectives. Research gaps and recommendations for future research were made.

Stage 6: Consultation

The results of the scoping review were presented for discussion at an action research colloquium.

3.3.5.2 Results:

Our initial database search identified 3,223 titles. After the initial search, we recognised that key action research journals were missing from our search. A manual search of these two key action research journals identified a further forty titles. Of the total number, 471 were duplicates. After applying our screening tool to the remaining 2792 titles, we identified 357 articles for full text screening. Of these, 298 were excluded as they did not meet our inclusion criteria and it was not clear how action research had been used in the research and they were therefore excluded. Fifty-nine were identified for abstraction and another two were excluded. The PRISMA flow chart is shown below in Figure 28.

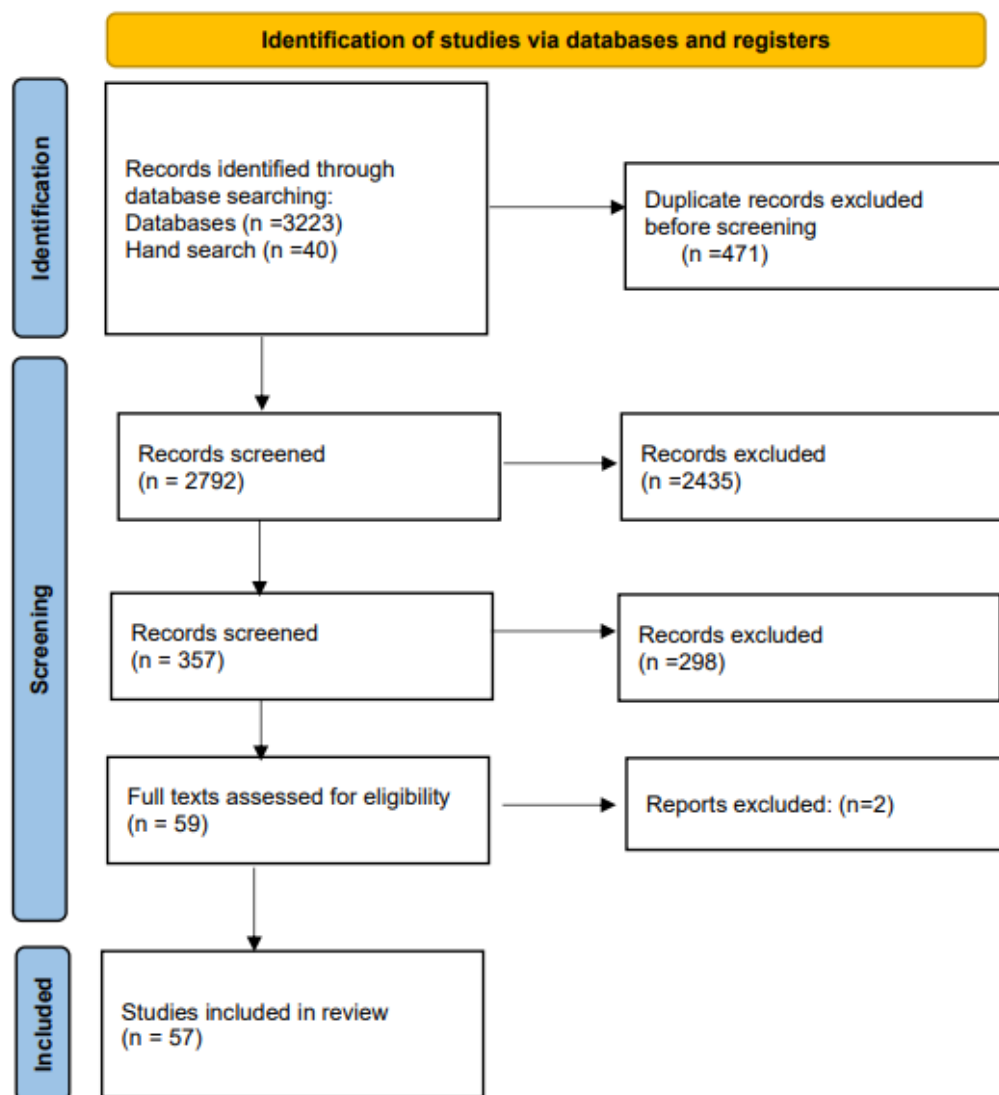


Figure 28: The PRISMA Flow Chart for the Action Research Scoping Review

Figure 29 shows the distribution of year of publication of the articles considered. Most articles were published in 2016 (16; 28%) followed by 2019 with 13 (23%).

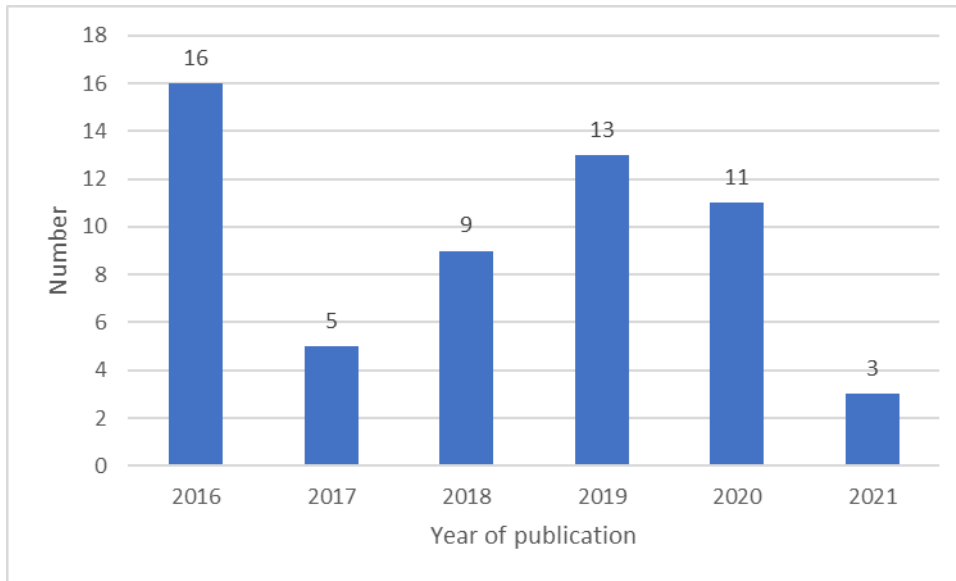


Figure 29: Year of Publication

Articles were published in a wide variety of journals. The journal of publication of the selected articles are shown in Table 8. The most common journal of publication was Action Research (9; 16%) followed by African Journal of Primary Health Care Family Medicine (3; 5%), Journal of Clinical Nursing (3; 5%) and the Journal of Nursing Management (3; 5%). Nursing journals were by far the commonest type of journal publication (23; 40%).

Journal	Number of publications
Action Research	9
African Journal of Primary Health Care Family Medicine	3
Journal of Clinical Nursing	3
Journal of Nursing Management	3
International Practice Development Journal	2
Midwifery	2
Pacific Rim International Journal of Nursing Research	2
Africa Journal of Nursing & Midwifery	1
African Journal of Midwifery & Women's Health	1
Asian Nursing Research	1
BMC Geriatrics	1
BMC Medical Education	1
BMC Palliative Care	1
BMC Public Health	1
British Journal of Occupational Therapy	1
Critical Care Nurse	1
Educational Action Research	1
European Journal of Cancer Care	1
Global Public Health	1
Health & Social Care in the Community	1
Health Care for Women International	1
Health Informatics Journal	1
Informatics for Health and Social Care	1
International Journal of Qualitative Studies on Health and Well-being	1
Intensive Critical Care Nursing	1
Journal of Allied Health	1
Journal of Hospital Palliative care Nursing	1
Journal of Medical Internet Research	1
Journal of Advanced Nursing	1
Journal of Health Management	1
Journal of the American Medical Informatics Association	1
Nursing & Health Sciences	1
Nursing ethics	1

Journal	Number of publications
Nursing Inquiry	1
Nursing Standards	1
Patient Educ Couns	1
Public Health Nursing	1
Qualitative Social Work	1
South African Journal of Occupational Therapy	1
Women & Birth	1

Table 8: Journal of Publication

Of the fifty-seven publications, there was quite a continental spread. Twenty-six were from Europe (46%), twelve from Asia (21%), eight from Africa (14%), six were from the continent of Australia (10%): one from Zealandia (a microcontinent in the South Pacific Ocean) (2%) and five from North America (9%).

The country of origin of extracted papers is summarised in Figure 30 with the most being published from the UK (4; 7%) followed by Canada, Denmark, Iran, Ireland, South Africa and Sweden with 3 each (5%).

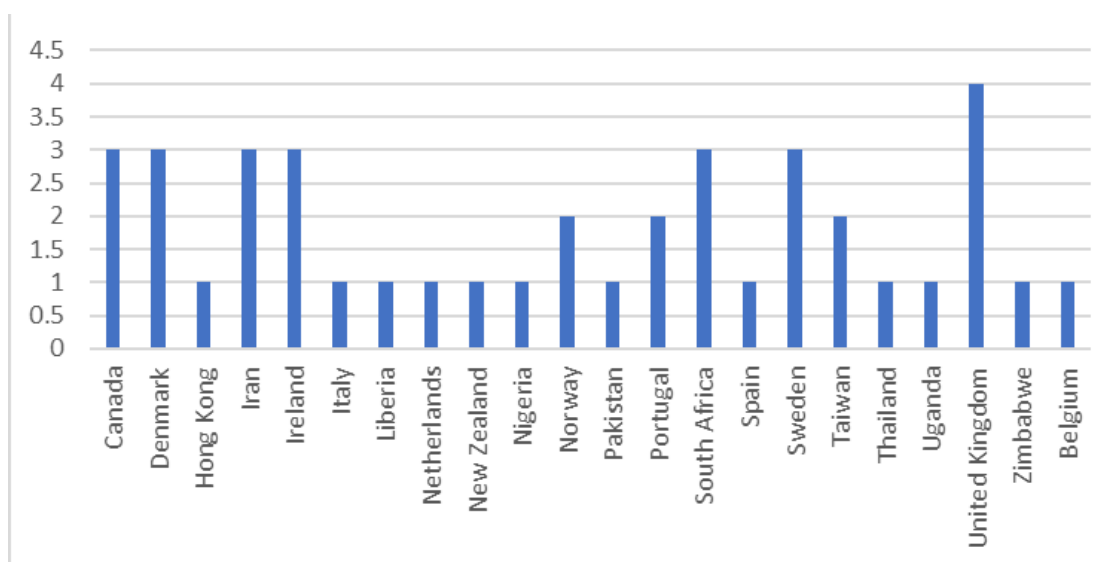
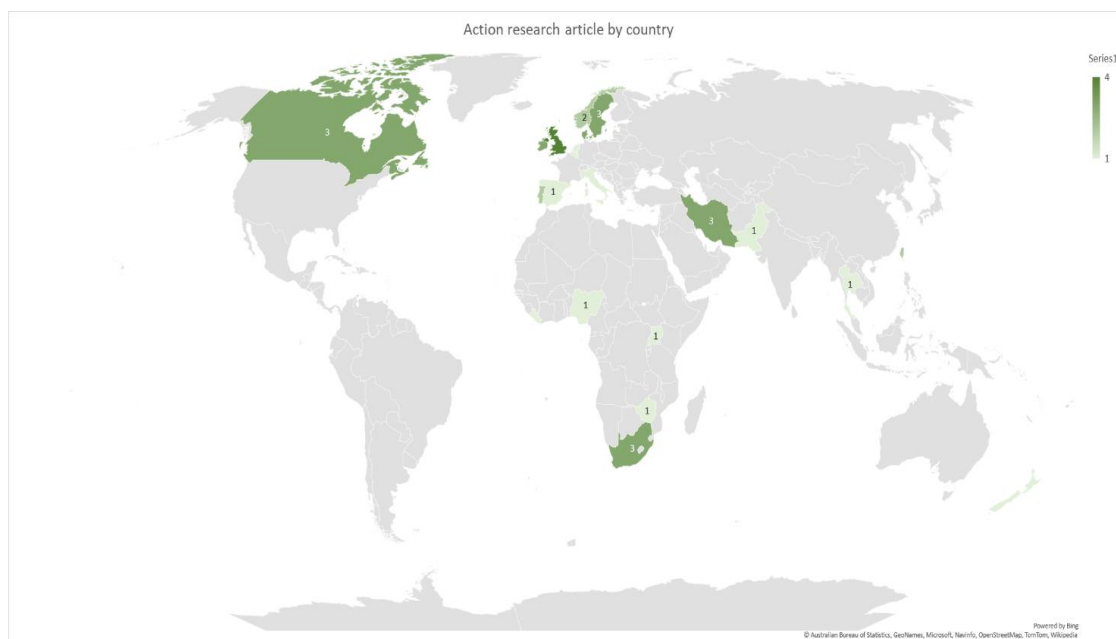


Figure 30: Action Research Article by Country

Thirty studies involved nursing or midwifery (53%), nineteen included different members of the MDT (including patients and citizens) [33.3%], four engaged solely with patients or citizens (7%), one related to occupational therapists (0.02%), one involved undergraduate medical students (2%) , one concerned locally based Research and Development units (2%) and one paper did not state participants (2%) .

Of the fifty-seven publications, thirty-one studies were hospital based (54%), ten were based in the community (18%), seven in an aged care, residential or nursing home facility (12%), two in a health system (4%), one in a higher education institution (2%), one in a hospice(2%) , one

in a primary school (2%), one in a defined geographical area (2%) , one was online (2%), and two studies did not state a setting (4%). No studies were based in a rehabilitation setting.

There were quite a few different action research approaches described in the papers reviewed. These are summarised in Table 9. The method used was extracted verbatim from each paper. Action research (18; 32%) followed by participatory action research (11; 19%) were the most commonly cited methods followed by appreciative inquiry (6; 10%) and co-operative inquiry (5; 8%).

Type of action research	Number
Action research	18
• Action research design	2
• Action research approach	1
• Underpinned by action research	1
• Critical utopian action research	1
• Collaborative Action research	1
• Insider action research	1
• Action research with lean principles	1
• Problem solving action research	1
• Systems model of action research	1
• Action learning action research	1
Participatory Action research	11
• Participatory Action research approach	4
• Participatory Action research design	1
• Participatory Action research using collaborative inquiry	1
Co-operative inquiry	5
Appreciative inquiry	6

Table 9: Summary of the Type of Action Research Method Employed.

In order to assess the impact of the publications included in this scoping review, the number of citations of the fifty-seven papers included in this review was used as a measure of impact as per Martin (1996). The most cited papers were Cardiff et al. 2018 (54), Skene et al 2019 (31), and Kwong et al 2016 (31).

Out of the fifty-seven papers included in this review, only one paper looked at leadership, Cardiff et al (2018): Person-centred leadership: A relational approach to leadership derived through action research. Whilst making reference to leadership theory, it does not reference complexity theory or complex adaptive leadership theory per se, but describes person-centred leadership as a '*complex, dynamic, relational and contextualised practice that aims to enable associates and leaders achieve self-actualisation, empowerment and well-being*' (Cardiff et al.,

2018 p. 3056). It also acknowledges the move from individual to new leadership styles that address complexity. Full analysis is available in Appendix G.

Of the fifty-seven publications, four papers (7%) discussed one of the four Shani and Pasmore factors, twenty-five (44) discussed two factors. Fifteen papers (26%) discussed three factors and thirteen papers (23%) discussed all four factors and these papers will now be discussed.

3.3.5.3 Discussion

As indicated above, only thirteen of the fifty-seven papers discussed all four factors outlined in the Complete theory of The Action Research Process.

Contextual Factors:

Although all thirteen papers reported on context, only two papers reported on the four contextual factors outlined in the complete theory. In Ericson-Lidman and Strandberg's 2018 paper on using a developed participatory action research process in practice to help care providers deal with troubled conscience in residential care of older people, they provided a rich contextual description of context, (including individual, organisational, environmental and research) viewed through the lens of conscience and how conscience can be an asset and a burden in residential care (Ericson-Lidman and Strandberg, 2018). In Jones et al (2018) investigating, Rebuilding people-centred maternal health services in post-Ebola Liberia through participatory action research, a very comprehensive vivid description of the context of the research at micro, meso and macro level is detailed. In both papers it is clear in the reporting that the researchers worked hard to establish a learning climate and also to model co-inquiry skills. These papers also reflected dynamic responses to challenges and change in context as the research unfolded in the cycles.

Quality of Relationships:

In Shani and Pasmore's (1982) Complete theory of Action Research, the quality of relationships is seen as having a significant impact on the outcomes of the AR process. They state that the management of relationships is important and depends on the relationships between specific factors: trust, concern, equality of influence and a shared common language. Although all papers made some reference to a collaborative process, only two papers described the factors in detail. Mann and Hung's paper, Co-research with people living with dementia for change,

gave a detailed description of the partnership approach taken and the value of working 'with' people with dementia (Mann and Hung, 2019). The Miguel Padilha et al., paper on participatory action research: A strategy for improving self-care management in chronic obstructive pulmonary disease patients, the discussion section details the attention paid to relationships (Padilha et al., 2016). They detail their endeavours to be democratic, equalitarian and to give a voice to the people involved.

Quality of the Action Research Process Itself:

The quality of the AR process is measured by two main components: the co-inquiry process and the implementation process. All thirteen papers made some reference to these factors but only one described quality criteria in detail. In the paper by Kramer-Roy et al., the developing role of occupational therapists in school-based practice: Experiences from collaborative action research in Pakistan, they make specific reference to Herr and Anderson's quality criteria for action research which they used to evaluate the processes and outcomes of this project (Herr and Anderson, 2014) to good effect (Kramer-Roy et al., 2020).

Outcomes of the Action Research Effort:

In Shani and Pasmore's Complete Theory of Action Research, they identified four main clusters of factors central in assessing the effectiveness of action research effort: the degree of organisational improvement, the degree of improvement of the quality of work life; the degree of organisational learning; and the generation of new knowledge. A number of papers reported on some outcomes of the action research process. Casey et al 2019 developed a policy assessment instrument (Casey et al., 2019), Kramer-Roy et al, Madden et al and von Biljon et al developed knowledge and procedures in the area of professional education (Kramer-Roy et al., 2020, Madden et al., van Biljon et al., 2019). Hung et al (2019), developed a website for breast cancer service (Hung et al.) and Mann and Hung developed a framework for more positive collaboration and reflexive practice in dementia care (Mann and Hung, 2019). Miguel Padhilla et al, improved the quality and quantity of information available in the information systems to support decision making of nurses managing COPD (Miguel Padilha et al., 2016). None of the papers reviewed reported on all four clusters of factors.

3.3.5.4 Limitations

All included studies were in English, so there may have been papers published in European, Asian, and African languages that were not considered and therefore if included, the results and conclusions may have been different. However, the most prominent action research journals, which are published in English, were included in the search which will have minimised this.

3.3.5.5 Conclusion of Action Research Scoping Review

Action research is a vital, dynamic, and suitable healthcare research approach that can be engaged in by practitioners, health service providers and service users. This scoping review showed that action research studies have been carried out in a diverse range of healthcare settings, by a diverse range of practitioners and providers and using a variety of methods. The scoping review showed that there was insufficient reporting on quality as recommended in Shani and Pasmore's Complete Theory of Action Research. Although there are a variety of ways to undertake action research in healthcare there is a requirement to demonstrate the rigor of the action research process. The Shani and Pasmore complete theory of the action research process has been a useful framework for the assessment of quality and has provided useful guidance and examples that have guided this research. This study will therefore provide a clear rationale for the chosen approach and provide evidence to support the quality of this study in accordance with the four factors. The scoping review demonstrated that action research has the potential to be useful in important areas such as healthcare innovation, improvement, and leadership development and also in developing knowledge and understanding in practitioners, and involvement in users and staff.

3.4 Conclusion

The chapter has detailed two scoping reviews: the application of complexity theory to healthcare and the use of action research in healthcare.

The first scoping review showed that complexity theory has grown in popularity as a lens through which to explore and conduct research in the areas of health and social care. It revealed that complexity theory offers useful insights that may help clinicians and managers

create self-organizing changes that support the sustainability and vitality of their people and organisations during transitions. However, despite the increased utilisation, there remains a huge divergence in the evidence-base regarding definitions, method of application and what constitutes its application. Guidance was therefore developed to inform the performance of this research and the outputs were also used to confirm and create a schematic of the hospital as a CAS.

The second scoping review explored the utilisation of action research in healthcare and demonstrated that action research was a popular research method in healthcare and one appropriate for the exploration of complex social systems, but papers often failed to demonstrate the four quality indicators developed by Shani and Pasmore. The scoping review showed that action research has the potential to be useful in important areas such as healthcare innovation, improvement, and leadership development and also in developing knowledge and understanding in practitioners, and involvement in users and staff and could therefore be a complementary approach to complexity theory that facilitates the self-organization of change by involving those responsible in the present in the organising process

The scoping reviews thus confirmed that the hospital is a CAS, and that action research was an appropriate method for exploring complexity leadership in a complex adaptive system and both informed the conduct of the research performed. This echoes the observation by Phelps and Hase that there is a 'deep complementarity' between complexity science and action research (Phelps and Hase, 2002).

Chapter 4: Research Design

'Would you tell me, please, which way I ought to go from here?'

'That depends a good deal on where you want to get to,' said the Cat.

Alice in Wonderland by Lewis Carroll

4.1 Overview

This chapter follows on from the literature syntheses in Chapter 3 and opens with a presentation of the focus, aims, objectives and the research questions that underpin the study. This is followed by the rationale for the approach to the inquiry and the methods used. The first section provides a rationale for adopting action research as the most appropriate research methodology for this study. Secondly, there is a discussion of the appropriateness of co-operative inquiry to fulfil my research intentions for the study. Finally, an outline is provided of the methodological issues of the study including methods, data collection and analysis.

4.2 Focus of the Research

The navigation of major transitions is never easy, and has been discussed previously, there are few organisational activities that are comparable to the change processes associated with the transition to a new hospital facility. As discussed in the preceding chapters, complexity theory offers useful insights that may help clinicians and managers create self-organizing changes that support the sustainability and vitality of their people and organisations during such a major transition and that action research appears to be a complementary approach that allows for the self-organization of change by involving those responsible in the present in the organising process.

Equipped with the outputs of the literature syntheses and in anticipation of the move to the new hospital building, my proposition was that a participatory work-based medical team intervention may help develop leadership in complexity skills that would facilitate successful transition to the new hospital with improved patient and staff experience.

4.3 Research Aims:

If the National Rehabilitation University Hospital is viewed as a CAS with positive change an emergent property, then interventions that seek to improve outcomes must align with a complexity paradigm. Using the complexity paradigm, if agents (in this case, medical consultants) working within the NRH are restricted in their ability to recognise the nature or dynamics of their working context or have an awareness of appropriate methods and approaches to support leadership development, improvement and progress, then conceivably an intervention that improves these abilities may support a transition towards more desirable outcomes. The aims of this study, therefore, were for participants to work together to identify strategies for increasing staff and patient satisfaction during a major organisational change (core action research project) and to evaluate the value of co-operative inquiry articulation of action research as a vehicle for supporting leadership development and learning in a complex adaptive system (thesis action research project).

4.4 Research Questions:

The specific initial questions to be addressed were (core action research project):

- How can we, as medical leaders within the NRH facilitate transition to the new hospital and effectively manage staff and patient experience?
- How do we develop the leadership skills to do this?

The first question focuses on understanding the perspective of participants and the creation of adaptive space within the organisation from which complexity leadership skills might emerge and the second question pertains to the efficacy of the co-operative process in complexity leadership development.

4.5 Research Objectives:

Four main objectives emerged for this study:

- i. To develop knowledge and awareness with medical colleagues about the concept of Healthcare and the NRH as a complex adaptive system

- ii. To take actions from this knowledge that will result in organisational Improvement and improved experience of quality of work life and patient experience.
- iii. To develop leading in complexity skills
- iv. To develop organisational learning

4.6 Ontological and Epistemological Stance

As I explored my research question; *How can we, as medical leaders within the NRH support transition to the new hospital and effectively manage staff and patient experience?* it was important to me to find a methodology that spoke to my view of the world and my life philosophy, and it was an epiphany to discover that my career choice as well as my research methodological choice speak to that philosophy.

I grew up in a small town in Northern Ireland during the troubles. Although small, it has the reputation of being one of the most divided communities in the North with extremist views from both sides of the political divide. I was very fortunate in being shielded from most of the horrors of the troubles and on reflection this was due to my father being a rural General Practitioner who served both sides of the community without prejudice. The many tributes that were written after his death in local papers and the visits of people and clergy from both sides of the community are testament to the success of his labours in the vineyard of Mourne. The Methodist Minister who lives close to my home place even drew the curtains as a mark of respect on the day of his funeral, a very Catholic custom. I was raised to believe that I 'was as good as anyone else but no better' which may have come from my parents Christian (Catholic) faith but also perhaps the enduring theme of Western philosophy – equality and egalitarianism (Baker et al., 2016). Fairness, integrity, and equality are values that I hold very strongly and the right for every citizen to have a voice. The emergence of the civil rights movement in Northern Ireland and the subsequent troubles were part of my formative years. As a student I was actively involved in the campaign for nuclear disarmament, Amnesty international and Greenpeace and as a healthcare professional I have advocated for the rights of persons with disabilities and to have disability rights recognised as a basic human right. A strong belief in participation and democracy have been threads that have woven throughout my life.

Throughout my personal and professional life, I have never been afraid to speak out when I have witnessed unfairness, inequality, or unkindness. I believe that the solutions to many of

the world's problems exist in the knowledge and experience of the people and that by working together we can improve society for everyone. I believe that by opening our hearts and minds to the idea that everyone has something of value to contribute to the world, that we can participate and work together to transform our world. I do not believe the world is made up of separate things (positivism) but rather of relationships between things and people and that the world we experience is subjective-objective and co-created and made up of a complex system of interrelated things. This is a participative world view described by Reason as follows *"In the participative worldview there is a given cosmos, a primordial reality, in which human intelligence-body, mind and spirit-actively participates"* (Reason 1997, p.425). Thus, my ontology and epistemology sit within a social constructionist paradigm where there is an epistemological assumption that knowing/knowledge is determined by people rather than by objective external factors (Andrews, 2012).

Reality is subjective- objective as described by Heron and Reason as follows *"this ontology is ... subjective-objective: It is subjective because it is only known through the form the mind gives it; and it is objective because the mind interpenetrates the given cosmos which is shapes... So any subjective-objective reality articulated by any one person is done so within an intersubjective field, a context of both linguistic-cultural and experiential shared meanings."* (Heron and Reason, 1997 p.5).

These ontological and axiological assumptions have influenced my choice of method but also my positionality in the research which is discussed later in this chapter. This participatory ontology with its concept of reality as subjective-objective requires an extended epistemology which is discussed in detail later in this chapter. In summary, epistemology, the theory of knowledge, is expanded in co-operative inquiry as it *"reaches beyond the primarily theoretical knowledge of academia"* (Reason, 1999 p.211) and empirical positivism or postmodern interpretivism. The knowledge created within a cooperative inquiry commences in relationship, through participation in the practice of inquiry together with others. Epistemology in co-operative inquiry holds within it four subjective forms of knowing. As Heron and Reason describe:

A knower participates in the known, articulates a world, in at least four interdependent ways: experiential, presentational, propositional and practical. These four forms of knowing constitute the manifold of our subjectivity, within which, it seems, we have enormous latitude both in acknowledging its components and in utilizing them in association with, or dissociation from, each other. This epistemology presents us as

knowers with an interesting developmental challenge. We call this challenge critical subjectivity. It involves an awareness of the four ways of knowing of how they are currently interacting, and of ways of changing the relations between them so that they articulate a reality that is unclouded by a restrictive and ill-disciplined subjectivity (Heron and Reason, 1997 p.5) .

4.7 Methodology

4.7.1 Action Research

Action research (AR) was chosen as the methodology for this research study because, similar to the disability motto ‘nothing about me without me’, it supports a collaborative and democratic approach to research based organisational change and improvement. Action research has a complex history and is an approach to research that has emerged over time from a wide range of disciplines and philosophical viewpoints.

As a medical consultant, I have spent most of my career immersed in a positivist environment and mindset but over the last number of years, I had come to realise that such philosophies and methodologies were limited and not getting to the heart of what I felt was important which is research and knowledge that makes a difference to what matters to people. My desire to understand, explore and experience differently has resulted in an exploration of qualitative research methodologies which has triggered a personal epistemological shift from positivism to collaboration and shared meaning. As discussed in Chapter 3, Action Research as a term, was originally proposed by Kurt Lewin in his 1946 paper ‘Action Research and Minority Problems’ (Lewin, 1997, Lewin, 1946) to provide a framework with which to solve practical problems through a research cycle involving planning, action, and investigating the results of the action. However, it should be noted that action research has many roots and origins which can be traced through the work of Lewin and also John Collier, in critical and pragmatic philosophy, and also in the different traditions of liberation thinking, especially Marxist and feminist and in Aristotelian philosophy (Coghlan, 2011).

Lewin’s fundamental ideas about action research are as valid today as when they were first published. As Lewin himself describes the action research cycle:

Planning starts usually with something like a general idea. For one reason or another it seems desirable to reach a certain objective. Exactly how to circumscribe this objective, and how to reach it, is frequently not too clear. The first step then is to examine the idea carefully in the light of the means available. Frequently more fact-finding about the situation is required. If this first period of planning is successful, two items emerge: namely, an 'overall plan' of how to reach the objective and secondly, a decision in regard to the first step of action. Usually, this planning has also somewhat modified the original idea. The next period is devoted to executing the first step of the overall plan . . . this second step is followed by certain fact-findings . . . This reconnaissance or fact-finding has four functions. First it should evaluate the action. It shows whether what has been achieved is above or below expectation. Secondly, it gives the planners a chance to learn, that is, to gather new general insight. Thirdly, this fact-finding should serve as a basis for correctly planning the next step. Finally, it serves as a basis for modifying the 'overall plan' . . . The next step again is composed of a circle of planning, executing, and reconnaissance or fact-finding for the purpose of evaluating the results of the second step, for preparing the rational basis for planning the third step, and for perhaps modifying again the overall plan (Lewin, 1946 p.205)

As the name suggests, action research has two intentions: action and research. The action intention seeks to address the practical concerns of people and the research intention aims to create practical or actionable knowledge that can be used beyond the initial inquiry group. This combination of action and research in a single paradigm distinguishes action research philosophically from Mode 1 knowledge (Gibbons, 1994).

The five attributes of Mode 2 research as described by Gibbons can be developed in insider action research projects (Coghlan, 2007a); Knowledge is produced in the context of application; research is transdisciplinary; it is characterised by heterogeneity and organisational diversity; it is organised more heterarchically and tends to be transient and quality control is more socially accountable and reflexive (Gibbons, 1994). In addition, Reason and Marshall argue that all good research is designed for three audiences (Reason and Marshall, 1987): (1) '*for them*' in that it produces generalizable ideas; (2) '*for us*' in that it provides insight into current situations and solutions to management problems; (3) '*for me*' in that it fuels the researcher's learning which speaks to the three voices of action research.

As discussed in Chapter 3, the field of action orientated research is diffuse and diverse with many different approaches and definitions of action research, however the definition best

aligned with complexity theory and complex systems is the definition offered by Shani and Pasmore:

Action research is an emergent inquiry process in which applied behavioural science knowledge is integrated within existing organisational knowledge and applied to address real organisational issues. It is simultaneously concerned with bringing about change in organisations, in developing self-help competencies in organisational members and adding to scientific knowledge. Finally, it is an evolving process that is undertaken in a spirit of collaboration and co-inquiry, (Shani and Pasmore, 1982 p. 439).

The link between complexity and action research is discussed in section 4.7.2.

The growth in interest in action research has spawned a huge literature on the topic with a large number of books on the subject across a large number of disciplines from education to healthcare, community, participatory development, and organisations with multiple handbooks including: The SAGE Handbook of Action Research: Participative Inquiry and Practice (Reason and Bradbury, 2001), Doing Action Research In Your Own Organisation (Coghlan, 2019), All You Need To Know About Action Research (McNiff and Whitehead, 2011) and Action Research In Education (Stringer, 2008) as well as featuring in many qualitative research textbooks. There is a well-established peer reviewed journal literature with key journals including Action Research (published by SAGE), Educational Action Research (published by Taylor & Francis), the International Journal of Action Research (published by Hampp), and Systemic Practice and Action Research (published by Springer) and others. Bob Dick in 2009 published a useful summary of the themes and trends in Action research literature from 2008–2010 (Dick, 2009). There has also been an increase in action research networks and communities of practice with various organisations arranging conferences, networking events and supports for people interested in action research. These include the Action Research Group in Ireland (ARGI), The Collaborative Action Research Network (CARN) and the Action Learning, Action Research Association (ALARA).

Although a broad family of approaches, as Raelin describes as multiple action modalities (Raelin, 2009), there are a number of approaches that feature more strongly in the literature such as appreciative inquiry, co-operative inquiry, collaborative research, participatory action research and, more recently, co-design (the choice of approach taken in this thesis, co-operative inquiry, is described later in section 4.7.4). All approaches have certain features in common. They undertake research to bring about positive change in participants' social

situation; they generate practical as well as theoretical knowledge about the situation and they enhance collegiality, collaboration and involvement of participants who are involved in the situation (Casey et al., 2018). The action research process involves cycles of action and reflection and has the dual imperative of addressing a real issue and contributing to science through the elaboration or development of theory.

The basic action research cycle with the four main steps is shown in Figure 31.

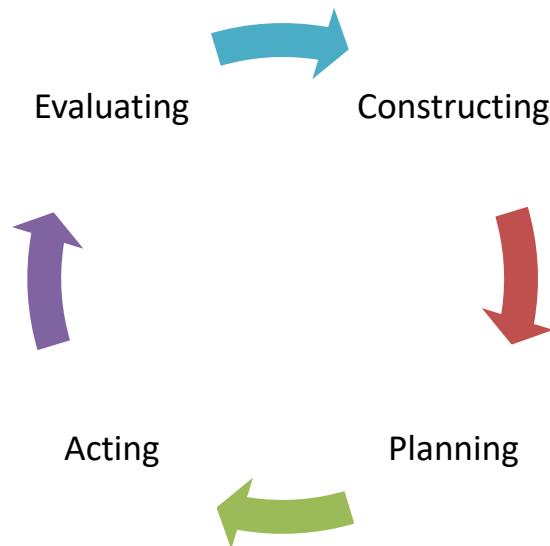


Figure 31: The Action Research Cycle

4.7.1.1 Steps of Action Research

The steps of action research are essentially based on the original Lewinian cycle described by Lewin above. These core steps have been interpreted differently by different authors over the years, but all are based on the core activities of planning action, taking action and then fact finding about the results of the action. Coghlan presents an action research cycle as consisting of a pre-step, context and purpose, followed by four basic steps: constructing, planning action, taking action and evaluating action shown in Figure 31 (Coghlan, 2019).

Pre-step, Context and Purpose

The action research cycle unfolds in real time and commences with an understanding of the context of the project and why the project is deemed necessary.

Diagnosing

Diagnosing involves identifying what the main issues are that act as the basis upon which action will be planned and taken.

Planning Action

Planning action follows on from the analysis of the context and establishing the purpose of the project and identification of the main issues to be addressed. This may result in the planning of a first step or a series of first steps.

Taking Action

Following on from the planning step, the plans are then implemented, and interventions are made.

Evaluating Action

Critical reflection, a form of analysis, based on the experiences and outcomes of action is a fundamental part of this step of the action research cycle. The outcomes of the action, including intended and unintended outcomes, are examined with a view to seeing: if the initial diagnosis was correct; if the action taken was the correct action; if the action was taken in a suitable manner and finally, what contributes to the next cycle.

In this way, instead of a linear model, action research progresses through multiple cycles of inquiry, beginning with reflection on action, and then proceeding to a new cycle which is then further researched and so the process continues until the project is complete.

Forms of Reflection

According to Etymology online, the etymology of the word 'reflection' comes from the Latin *reflectere* with 're' meaning to back or backwards or turn away and 'flectere' meaning to bend.

The meaning 'to turn one's thoughts back on, resolve matters in the mind' is from circa 1600. Rather than simply narcissistic navel gazing, reflective and reflexive processes allow us to be self-critical and ethical (Dallos and Stedmon, 2009). Reflective practice is best seen as a successive process of analysing and reanalysing important episodes of activity, often in the moment, and reflexivity is a conscious cognitive process of reflecting on action and reflecting on the role of self in action (Dallos and Stedmon, 2009).

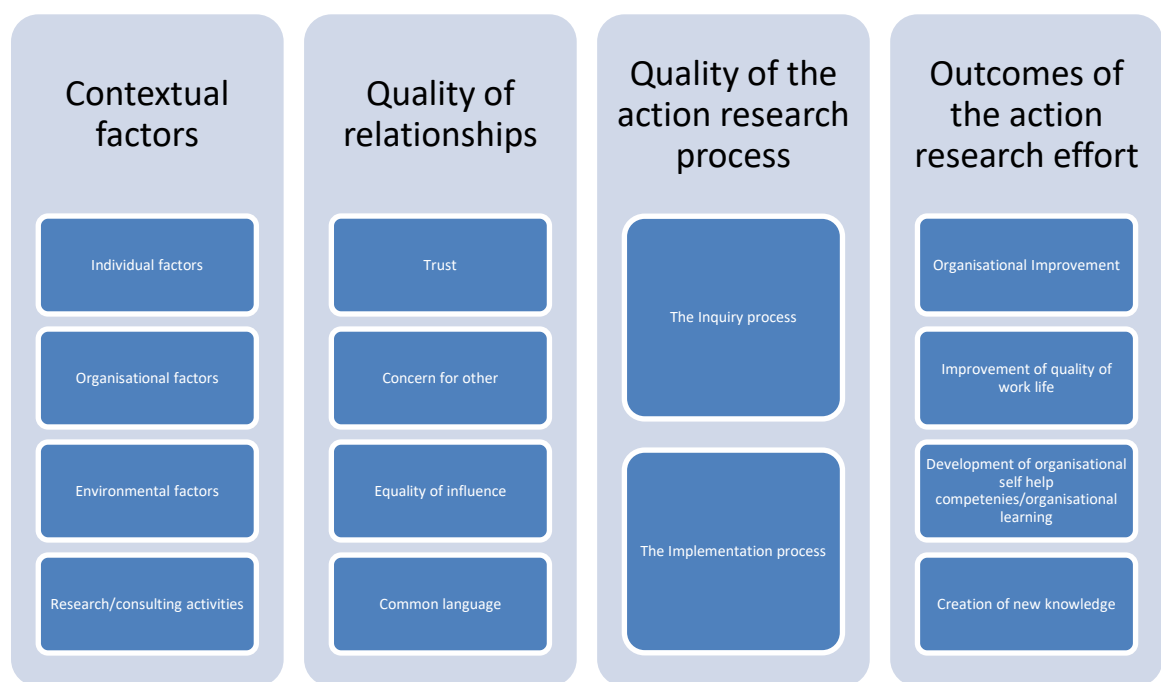
Three forms of reflection have been identified by Mezirow (1991). These are content, process and premise. Content reflection is where one reflects on the issues as they happen. Process reflection is where one reflects on strategies, procedures and how things are being done. Premise reflection is where one reflects critically on underlying assumptions and perspectives. All three forms of reflection are important in action research (Coghlan, 2019).

These forms of reflection echo the description of reflective practice provided by Schön (1995). In Schön's writing he articulates reflection as a core competence for practitioners to develop, practice on a day-to-day basis and also continuously improve. He describes three types of reflection: '*reflection-before-action*' (i.e. before an activity), '*reflection-in-action*' (i.e. during an activity) and '*reflection-about-action*' (i.e. in the aftermath of an activity) (Schön, 2017).

To recap on what was presented in Chapter 3, the central tenets of action research can be expressed as follows (Argyris et al., 1985, Coghlan, 2007a):

1. It involves tests of change on real issues in social systems. It focuses on a particular problem and seeks to resolve the problem.
2. It involves iterative cycles of identifying a problem (constructing), planning, acting, and evaluating and learning.
3. The intended change in an action research project typically involves re-education, a term that refers to changing patterns of thinking and action that are presently well-established in individuals and groups. A change intended by change agents is typically at the level of norms and values expressed in action.
4. It challenges the status quo from a participative perspective, which is congruent with the requirements of effective re-education.
5. It is intended to contribute simultaneously to basic knowledge in social science and to social action in everyday life. High standards for developing theory and empirically testing propositions organised by theory are not to be sacrificed nor the relation to practice be lost.

As discussed in Chapter 3, there are many authors who have published guidance on quality and rigor in action research. A useful and comprehensive framework to realise the advantages of the action research process is Shani and Pasmore’s complete theory of the action research process which consists of 4 interconnected factors to support action researchers to achieve their objectives as shown in Figure 32 (Shani and Pasmore, 1982). Coghlan and Shani drew on this work to develop a comprehensive framework of the action research process (Coghlan and Shani, 2014) however the original model and paper is more detailed and instructive and is rearticulated here for ease.



Adapted from Shani and Pasmore (1982)

Figure 32: Complete Theory of the Action Research Process

Context

As discussed in detail in Chapter 2, studying the entangled multiplicity of contexts in which any research unfolds allows a more enlightened and contextualized insight into the diversity of influences on and within any intervention. In the Shani and Pasmore Complete Theory of the Action Research Process, they describe four factors (individual factors, organisational factors, environmental factors, and research/consulting activities) that set the foundations of the action research project. Individual goals may differ and impact the direction of the project, while shared goals enhance collaboration. Organisational characteristics, such as resources, history, formal and informal organisations, and the degrees of congruence between them

affect the readiness and capability for participating in action research. Environmental factors in the global and local economies provide the larger context in which action research takes place. Finally establishing a learning climate and modelling co-inquiry is important.

Quality of Relationships

The quality of relationship between members of the system and researchers is the foundation upon which action research is built. Hence the relationships need to be managed through trust, concern for other, equality of influence and common language and shared meaning.

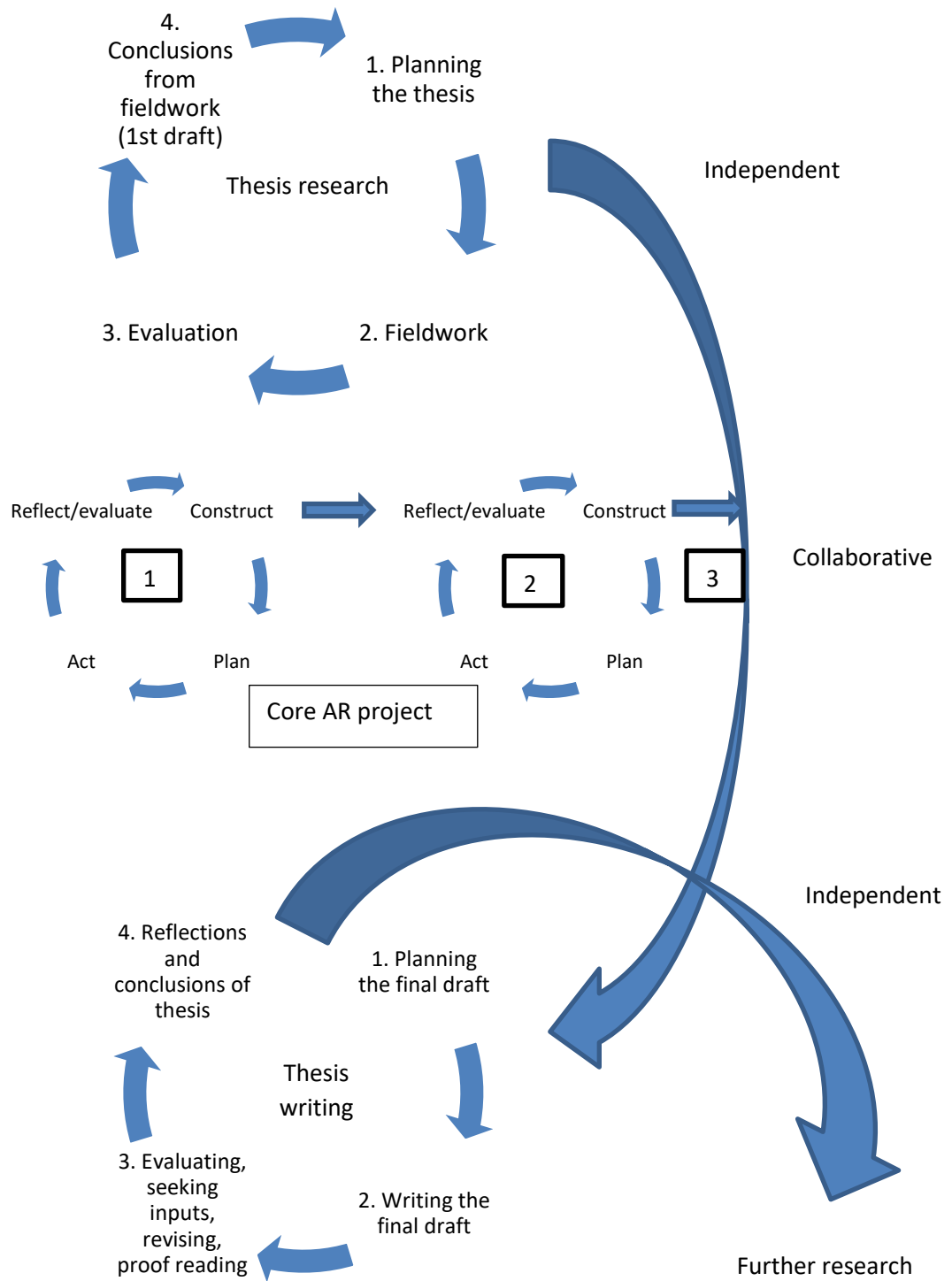
Quality of the Action Research Process Itself

The quality of the action research process is grounded in the dual focus on both the inquiry process and the implementation process.

Outcomes

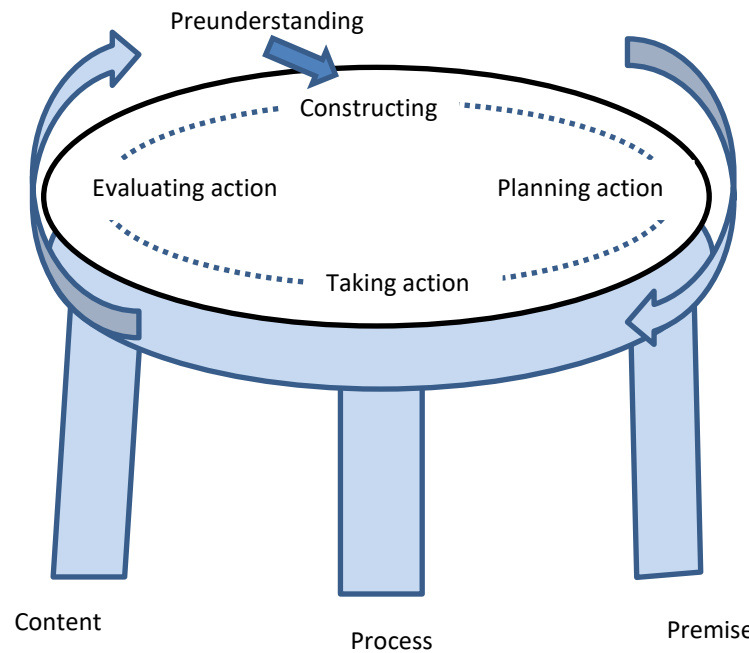
The dual outcomes of action research are some level of sustainability (human, social, economic, ecological) and the development of improvement and self-help and competencies out of the action and the creation of actionable theory and learning through the shared action and inquiry.

In this thesis and action research study, there are two action research cycles operating in parallel: the core action research project (the cycles of constructing, planning, taking action and evaluating) and the thesis action research cycle or meta-cycle (a reflection action research cycle about the action research cycle that makes an original contribution to knowledge) also referred to as Meta learning (Coghlan, 2019, Zuber-Skerritt and Perry, 2002). The relationship between the two is shown in Figure 33. The meta-cycle of inquiry is shown in Figure 34 which shows the reflection cycle and the reflection action research cycle about the action research cycle. Argyris asserts that this inquiry into the steps of the cycles is central to the generation of actionable knowledge (Argyris, 2003) and Coghlan describes it as learning about learning or meta- learning (Coghlan, 2019).



Adapted from Perry and Zuber-Skerritt (2002)

Figure 33: Conceptual Model of an Action Research Thesis



Adapted from Coghlan 2019

Figure 34: Meta-cycle of Action Research

4.7.2 Action Research and Complexity

In their 2019 review and critique of complexity theory and leadership practice, Rosenhead et al acknowledge that qualitative research methodologies are more suited to the study of complexity leadership (Rosenhead et al., 2019). Methods such as ethnography and participatory methods allow a peer derived, rich description of the experiences of leading in a complex organisational environment. They suggest that theory building in this instance should honour and draw out complexity, rather than the pursuit of solution or simplification.

Action research has been identified as an appropriate method for investigating complex phenomena, including healthcare (Ahmadian and Tavakoli, 2011, Waterman et al., 2001b, Phelps and Hase, 2002, Biggs et al., 2021). Once again, Stacey and colleagues take exception to participative inquiry suggesting that the complex responsive process of relating offers a different interpretation of the meaning of the words action, participation, relationship, and experience (Stacey et al., 2005). As discussed in Chapter 3, the scoping literature review enabled a crystallisation of the issues of quality that need to be addressed in an action research study which address the concerns in Stacey's work, in particular, a co-operative inquiry with its emphasis on experiential knowing and action and co-operative relations between co-researchers.

Action research has been chosen as an approach to healthcare research because it acknowledges complex contexts and can be used to study complex problems in complex adaptive systems (Waterman et al., 2001, Hughes, 2008). There is increasing interest in complexity informed action research (Reason and Goodwin, 1999, Rosenhead et al., 2019, MacLean and MacIntosh, 2011, MacLean and MacIntosh, 2017) and many parallels have been drawn between action research and complexity thinking. In action research, there is collaboration and participation of co-researchers who bring different perspectives and ways of understanding and this together with the iterative cycles of action and reflection, provide a robust model that helps increase our understanding of complex systems and of complex interventions in complex systems. This has parallels with Snowden and Boones *Cynefin framework*, a tool designed to help support leaders' decision making and which '*allows executives to see things from new viewpoints assimilate complex concepts and address real world problems and opportunities*' (Snowden and Boone, 2007 p. 70). The feedback loops that are part of the action research cycles can be used for constant monitoring of complex adaptive systems, to test interventions and assess impact either positive, negative, or neutral. This can then lead to the development of local theories of change or living theories (Whitehead and McNiff, 2006). In addition, second-person inquiry can be viewed as an emergent self-organizing process in which the inquiry group is, as Goodwin describes, an 'excitable medium' (Goodwin, 2001) from which new knowledge can emerge.

4.7.3 Action Research and Leadership Development

Zuber-Skerritt and colleagues have identified action research as an appropriate method to develop professional competencies and leadership in organisations and communities (Zuber-Skerritt, 2011, Fletcher et al., 2010). Many studies have been published that have used action research and action learning as an approach to leadership development in many industries including healthcare (Rocha et al., 2017, Day et al., 2014, Dopson et al., 2016). Co-operative inquiry, one of the family of action research methods, has been used successfully to explore leadership in a number of different fields including education, social justice and healthcare (Ospina et al., 2008, Yorks et al., 2008).

Coghlan advances this thinking further in his paper: '*Insider Action Research as Leadership-as-Practice: A Methodological Reflection for OD Scholar-Practitioners*' (Coghlan and Holian, 2021). In this paper, he suggests that Insider action research provides a methodology and methods

for the exercise of leadership as practice. Torbert has argued that leadership within an organisation is enhanced by the ability of individuals' adopting first and second-person research/practice that then leads to successful third-person research/practice (Torbert, 2006). In addition, action research methods embrace the unpredictable, emergent self-organising nature of complex systems (MacLean and MacIntosh, 2011, MacLean and MacIntosh, 2017). McClean and colleagues suggest that there is much to be gained by embarking on pragmatic combination of action-research and more traditional inquiry method. They have also recognised that research can be viewed as creative practice informed by both logic and science and by art, poetry and aesthetics which is view also reflected by Heron and Reason in their description of co-operative inquiry (MacLean and MacIntosh, 2017, Heron and Reason, 2006) .

4.7.4 Co-operative Inquiry

As discussed previously, Action Research is a generic term for a wide family of approaches each of which has its own unique characteristics (Coghlan and Brannick, 2014). Co-operative inquiry is one articulation of action research. The original proposal for experiential inquiry was put forward by John Heron in 1971 (Heron, 1971) and subsequently developed into a practice of co-operative inquiry as a methodology for a science of persons (Heron and Reason, 1997, Heron and Reason, 2006). In co-operative inquiry, all those involved in the research are both co-researchers and co-subjects. Participants are involved together in the generation of ideas and solutions and the development of a shared understanding of the meaning of any outcomes as well as participating in the research activities.

Co-operative inquiry has been chosen for this research project as it is in keeping with the philosophy of the hospital, the biopsychosocial model of rehabilitation and because it has a solid evidence base in leadership and professional development in healthcare. (Reason, 1998, Baldwin, 2002, Hostick and McClelland, 2002, Hynes et al., 2012, Jenkins et al., 2009, Meehan and Coghlan, 2004). As noted previously, there is a 'deep complementarity' between complexity science and action research (Phelps and Hase, 2002). Both action research and complexity theory are focused on pragmatic action and action research embraces emergent processes and complexity. Co-operative inquiry is a way of working with other people who have similar concerns and interests in order to understand and make sense of a situation or problem and to develop new and creative ways of examining it (Heron and Reason, 2006). This

collaborative approach is necessary in this project to draw on the range of experience and expertise, which is imperative to reflect the range of issues and concerns experienced by the Consultant staff in our hospital and also to develop the leadership skills necessary to facilitate transition to the new hospital.

According to Heron and Reason, co-operative inquiry is defined as:

... involving two or more people researching a topic through their own experience of it in order to (1) Understand their world to make sense of their life and develop new and creative ways of looking at things and (2) Learn how to act to change things they might want to change and find out how to do things better. (Heron and Reason, 2006 p. 144)

Each participant is engaged in the design and management of the inquiry; everyone gets into the experience and action of what is being explored; everyone is involved in making sense and drawing conclusions; thus everyone involved can take initiative and exert influence on the process. Co-operative inquiry is primarily a way of doing research *with* rather than *on* people (Heron, 1971, Heron, 1981, Heron and Reason, 2006, Reason and Torbert, 2005).

Heron and Reason have described eight defining features of co-operative inquiry (Heron and Reason, 2006):

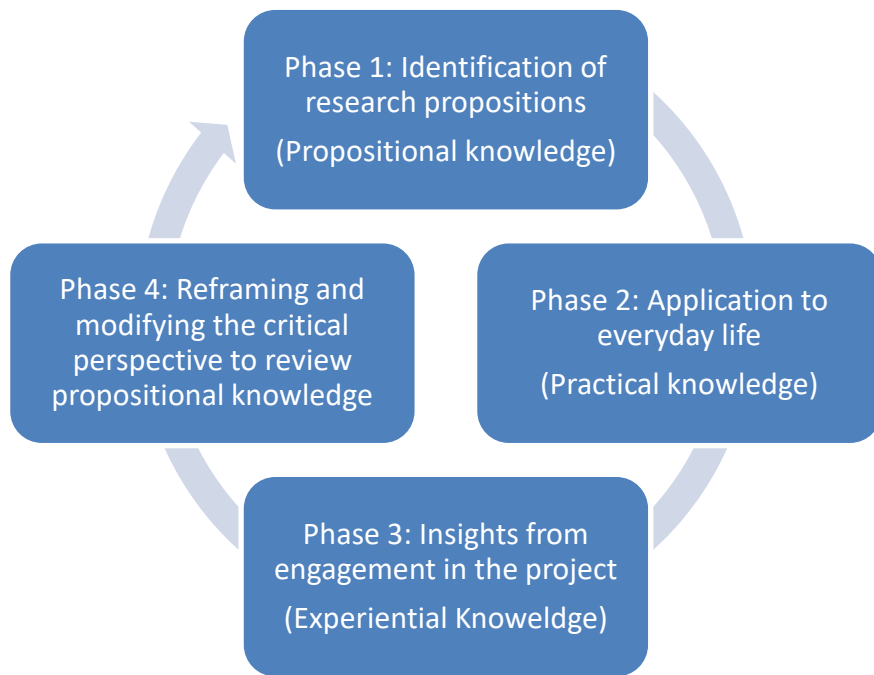
- i. All participants are fully involved as co-researchers in all research decisions about both content and method- taken in the reflection phase'
- ii. There is deliberate interaction between reflection and sense making, and experience and action.
- iii. Mutually agreed processes ensure that the investigation and its results are valid. The primary technique is to use question cycles that alternate between reflection and action multiple times.
- iv. There is a radical epistemology for a wide-ranging method of inquiry that integrates experiential knowledge through meeting and encounter, presentational knowledge through the use of aesthetic, expressive forms, propositional knowledge through words and concepts, and practical know-how in the exercise of various skills intrapsychic, interpersonal, political, transpersonal, and so on. These forms of knowledge are applied to each other through the use of investigation cycles to

improve their mutual congruence both within each researcher and the investigation group as a whole.

- v. In addition to validity procedures, there are a number of special abilities that are suitable for such universal empirical research. This involves a finely tuned distinction in perceiving, acting, and remembering both; elimination and redesign of launch concepts; and emotional competence, including the ability to effectively manage the anxiety generated by the inquiry process.
- vi. The method of inquiry can be both informative and transformative for any aspect of the human condition that is accessible to a transparent body-mind, that is, one that has an open, unbound consciousness.
- vii. Priority is given to transformative inquiry, which involves actions in which people change the way they are, do, and relate to their world toward greater prosperity. This is because practical knowledge complements the other three forms of knowledge on which it is based, namely statements, presentations and experiences.
- viii. The entire range of human abilities and sensibilities is available as an investigative instrument.

Reason (1999) set out the process of co-operative inquiry in the following phases:

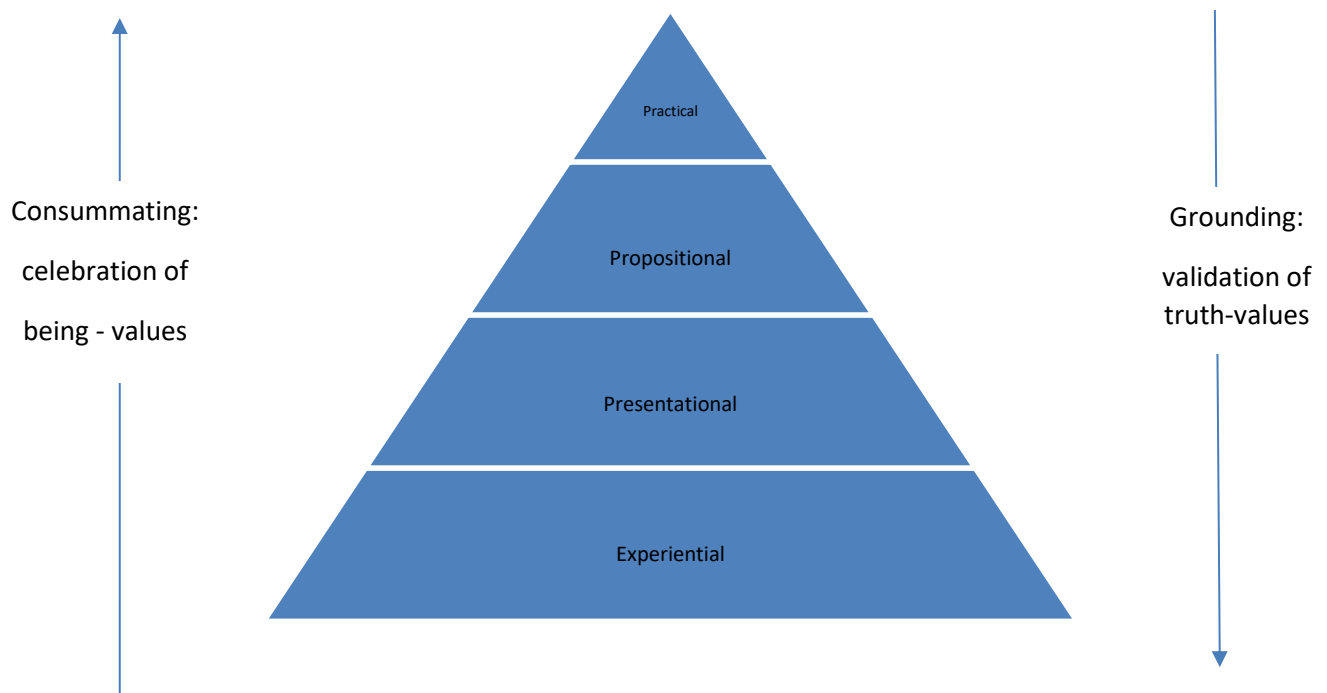
1. Co-researchers discuss the group's interests and concerns, agree on the focus of the inquiry, and develop together a set of questions or proposals its members wish to explore.
2. The group applies actions in the everyday work of the members, who initiate the actions and observe and record the outcomes of their own and each other's behaviour.
3. The group members as co-researchers become full immersed in their experience. They may deepen into the experience, or they may be led away from the original ideas and proposals into new fields, unpredicted action, and creative insights.
4. After an agreed period engaged in phases two and three, the co-researchers reassemble to consider their original questions in the light of their experience.



Adapted from Heron and Reason 2006

Figure 35: Four Phase Spiral of Action and Reflection Incorporating the Extended Epistemology of Knowing

Co-operative inquiry and other types of action research, work on the basis of iteration or cycling through the steps as outlined above. It is often necessary to go through these cycles several times in order to develop a better understanding of an issue. Heron and Reason (2006) have suggested that it may be necessary to cycle 6 to 10 times on a particular topic, to gain a complete grasp of the issue and its parts (Heron and Reason, 2006). These cycles of action and reflection, develop the participants understanding and practice by engaging in an 'extended epistemology' of experiential, presentational, propositional, and practical ways of knowing (Heron and Reason, 2008) as shown in Figure 36. (Heron and Reason, 1997). These interdependent, different ways of knowing reflect the different ways we experience and act in our world.



(Heron and Reason, 1997)

Figure 36: The Relationship between the Four Ways of Knowing

In co-operative inquiry, knowing is more valid if the four ways of knowing are congruent with each other: grounded in the shared experience; expressed through images and stories; understood through theories which make sense to participants; and expressed in meaningful action in participants lives (Heron and Reason, 2008).

Action research is an integrative approach to research that incorporates three voices or audiences: first, second, and third-person practice/inquiry (Coghlan et al., 2019b). Building on Torbert's original 1998 interpretation, Reason and Torbert in 2001 and Reason and Bradbury in 2015 introduced the terms first, second-, and third-person research/practice as an organizing framework to describe the diversity of practice in action research. (Torbert, 1998, Reason and Torbert, 2005, Reason and Bradbury, 2001).

- First-person action research/practice is a form of inquiry that the researcher does on their own into their own lives. The researcher acts out of awareness and purpose and brings inquiry into the whole range of everyday activities and behaviours.
- Second-person action research/practice addresses the ability to inquire into issues of mutual concern through face-to-face dialogue, conversation, and joint action.
- Third-person research/practice, the more traditional research approach, aims to create broader communities of inquiry, through dissemination and knowledge

mobilisation and extrapolating from the concrete to the general. It also refers to processes between people who do not have direct contact with each other and continuing the conversation that emerged from the immediate project (Hynes, 2012a). Third person approaches interact with second and first-person approaches (Gustavsen, 2014).

This research takes an integrative approach incorporating all 3 voices as recommended by Torbert (2011) and although co-operative inquiry is traditionally a second person inquiry, this research also incorporates the first- person and third- person. Abductive reasoning acts as the integrating mechanism between the 3 voices (Sætre and Van De Ven, 2021a, Sætre and Van de Ven, 2021b). From a third- person perspective, there will be discourses on a number of levels: the organisation, the community, the network, the region, the national and the global.

According to Coghlan and Brannick (2005), doing action research in one's own organisation involves managing three interlocking challenges: preunderstanding, role duality and organisational politics (Coghlan and Brannick, 2005). Preunderstanding requires insider action researchers to build on the familiarity they have with the organisation, while, at the same time create distance from it in order to see things critically and enable change to happen. Role duality, as a staff member and an insider action researcher, can create uncertainties which may cause role confusion, role conflict, and role overload. Insider action researchers have the additional challenge of needing to manage organisational politics yet balance the constraints of future career planning with the requirements of delivering a successful action research project. Each of these three challenges makes demands on first-, second- and third-person voice/practice and, through confronting them, insider action researchers can contribute to the development of capabilities. These challenges are likely to shift as the consequence of deliberate action or as unintended consequences of actions.

As has been discussed previously, action research has been criticised by many authors with criticisms focussing on a number of specific areas: the role of the researcher; the design and validity of the research, the measurement of outcomes and whether action research is, in fact, research (Greenwood and Levin, 2006). However, there is also much guidance available in the literature on how action research can be undertaken rigorously and if such guidance is attended to, such criticisms can be allayed. This is discussed in the next section.

4.7.5 Ensuring Quality in Action Research

Many of these criticisms of action research have been borne out in my exploration of the literature described in Chapter 3. Many publications fail to define or are vague in their definition of action research and the description of the methodology is unclear. Authors did not demonstrate in their publications how they addressed the quality elements of their action research work. This behoves action researchers to attend to quality and approach their inquiry with scientific rigour. Many authors have published guidance on what constitutes quality in action research. Eden and Huxham (2006) published 15 characteristics of good action research (Eden and Huxham, 1996) and Coghlan and Brannick (2010) summarised that rigor typically refers to how data are generated, gathered, explored, and evaluated, how events are questioned and interpreted through multiple action research cycles (Coghlan and Brannick, 2014). Pasmore et al (2008) suggest that AR needs to be rigorous, reflective, and relevant (Shani et al., 2007). This is also supported by other key Qualitative research texts (Flick, 2017, Flick, 2018). Bradbury and colleagues published seven quality choice points for action-oriented research for transformation (Bradbury et al., 2020) that refer to similar areas. Herr and Anderson have also offered validity criteria (outcome, process, democratic, catalytic, and dialogic) as part of an ongoing conversation amongst action researchers (Herr and Anderson, 2005). As discussed in chapter 3, the Shani and Pasmore framework provides a comprehensive framework of four factors, capturing the core of action research as well as the complex cause-and-effect dynamics within each factor and between factors. These four factors provide the most detailed criteria for ensuring quality and were considered over the course of this research.

4.7.6 Role of the Action Researcher

Insider Action Research has become well recognised as an important way of understanding and changing organisations (Coghlan, 2019). Insider action researchers research within their own organisations and they employ methods and tools that enable them to engage with and make sense of what goes on within them, as they work to deal with what goes on without. These challenges of inquiring from inside organisations have been referred to by Evered and Louis as ‘*groping in the dark*’ to explore the hidden organisational realities around them, in many directions simultaneously as a ‘*multisensory holistic immersion*’ and as ‘*messy, iterative groping*’ (Evered and Louis, 1981 p. 387). Similarly, Schön commented:

In the varied topography of professional practice there is a high ground where practitioners can make effective use of research-based theory and technique, and there is a swampy lowland where situations are confusing ‘messes’ incapable of technical solution. The difficulty is that the problems of the high ground, however great their technical interest, are often relatively unimportant to clients or to the larger society, while in the swamp are the problems of greatest interest (Schön, 1991 p. 42).

In action research, the researcher is actively involved in the carrying out of action research and from a quality perspective, their position and relation to the organisation and people involved needs to be addressed (Coghlan and Shani, 2014). According to Savin-Baden & Major (2013), positionality in research describes an individual’s world view and their chosen position in relation to a specific research task (Savin-Baden & Major, 2013). Herr and Anderson proposed a 6-point continuum of positionality as shown below (Herr and Anderson, 2014 p.31):

1. ‘*Insider*’ – A researcher studies either alone or in a group within their own practice or practice settings. Examples include autobiography and narrative research as well as self-study.
2. ‘*Insider in collaboration with other insiders*’ – A group of insiders within the setting will research together within a study group with the aim of achieving a greater impact than seen in position 1.
3. ‘*Insider(s) in collaboration with outsider(s)*’ – This is a situation where insiders invite or contract outsiders into their organisation to collaborate on research. The level of outsider involvement can vary from consultation on methodology to outsiders being included in the research project.

4. '*Reciprocal collaboration*' – Similar to position 3, outsiders work with insiders, however under this positionality power is equally displaced amongst all members. This form of working relationship is usually formed over a prolonged time period.
5. '*Outsider(s) in collaboration with insider(s)*' – Under this circumstance, an outsider will initiate a research project with insiders acting in a participating role rather than actively carrying out research.
6. '*Outsider*' – This extremity of the scale represents the traditional research methodology of quantitative or qualitative research where research is merely an investigation into an organisation.

This continuum shows how a researcher can adopt many positions whilst carrying out action research and although all positions allow successful research, it is important for the researcher to identify their position in the project contributing to the validity of research (Reason, 2006). As an insider in collaboration with other insiders, I was to be actively participating in the research placing me at point 2 on the continuum. An important part of a co-operative inquiry, however, is the group agreeing to the researcher's position and my positionality was agreed at the first session. It is acknowledged that during action research, positionality may change.

4.7.7 Participants

All medical consultants with substantive positions at the NRH were invited to participate. These colleagues are all specialists in Rehabilitation medicine, a relatively young specialty that is focused on the management of complex disability.

4.7.8 Method of Inquiry

A systemic design-based framework consisting of seven phases was developed shown in Figure 37. Phase 5 (Data generation) occurred in parallel with the other phases. This included the four key features described by Shani and Pasmore: Context, inquiry mechanism (structures, processes, procedures, rules, tools, methods, and physical configurations), inquiry cycles (four main phases of diagnosing, planning action, taking action, and evaluating action) and outcomes (the actionable knowledge created).

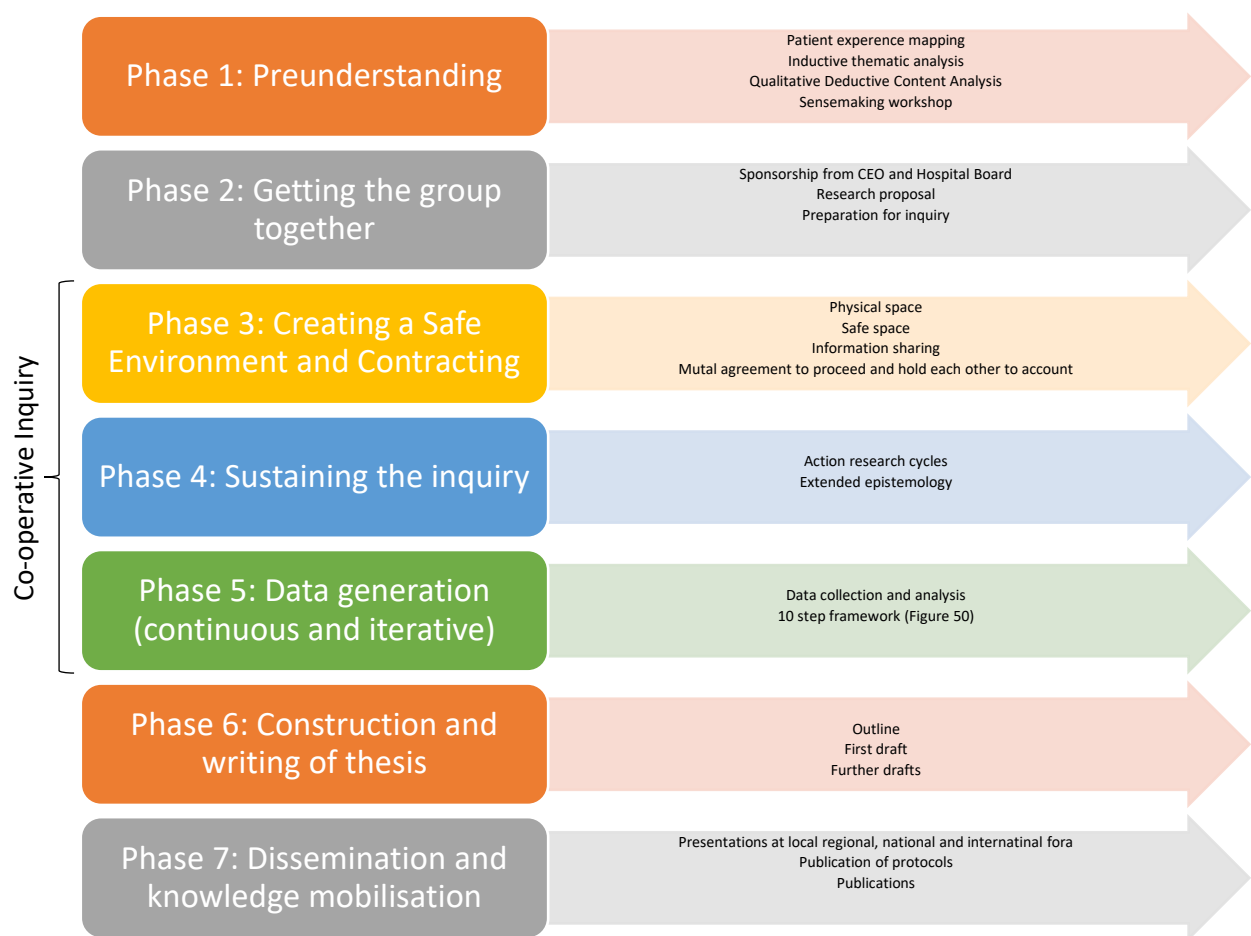


Figure 37: Phases of the Research Process and Methods¹

To recap on the action research cycle, each cycle comprises 5 steps as shown in Figure 38; a pre-step (here described as preunderstanding), and four basic steps, constructing, planning action, taking action, and evaluating action. A more detailed description of each step is provided earlier in this chapter.

¹ According to Coghlan (2019) 'acts which are intended to gather data are themselves interventions' (Coghlan, 2019 p. 134) and therefore it is more appropriate to refer to data generation rather than data gathering/collection.

Preunderstanding (context and purpose)

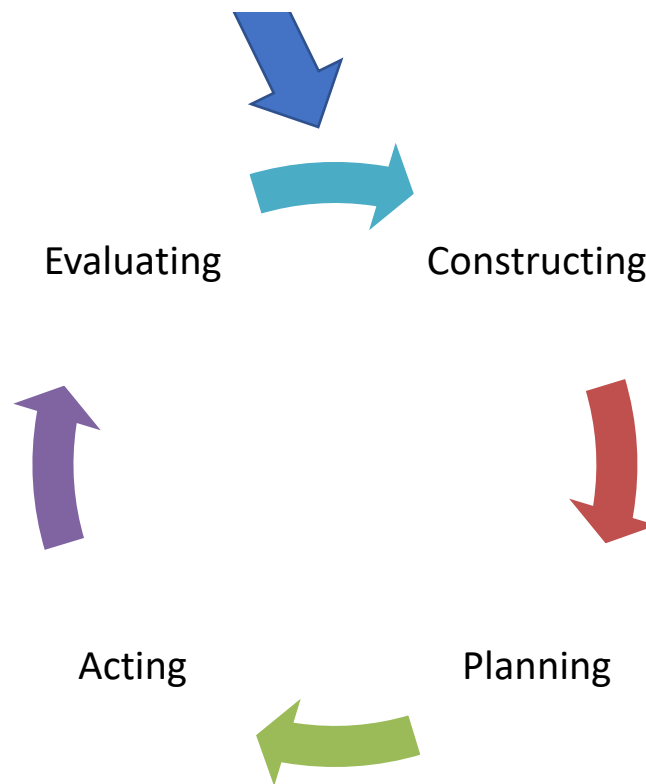


Figure 38: The Action Research Cycle

4.7.8.1 Phase 1: Preunderstanding

According to Gummesson preunderstanding is ‘people’s knowledge, insights and experience before they engage in a research programme’ (Gummesson, 2000 p. 57). There are two types of preunderstanding; firsthand, which is acquired through personal experience and secondhand, which is collected through intermediaries, such as lectures, literature and other media. In addition to its application to the theoretical understanding of organisational dynamics (secondhand preunderstanding), it also applies to the lived experience of the organisation, and this can include both explicit and tacit knowledge (firsthand preunderstanding). Personal experience and knowledge of their own system and job are a distinctive preunderstanding for insider action researchers. Similar to Gummesson’s secondhand preunderstanding, Coghlan identifies parallel activities for an action research thesis which consists of engagement with relevant literature (Coghlan, 2019). For the purpose

of this thesis, this requirement has been met through the generation of the two scoping reviews demonstrated in the literature reviews detailed in Chapter 3.

As detailed by Coghlan, insider action researchers are required to build on the familiarity they have with the setting they are researching whilst, at the same time maintain a distance from it to allow a criticality and to enable change to happen (Coghlan and Holian, 2021). Because insider researchers are immersed in their organisational culture, it may be that there is much they are unable to see, and it may be challenging to step back to assess the organisation critically. An insider action researcher's perspective may be restricted as their experience may be confined to one functional area of the system and are therefore lacking in understanding of other areas. It may also be the case that their professional discipline may give them close affiliation with one occupational community however, they may lack an understanding of other disciplines within the organisation. As Coghlan advises, insider action researchers must familiarize themselves with their own feelings as an organisational member and explore where their feelings of good will are directed, where their feelings of frustration are directed et cetera (Coghlan and Holian, 2021). As Coghlan states the core function of the preunderstanding activities:

...is the development of a spirit of inquiry in familiar situations where things are likely to be taken-for-granted and skills required are those of introspection whereby the insider researcher's own assumptions are exposed to questioning and self-awareness and reflection skills are built. In short, preunderstanding for insider action researchers involves building on closeness and achieving distance, (Coghlan and Holian, 2021 p. 14).

Although I had been an insider (Consultant in Rehabilitation Medicine) for 7 years, I had been working outside the organisation for nearly 8 years in a number of national leadership roles. When the research began, I had only recently returned to the National Rehabilitation University Hospital. I was aware that many changes had unfolded during my time away. I was mindful that I had changed, and that my explicit and tacit knowledge of the organisation was outdated. I was also conscious that the organisation had also changed over the time I had been absent, and I recognized the need to gain a more contemporary view and also gain better insights into the current lived experience of colleagues. As Coghlan describes I needed to get closer to the data (Coghlan, 2007a).

In order to create the conditions from which the co-operative inquiry could emerge, a number of preliminary steps were taken which address the first 2 factors in Shani and Pasmore's

complete theory of the action research process (Shani and Pasmore, 1982); contextual factors and quality of relationships.

- 1) Gaining an understanding of participants 'preunderstanding' i.e., participants knowledge, insights, and experience before they become part of the co-operative inquiry. Reflecting on the guidance provided by Coghlan and summarised above, I considered carefully what sources of data I could select to provide me with an assessment of the organisation prior to the commencement of the inquiry and also meet the quality requirements as per Shani and Pasmore's framework. In order to gauge patient experience of hospital services, I needed to understand how patient experience was being collected and used and interpret the data to assess if there were any strengths or weaknesses that could be identified and used to inform changes in practice. In addition, using qualitative research methods, individual factors were assessed with 1:1 semi-structured interviews with Consultant colleagues which were audio recorded and transcribed verbatim. Inductive thematic analysis was then performed, and the results presented and discussed in a workshop involving Consultant colleagues.
- 2) Organisational characteristics and environmental factors were assessed by reviewing the history of the organisation (detailed in chapter 2), hospital strategies and annual reports. Minutes of hospital executive and hospital and medical board meetings were identified as important sources of decision-making data, and these were reviewed and analysed using qualitative deductive content analysis (described in detail on page 172). In addition, secondary analysis of patient experience data was also performed.
- 3) As recommended by Zuber-Skerrit et al (2002), sanction and sponsorship for the action research was sought from NRH Chief Executive Officer (CEO) and the Hospital Board, and support obtained for the project from the Human Resources (HR) department as they have responsibility for implementation of the HSE people strategy which includes professional development (as detailed in chapter 2). In addition, identification and buy-in from key influencers was sought as the importance of informal networks was recognised.
- 4) A facilitated workshop was then held to share the results of the inductive thematic analysis and to discuss the outputs from the other activities for further discussion and exchanges of experiences and sense making and to agree next steps (the co-operative inquiry).

4.7.8.2 Phase 2: Getting the Group Together

As an organisation, the NRH is traditionally very hierarchal dating back to the time when it was a religious institution, so I knew from my prior experience and knowledge that getting sponsorship from the CEO and also the Hospital Board was important.

My reasons for this were twofold; firstly, to get buy-in for the project as being important for the organisation, and therefore more than '*Áine's DBA Research Project*' but also because they would be a key part of the 3rd person inquiry. The hospital has a Project Approval and Review committee through which all projects must be considered. I drafted an outline proposal making the case for action research being an appropriate research approach and met with the CEO formally to request endorsement and sponsorship. The CEO sanctioned the project in principle which was useful when I was doing my preunderstanding work as I was able to say this was a CEO approved project and also it allowed me to gain access to the meeting minutes data. I met medical colleagues informally for coffee and discussed the project and also took every opportunity to mention the project at every meeting I attended. These meetings helped me consider aspects I hadn't considered before, such as - do we include sessional consultants? How will I manage gender balance when the consultant workforce is predominantly female? Also, it became apparent in my interactions with HR, that HR were concerned about where this project would sit in relation to other '*people projects*' in the hospital so I was able to clarify that and reassure project leads that this would not interfere and might compliment that work. Interestingly this process generated interest in other groups initiating their own inquiries. What was also interesting was that so much information was available through informal channels.

I was very conscious of not being seen to be potentially undermining the clinical leadership structure in the hospital so I spent time with the Clinical Director formally and informally to ensure they were supportive of the endeavour but also that they would be a willing participant. I presented myself to them as a supporter, ally, and a challenger of the status quo. On reflection, the fact that I had held senior leadership roles within the organisation and at national level helped give me credibility and as it turned out later, colleagues knew my track record of collaboration and success and they trusted me. Although these activities coupled

with the pre-step activities were very time consuming, they provided a firm foundation upon which to build the inquiry.

I followed the internal procedures for submitting a Research Proposal to the NRH which, as well as successfully obtaining ethics approval, was also a mechanism for discussing the project and getting feedback at the different sign off fora, the academic steering group, and the ethics committee.

In partnership with the CEO and Clinical Director, Consultant colleagues were invited to participate, verbally and by e-mailed letter. Information about action research and co-operative inquiry (*Laypersons guide to co-operative inquiry*) was circulated (Reason and Heron, 1999) [Appendix J]. Although described as a method where two or more people come together, Reason has indicated in his writing that the ideal group size is between six and twelve (Reason, 1999). Based on Reason's experience on co-operative inquiry groups, he indicated that he felt that numbers below six resulted in a reduction in the variety of experiences and groups above twelve need more time and particular care to develop a collaborative ethos. Wishing to involve as many colleagues as possible, I then arranged one to one briefings for potential participants if required. Then, when a date was agreed, the initiation meeting was held.

I spent a long time researching the initiation of inquiry groups and deciding what I thought would work and identifying what wouldn't (McArdle, 2002). Although we had established a firm platform upon which to build through the preunderstanding activities, I knew the importance of the first session in the success or failure of an action research venture (Wicks and Reason, 2009).

I had read with interest Geoff Mead's account of his action inquiry where he started his group session with the story of jumping mouse (Mead, 2002).²

I tested using the story in 3 ways:

- Recounting the story aloud from memory.
- Reading the story supported with PowerPoint slides.
- Using a You-tube video of Tim Macartney-Snape a mountaineer and author telling the story (Balerdi, 2012).

² Jumping mouse is a Native American Legend about a small mouse who goes on a journey of self-discovery and transformation. He meets and befriends other creatures who assist him as he discovers his strengths and his spirit. In the end, he is transformed into a magnificent soaring eagle.

I probed these approaches with a consultant colleague, and they questioned the relevance of the story for our work and setting and I therefore decided against using that approach.

I made a conscious decision to be open and honest with colleagues and to '*lay myself bare before them*' and decided that I would start the session with a presentation describing my personal journey to this research project and inviting colleagues to share the journey with me. In this way, I hoped that colleagues would be curious, empathetic and would feel safe about sharing as I was prepared to open myself to them.

I also chose a video of David Coghlan explaining what action research is (Sage, 2019). I felt that a blend of approaches, audio and visual would be more engaging and interesting. I also thought that David explained a complex area very clearly and succinctly – something I struggled to do at that time. When I reflected on how I felt prior to commencement, I was concerned about ridicule and rejection, but I felt it was '*worth taking the risk*'.

4.7.8.3 Phase 3: Creating a Safe Environment and Contracting

A safe communicative space is one where participants feel comfortable to share freely, listen, talk, and dialogue (Bevan, 2013). These spaces are conceptual and physical (Bevan, 2013) and create a discursive arena in which people's voices can be heard (Habermas, 1984). Such a space has similar connotations with the concept of psychological safety. Although a number of definitions of psychological safety have been proposed, most studies cite Amy Edmondson and define it as a shared belief amongst individuals as to whether it is safe to engage in interpersonal risk-taking in the workplace (Edmondson, 1999). As Edmondson indicates, where there is psychological safety, staff feel that they will not be rejected by their colleagues for being themselves or saying what they think that each other's competences are respected, that there is interest in each other as people, that colleagues have positive intentions towards one another, are able to engage in constructive tension, and feel that it is safe to experiment and take risks (Edmondson, 1999). From a behavioural point of view, psychological safety enables staff to engage in interpersonally risky behaviors such as: open communication, airing concerns, and seeking constructive feedback (Pearsall and Ellis, 2011). The presence of psychological safety has been shown to impact on a range of workplace outcomes including learning and performance. (Edmondson and Lei, 2014). Although they may initially appear similar, psychological safety is not the same as trust. It is conceptually different as it has a

focus on how members of a group perceive a group norm, whilst trust focuses on how one individual views another.

In considering the development of this communicative space and safe space, I carefully contemplated the timing of meetings and also the physical space. In order to facilitate the participation of as many colleagues as possible I used a doodle poll to find the most suitable day and time. Finding a mutually agreeable time slot for a group event is challenging and is an example of the key features of group decision-making. Web-based Doodle polls, where respondents indicate their availability for a variety of dates and times provided by the poll author, are an increasingly common way of selecting a time for an event or meeting.

I also made a decision to hold the meetings on the hospital campus rather than in a remote location. Although being off site might have allowed participants to participate without interruption, I also knew this had the potential to reduce the number of participants. Careful consideration was given to the choice of each meeting venue with attention given to space, light, view, and comfortable furniture arranged so that everyone could see each other around the table to facilitate communication and participation. Comfort for participants was also afforded attention and for each meeting I arranged for refreshments to be available and checked room temperature before each meeting. Flipboards, pens and diaries were also provided.

A 'safe' environment was created where participants felt psychologically secure, so they felt able to share their (our) experiences and agree the inquiry agenda and establish the process of the group. Confidentiality was collectively assured at the commencement of each meeting as a standing agenda item, and any recordings or notes were transcribed and anonymised with a participant code assigned to each participant to which only I had the key. Each participant was provided with a participant information leaflet, a copy of the laypersons guide to co-operative inquiry (Reason and Heron, 1999) [Appendix J] and each participant signed a consent to participate form [Appendix K]. These signed forms were then scanned (with the paper copies kept in a locked cabinet until the end of the project) and kept in an encrypted computer in a password protected computer folder to which only I have access. Only information that was agreed to be shared by co-researchers was shared and co-researchers received and reviewed drafts and agreed with and consented to the distribution of any knowledge mobilisation material in advance.

4.7.8.4 Phase 4: Sustaining the Inquiry (Cycles of Inquiry)

The action research cycles unfolded in real time. The stages of Reason and Heron's method as they correspond to the steps described by Coghlan are shown in Figure 39.

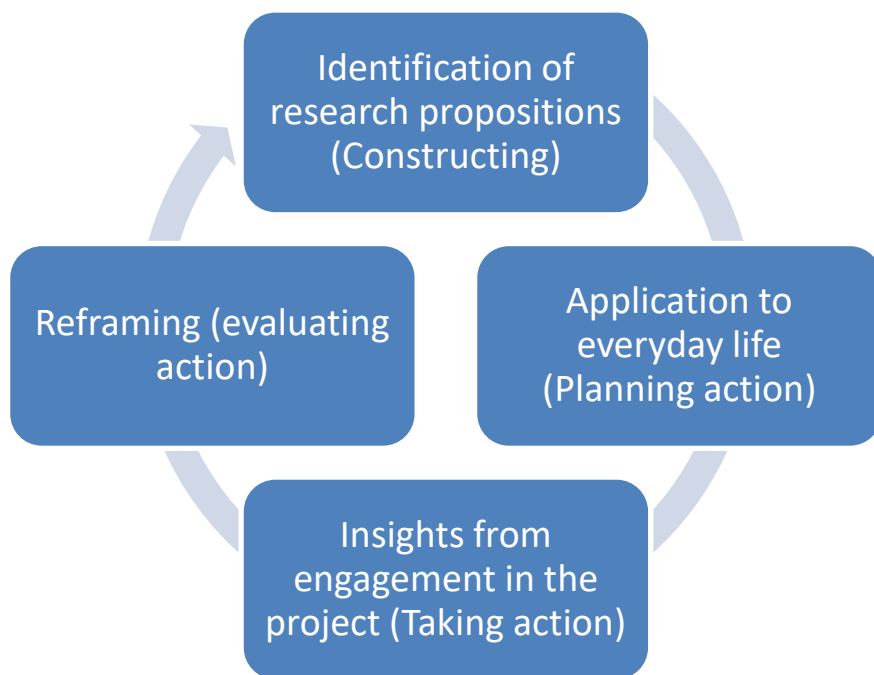


Figure 39: Phases/steps of the Co-operative Inquiry

Participants/co-researchers agreed individual inquiry questions and actions and how they planned to collect data (journal/video/diary/other). There was also agreement on how frequently the meetings would be held and what form the meetings will take (virtual/face to face/mixed). Agreement was reached on how the project would conclude (e.g., workshop at the end). While the inquiry group decided together what changes were appropriate in the project, Kemmis & McTaggart (1988) suggest that changes should be made across three categories (Kemmis et al., 2013):

- i. Language and discourse (what are said in the situation)
- ii. Activities and practices (what is done in the situation)

- iii. Social relationships and organisation (who says and does what to whom)

4.7.8.5 Ethical Issues

According to Yoak and Brydon-Miller, ethics may be defined as:

'a practical science focused on how we put values into action. It is the study of ethical relationships we have with human beings, sentient creatures, and the physical world in which we live. It is the study of what we value in these relationships and the decisions we make based on those values' (Yoak and Brydon-Miller, 2014 Pg 306).

Concerns have been raised about traditional informed consent processes in action research and complexity studies as with the unfolding of the research, unexpected things will happen (Boser, 2006, Cilliers and Preiser, 2016, Brydon-Miller, 2009, Brydon-Miller and Greenwood, 2006). Action research and complexity studies recognise the unpredictable nature of human systems and therefore as Boser notes *'participants cannot give informed consent to research activities in advance, because the full scope of the process of the research is not determined in advance by one individual'* (Boser, 2006 p. 12). Cilliers proposed a *'provisional imperative'* when considering the ethics of complexity and recommended being open about all decisions and actions (Woermann and Cilliers, 2012 p. 447).

The scientific literature has identified seven requirements as the basis for evaluating the ethics of a research project which are discussed below (Emanuel et al., 2000). These requirements also incorporate other ethical approaches, including covenantal, feminist, communitarian, and virtue ethics (Brydon-Miller et al., 2015). I will discuss how I will address each requirement.

1. Value of the study:
This research is novel, of value and worth doing. It has the potential to improve individual and team performance and hence improve patient experience and staff morale and job satisfaction.
2. Scientific validity:
Action Research is a proven methodology in healthcare and in the study of complexity and has the real potential to influence change through collaboration.
3. Fair participant selection:

It was made clear that collaboration and participation is voluntary, participants' autonomy shall be protected, and they are free to withdraw at any time without consequence. Relevant participants will also be selected i.e., permanent Consultant staff.

4. Favourable risk-benefit ratio:

The researcher made every effort, based on the available scientific literature to minimize possible risks, and maximize possible benefit. (Gelling and Munn-Giddings, 2011)

5. Respect for enrolled participants:

As a co-operative inquiry, this inquiry is entered into as a democratic and collaborative endeavour that has mutual respect for participants and co-researchers. Because this project looks at work processes there is potential for some participants to feel overly scrutinized. Also, there is potential for other members of hospital team, those not included in this research project, to feel vulnerable or threatened. They may feel excluded from the project but may be affected by the changes that occur as a result of the project. At the commencement of the project, there is a clear understanding that the findings will be disseminated, and the inquiry is undertaken in the spirit of first second- and third-person inquiry and that we participate on that basis.

6. Informed consent:

Information regarding purpose of this research, the background, the procedures, potential risks, and benefits were provided to all potential participants so that they understood the information and so that they could make a voluntary decision whether to enrol and continue to participate. It was explained in the first session that a co-operative inquiry develops organically, and that the outcome is not guaranteed and that participants may withdraw at any time. This was reiterated at subsequent meetings. Any changes in the flow of the inquiry were identified immediately to participants and discussed openly and transparently.

7. Authorship and ownership:

In Action Research and co-operative inquiry, everyone is a co-researcher and without participants progress cannot be made. It was discussed that the participants will be mentioned in all acknowledgements, but they will not be co-authors on papers.

During phase seven of the project, dissemination of findings, all participants would remain anonymous. In his 2004 paper, *Ecology and ethics in participatory collaborative action research*, Collins outlines four areas that must be addressed to ensure the project is ethical: collaboration, authentic participation, power, and language (Collins, 2004). As a researcher, I chose both the inquiry (CI) and data analysis (abductive triangulation) method to address these issues.

Quality was assured by the application of a systematic method and orderliness (Eden and Huxham, 1996) in reflecting on the outcomes of each cycle and the design of subsequent cycles and observing Shani and Pasmore's complete theory of action research.

This research followed the ethical procedures of the University of Reading.

4.7.8.6 Phase 5: Data Generation (Collection and Analysis)

Qualitative research approaches typically involve three forms of data collection: observation, interviews, and artifacts (Saunders et al., 2009, Marshall and Rossman, 2014). This research is consistent with these recommendations. According to Coghlan (2019) '*acts which are intended to gather data are themselves interventions*' (Coghlan, 2019 p. 134) and therefore it is more appropriate to refer to data generation rather than data gathering/collection.

For the purposes of this research, data are considered to be any form of information, observations, or facts that are collected or recorded. As Eden and Huxham (1996) point out, the process of exploration of the data, rather than collection, must demonstrate a high degree of method and orderliness in reflecting about and holding onto the emerging research content of each episode and the process whereby issues are planned and implemented (Eden and Huxham, 1996). Coghlan makes the point that an action research inquiry not only collects data but also generates learning data, so he contends that it is more correct to use the term data generation.

Although each phase of this study was interlinked, there were three discrete periods of data collection. These are summarised in Table 10.

Period 1: Patient experience data, semi structured interviews, and meeting minutes.

Period 2: Planning and Taking action: Co-operative inquiry group meetings, emails and other forms of written information and recording personal reflections.

Period 3: Evaluating: Co-operative inquiry group meetings. In addition, a meta-cycle of learning, or reflection on reflection, was performed (Coghlan, 2019) reflecting on content, process and premise as described by Mezirow (Mezirow, 1991).

Data Sources

The data collection period, research questions, sources of data and the method of analysis and reasoning are summarised in Table 10.

Observational data included the recordings of the sessions as well as the researcher's reflective diary and recordings and field notes. The recordings were used to analyse content and process with regard to participation and contribution, critical reflection, and dialogue. The researcher's reflective diary and audio recordings were used to capture my own reflections and observations.

Period	Research question	Data source	Analysis methods	Reasoning
a) Preunderstanding	What matters to patients?	Patient experience data	Secondary thematic analysis	Deductive (Using the Reader coding (Reader et al., 2014))
	How do consultants feel the medical board is functioning?	Semi-structured interviews	Inductive thematic analysis	Inductive
	How is leadership, complexity and teamwork being reflected in senior management meetings?	Meeting minutes	Qualitative deductive content analysis	Deductive (Using a bespoke <i>a priori</i> framework)
		Workshop post-its	Affinity diagram	Abductive
b) Co-operative inquiry	How can we as medical leaders	Short Message Service Texts	Thematic analysis	
	within the NRH facilitate transition	Participant journals	Thematic analysis	

Period	Research question	Data source	Analysis methods	Reasoning
	to the new hospital and effectively	E-mail communication	Thematic analysis	Abductive
	manage staff and patient	Reflection sheets	Thematic analysis	
	experience?	WhatsApp messages	Thematic analysis	
	How do we develop the	Questionnaires	Thematic analysis	
	leadership skills to do this?	Researcher field notes of presentations to senior management	Thematic analysis	Inductive
c) Meta-cycle of learning	Is co-operative inquiry an effective vehicle for	Audio recording transcripts	Inductive thematic analysis	Inductive
	supporting leadership and	Researcher audio	Thematic analysis	
	learning in a complex adaptive system?	Researcher journal	Thematic analysis	
		Researcher field notes	Thematic analysis	

Table 10: Summary Data Table

Data Collection Period 1: Preunderstanding

Mapping of Patient Experience

The Patient Services and Corporate Data Manager and the Programme Managers were e-mailed and invited to provide insights into how the organisation and each programme collected patient experience data. The Patient and Corporate Services Manager and the programme managers were identified as key stakeholders for understanding patient experience in the hospital.

The Patient and Corporate Services Manager is a key management post in the hospital with responsibility for service user involvement, ensuring that service user involvement is at the core of the organisation's functions with continuous improvement initiatives. The Patient and Corporate Services Manager represents the needs of stakeholder groups across the hospital and coordinates the varying stakeholder interventions hospital wide and reporting on same. They establish appropriate standards and key performance indicators, while providing high quality information and statistics on hospital wide performance and make recommendations to enable the NRH to develop strategies to improve the performance of service delivery to relevant stakeholders while complying with relevant legislation.

Programme Managers (n=4) are key leadership functions within the NRH. They are responsible for the day-to-day management of each Clinical Programme. They work collaboratively with the Interdisciplinary Teams in the programmes to drive continuous improvement and quality initiatives as part of the provision of a high-quality clinical service for patients, service users and stakeholders.

The main duties and responsibilities of the Programme Managers include: a close co-operative working relationship with the Medical Director to facilitate the effective, efficient and safe delivery of services; develop, monitor and evaluate programme specific policies and procedures; develop, monitor and report programme specific activity, quality, outcome and performance indicators /targets; plan and initiate various programme specific service developments and enhancements; develop and monitor programme specific budgets with the assistance of the Financial Controller and other relevant service managers; assume programmatic line manager duties and responsibilities for the administrative staff assigned to the programme; ensure compliance of the programme with relevant accreditation standards,

HSE standards, Health & Safety and other quality control guidelines and regulations and liaise and work with all stakeholders including other Programme Managers and Heads of Services, all NRH staff, committees, service users, and the general public and external agencies.

I had positive responses from all recipients with a comprehensive detailing of patient experience collection methods. Once these methods had been mapped, I then gained access to the data collated for 2019.

A retrospective analysis of the comments and suggestions data for 2019 data was performed and analysed against the patient complaints coding taxonomy developed by Reader et al (2014). Throughout the coding process, the researcher remained attentive to any complaint issues not included in the taxonomy (see section 5.1.1 for results).

Semi-structured Interviews

Semi-structured interviews, the most common of all qualitative research methods (Alvesson and Deetz, 2000) were used as method. An interview guide, according to the guidance in Kvale et al (2009) was developed by the researcher de novo to explore interviewees' experience of the functioning of the medical board (Appendix I). Probes were used to explore participants experiences of the medical board, such as 'How do you feel the Medical Board is functioning currently?', 'What do you think is working well?', 'What do you feel isn't working well?', 'Do you have any suggestions to make things better?', 'How do you feel about the move to the new hospital?' 'How might any concerns be addressed?' and 'Any other thoughts?'. Participants were encouraged to speak freely and were given the time and safe space to do so. The number of interviews conducted (sample size) was determined using the principle of data saturation with a minimum of twelve as recommended by Guest et al (Guest et al., 2006). A group and individual e-mail invitation to participate in one-to-one interviews was issued to the whole medical board.

Prior to the scheduled interviews, I shared the interview guide (called 'thought prompts' to be less intimidating), the outputs from two previous away days (2016 and 2018), the hospital constitution and the terms of reference of the medical board as contained in the constitution. I advised colleagues that the key themes that would emerge from thematic analysis of the

interviews would be shared on an away day to be arranged subsequently. I also informed colleagues that I had done a quick literature scan to see if there was any literature on clinical leadership and hospital moves but whilst there were some papers and reports about amalgamations, they essentially concluded that clinician engagement is important. The participants chose the time and dates for the interviews, and I was flexible and available at the time and place that suited each one.

Data were collected through face-to-face interviews using the semi-structured guide (Appendix I). The interviews lasted 45-60 minutes. The interviews were audio recorded and transcribed verbatim. I tested the interview guide with the first interviewee to ensure the research question was being answered and also to make sure the questions made sense to the participant. No amendments were required to be made following the test. Over the course of each interview, I observed the three principles described by Schensul et al for ensuring the quality of the interviews; I maintained the flow of the interviewee's story, maintained a positive relationship with the interviewee; and avoided interviewer bias (Schensul et al., 1999).

The data was analysed manually, and an inductive approach was utilized with data coding undertaken without a pre-determined coding frame which allowed the process to be driven by the actual data collected rather than any analytic preconceptions. See section 5.1.2 for results.

Meeting Minutes

The culture of a healthcare organisation can be explored and analysed in many ways and the literature has differentiated cultures by internal or external orientation and stability versus adaptability (Denison and Mishra, 1995) or by the competing values framework which is based on those differences (Yu and Wu, 2009). It is also recognized that the content (substantive norms stipulating objectives and tasks) of organisational culture is relevant too (Watkins et al., 2008, Ouchi and Wilkins, 1985) and analysis of minutes is a recognized method in this regard (Ouchi and Wilkins, 1985). As part of my preunderstanding, I wanted to get a sense of how the senior decision-making authorities in the organisation were supporting clinical leadership in the lead up to the hospital move. I did this by looking at the degree of focus on supporting leadership that was reflected in the textual data of Hospital Board and Executive management

committee meeting minutes. The minutes of these meetings are discussion minutes and therefore contain quite rich information. See section 5.1.3 for results.

Workshop Affinity Diagram

Originally developed by the Japanese anthropologist Jim Kawakita (1991), an Affinity diagram (also referred to as thematic analysis or the K-J method), is a popular brainstorming method for groups to visualize and organise their ideas together. Following on from my training as a Quality Improvement Advisor, it is part of my toolkit and a method I use frequently. This method is based on Peirce's concept of abductive reasoning (Peirce, 1997) and relies upon intuitive non-linear non-logical thinking processes. The original K-J method included four different aspects: 1) a problem-solving model (the so-called W model); 2) qualitative data formulation and analysis (the K-J method, etc.); 3) a new type of field research concept and method; 4) teamwork concepts for creativity. K-J methodology was often used to supplement a more generalized model of problem-solving referred to as the 'W- shaped Problem-Solving Model' developed by K Groups. The actual application of the K-J method involves four key steps 1) label making, 2) label grouping, 3) chart- making, 4) written or verbal explanation and is well described in Scupin's 1997 paper. In step one, the label making step, information based upon observations relevant to the problem is written on a note card or self-adhesive label. Each note card or label contains only one thought or concept related to the problem in question. Step two involves randomizing the concepts or thoughts from step one by shuffling the cards or labels and then grouping the labels into 'teams.' Kawakita emphasizes a non-linear- non-logical method in this phase of the method and advises that biases must not motivate one's choices, but 'feelings' should dominate logic in grouping these labels together in teams. This process is repeated many times and similar teams are subsequently used to order the data into larger groups or 'families.' This intuitive process can be repeated until there are fewer than ten 'families'.

The third step, chart making, involves the creation of a spatial model of the 'families' into a chart which reflects patterns identified within the original labels. The chart should have arrows to indicate cause and effect, order of occurrence, interdependence, connection, or contradictions. Finally, the chart should be explained both verbally and in writing.

The final step is explanation and this step attempts to reduce the complexity of observable data into a more manageable form. In this step, new ideas often emerge about the problem. The explanation should express the interrelationships between the elements on the chart. In our workshop we used Post-its and whiteboards as our brainstorming tools and we moved through the four steps: 1) label making, 2) label grouping, 3) chart making and 4) written or verbal explanation (Scupin, 1997). See section 5.1.4 for results.

Data Collection Period 2: Co-operative Inquiry Sessions

Process-Folio Approach

A portfolio is a collection of work that illustrates efforts, progress, and achievement over time. It usually demonstrates participation and explanation in selecting contents, the criteria for selection, the criteria for judging merit, and evidence of self-reflection (Stiggins, 1994). This approach has also been used in action research to demonstrate data collection, analysis, and reflective practice (Smith, 2017).

A ten-step data collection and analysis procedure were followed for the co-operative inquiry cycles which are now detailed and are shown in Figure 40.



Figure 40: The Ten-Step Data Collection And Analysis Procedure

Step 1: Researcher's Action Research Cycles

Based on Coghlan's 4 steps of the action research cycle (Figure 41) a template was developed to help co-researchers understand the action research process and also acted as a basis for reflection and a reminder of the process.

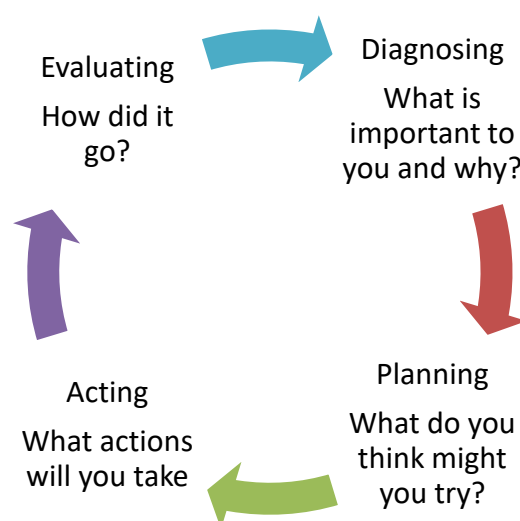


Figure 41: Coghlan's 4 steps of the Action Research Cycle

Step 2: Session Agendas

In advance of each of the six sessions I prepared a session agenda. This agenda was shared with colleagues by e-mail several days before each session. These agendas served a dual function, to help me plan for each session, and also to prepare colleagues for the sessions so they would be prepared to present their reflections on actions. I also sent personal e-mails and texts to participants to remind them of their actions and to inquire of them how they would like to feedback so I could have the necessary equipment prepared. The agendas were also very useful in keeping a structure to the sessions, and also keeping them to time. After the first few sessions, we became less dependent on the agendas as we had got into a rhythm of inquiry.

The agendas represented the sessions as planned and the logic models captured the sessions as they actually transpired.

Step 3: Facilitation Guides

In advance of each session, I prepared a facilitation guide which consisted of a detailed plan of the sessions and learning activities. As the sessions progressed, I realised that the guides were too rigid, and I relied less on the guides after session 3 but I still found the structure of the guide helpful to get through all the material and leave time for discussion and reflection.

Step 4: Researcher's Checklist

In readiness for each session, I prepared a checklist to ensure I had completed all the logistical steps in advance of each session. Each checklist followed a similar format of activities to be completed before, during and after each session. These proved to be essential to ensure that the sessions went smoothly and also that there was information flow between sessions.

An exemplar checklist is shown in Table 11:

Timing	Task	Completed
2 weeks before planned session	Doodle poll	
	Confirm date	
	Book room	
	Book tea coffee/refreshments	
	Arrange virtual attendance	
	Send invite	
Week before session	Agenda	
	e-mail and text reminder	
	Questionnaire	
	Reflection sheets	
	Presentation	
Day of session	Prepare room	
	Check audio-visual equipment	
After session	Collect feedback sheets	
	Analyse feedback	

Timing	Task	Completed
	Record immediate reflections	
	Thank you e-mail	
	Thank you, WhatsApp,	
	Individual messages to say thank you	
Day after	E-mail session summary	
	Transcribe recordings	
	Thematic analysis	
	Triangulate data	
	Prepare action research cycle for next session	
	Prepare agenda and material for next session	

Table 11: Exemplar Checklist

Step 5: Participant Responses and Transcripts

With consent, each session was audio recorded with a Sony Digital Voice Recorder³. When COVID-19 restrictions meant we could not have face to face meetings, and required videoconferencing, video recordings were made of each session. Each session, audio or video recorded, was transcribed manually and verbatim. The recordings and transcriptions were stored in NVivo, but this was only used as a storage facility and not for analysis. NVivo is a commonly used software program that is used for qualitative and mixed-methods research. Specifically, it is used for the analysis of unstructured text, audio, video, and image data, including (but not limited to) interviews, focus groups, surveys, social media, and journal articles. It is produced by QSR International. Training in NVivo was booked but was cancelled due to COVID19. I attempted to self-teach but I was dissatisfied with the analytic results and therefore did all analysis by hand.

Each session was listened to multiple times together with the transcripts to help the researcher get familiarised with the data. The audio/video recordings revealed data about contribution, tone of voice and level of participation.

³. This device was recommended by qualitative researcher colleagues. It is very compact and portable and has 16GB of built-in memory. It is very unobtrusive and goes from 'off' to 'record' mode with just one touch. It can even be controlled from across the room with the supplied remote control.

Reflexive Inductive thematic analysis was performed on the transcriptions of the sessions.

Step 6: Participants' Reflections

At the conclusion of each session, I provided a paper or e-copy of the feedback sheet for each participant to complete. Initially I e-mailed the form to all participants, but the return rate was so poor, that for subsequent sessions, I provided hard copies and encouraged colleagues to complete them there and then. The form is shown in Figure 42.

Understandings confirmed for me today.	Topics I am interested in exploring further.
Activities which helped me today	Suggestions, requests, ideas for next session

Figure 42: Sample Feedback Form

Step 7: Researcher's Reflections

After each session, I recorded an audio memo to capture my immediate reflections on the session including structure process and outcome. These reflections were analysed, and initial themes identified and triangulated with the other data sources to produce initial preliminary themes to identify meaning from the content to inform the next session (Brown et al., 2008, Beebe, 2001).

Step 8: Logic Models

According to James et al, logic models are graphical organisational tools to capture experience in a systematic manner (James et al., 2008). They help the researcher focus on their purpose and find relevant literature necessary to solidify their diagnosis of the problem as they progress through each cycle. This also contributed to the abductive reasoning (Timmermans and Tavory, 2012). Sharing research among co-researchers in a community of inquiry has been shown to stimulate the articulation and refinement of theoretical constructs. Abductive analysis lay the groundwork for further analysis.

An exemplar template logic model is shown in Table 12.

Questions to be addressed	What have others done?	Variables to be measured	Local measurements	Form of analysis

Table 12: Exemplar Template Logic Model

Step 9: Session Summaries

After each session and within 24 hours of the conclusion of that session, I prepared and circulated a session summary. This allowed me to consolidate and synthesise the content and analysis on an ongoing basis and also to receive feedback from participants on my interpretations of the data. The session summaries also served as a reminder for colleagues of their agreed actions and the timescale we had agreed and also when we would have the next session.

Step 10: Cumulative Themes

At the end of each session, I shared with colleagues the themes which I felt had been generated during the session and colleagues either validated or gave critical feedback on the suggested themes. After reflection overnight and after analysing the feedback sheets and my

own recorded reflections, I revised the preliminary themes and added them as part of the session summary. Again, I invited feedback on my interpretation.

Then at the start of each face-to-face session, I did a brief overview of the preceding session and the themes which had been generated through the process indicated above, to seek additional reflections, interpretations and validation.

Questionnaires

A questionnaire is a method of data collection which is completed by the respondent in written form. Questionnaires can be used on their own as the only research instrument or in association with other research tools (Boynton and Greenhalgh, 2004). The following validated questionnaires and survey tools were used to generate data to prompt discussion at the sessions rather than for data analysis per se.

The Workforce Dynamics Questionnaire (WDQ)

The WDQ is a validated, 58 item, Likert scale questionnaire, which is self-completed by staff members. It explores 11 domains: management; team working; training and skills development; access to support and equipment; autonomy; role perception; satisfaction, integration with team members; and role confidence. The WDQ explores closeness of working and role overlap of the staff member to provide an 'interdisciplinary' score. It was developed and validated in the context of older peoples' services (Nancarrow et al., 2006). The dimensions and descriptions of each of the scales is provided in Table 13.

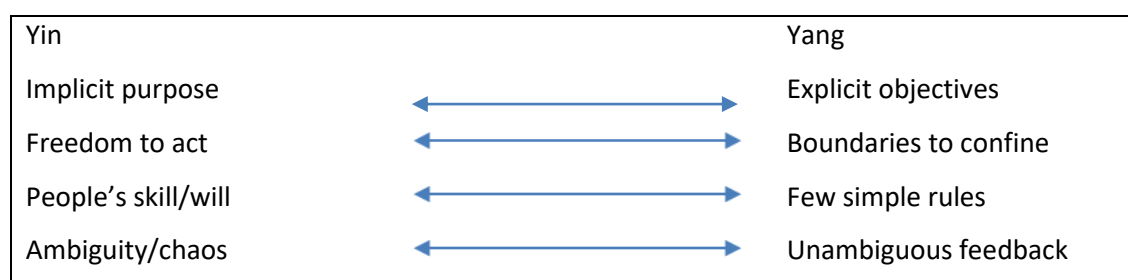
This was planned to be collected at 2-time points, at the start and at the end. This was to be administered on a hospital wide basis with voluntary participation and is part of the whole hospital interdisciplinary work but was to be used with Consultants as a data source for discussion.

<i>Scale</i>	<i>Description</i>
1. Autonomy	The extent to which a practitioner has control over his / her own work or that of others.
2. Role perception	The way a practitioner perceives his/her role is understood and valued by other people (practitioners and the public).
3. Role flexibility	The extent to which a practitioner perceives can alter his /her role to meet the needs of the team or service users.
4. Integration with peers and colleagues	The level of support available to the practitioner from a member of his / her own professional group.
5. Team working	The level of coherence and harmony within the team.
6. Management structures and styles	The overall extent of satisfaction with the management of the team.
7. Access to technology and equipment	Ability of the staff member to access necessary administrative support and equipment to do their job.
8. Training and career progression opportunities	Support for and satisfaction with the career development opportunities offered by the current post.
9. Quality of care	Staff perception of the quality of patient care provided by their team.
10. Uncertainty	Measures staff uncertainty about the future of their team and their role within the team.
11. Overall satisfaction	Overall level of satisfaction with the job.
12. Intention to leave (employer)	Intention to leave the employer within 12 months.
13. Intention to leave (profession)	Intention to leave the profession within 12 months.

Table 13: WDQ Scales and Descriptions

The Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ)

The Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ) is a team measurement instrument based upon the complexity science framework which was used to evaluate leadership of the consultant team in complexity. Developed by Obolensky, it examines polyarchy which is an evolution, or synthesis, of the emerging trends of leadership, anarchy and oligarchy (Obolensky, 2017). The tool has been developed and extensively tested in corporate teams and companies (Jones et al., 2014) and has also been used in healthcare settings (Pype et al., 2018). The questionnaire is based around 8 principles: clear individual objective; a few simple rules; continuous feedback; discretion and freedom of action; skill/will of participants; underlying purpose; clear boundary; a tolerance for uncertainty and ambiguity. The eight principles are paired, with each pair having two principles which are complementary and, in some way, paradoxical to each other. These four pairs of paradoxical principles together allow complexity to work within an organisation (Obolensky, 2017) and form the 4-plus-4 model for complex adaptive leading shown in Figure 43.



Adapted from Obolensky 2017

Figure 43: Four + Four Principles

The score on the CAL™ OCQ (self-administered by participants) provides a general indication on a team's capability to operate as a self-organizing system in complex situations. Moreover, not only the scores in themselves but also the reflection and discussion on the scores are an important reason for using this questionnaire as part of an action research project. As such, the CAL™ OCQ can be appropriate to evaluate team functioning in healthcare teams that need high flexibility and adaptability in complex circumstances. The questionnaire consists of 16 questions on a 10-point Likert Scale. The scores are to be added up (min 16–max 160), with a higher score signifying a higher degree of team functioning according to complexity principles: >120 = Excellent; 100–120 = Good; 60–100 = Danger zone; 30–60 = Severe danger – action

needs to be taken if individual and organisational effectiveness are to be safeguarded. Less than 30 = 'still existing?' The full scoring approach is detailed in: '*Complex adaptive leadership: Embracing paradox and uncertainty*' (Obolensky, 2017) and the scoring template is shown in Appendix N. As Obolensky states,

It should be noted that this tool is not about gaining an absolute picture – its real value is by being shared with others who subsequently come together for a powerful dialogue. The key is to first get balance (between Yin and Yang – more than 2 per cent difference is out of balance) and then go for strength (that is, target lowest scores). Balance first – then strength (Obolensky, 2017 p190).

The original plan was that this would be administered at the start and at the end of the project. The anonymised results were to be shared at the session following completion to provide a lever for discussion. Permission for use in this project was granted by the author.

The Cognitive Edge SenseMaker® Tool

Sensemaking is a research approach that seeks to explore and comprehend the dynamics of complex social systems (Weick, 1995, Drazin et al., 1999, Schutz, 1972, Vaara, 2000). It is the process through which people work to understand the unknown or unexpected, to comprehend and clarify the world, and to enlighten action (Van der Merwe et al., 2019). According to Weick, sensemaking is much more than simply interpretation (Weick, 1995). It is an active process where people engage in activities such as reflection, writing and constructing the situations they are trying to understand (Weick, 1995, Weick et al., 2005).

In order to assess experience, it was necessary to get a sense of patients and staff experiences of being or working in the NRH during the hospital move and the first wave of COVID-19.

SenseMaker© is an emerging research methodology that is grounded in complex adaptive systems theory, cognitive science, narrative, and anthropology (Van der Merwe et al., 2019, Ali, 2014). SenseMaker© uses data visualization software to capture, analyse, and report in real time, qualitative data (i.e., participants' narratives) and quantitative data (participants' survey responses to questions asked about their stories). Unlike traditional research methods, the stories emerge from a neutral question prompt rather than a pre-determined set of questions. The prompt is the impetus for participants to share their lived experience. The SenseMaker© tool, which is based on the Cynefin sensemaking framework was originally

developed as a narrative-based mixed method tool to inform response options in organisations (Edge, 2010). SenseMaker© is now increasingly being used in trans- and interdisciplinary academic domains (Elford, 2011, Dunstan, 2016, Ray and Goppelt, 2011, Mark and Snowden, 2017). SenseMaker© is both a tool and a method for collective inquiry into people's attitudes, perceptions, experiences, and reflections. SenseMaker© is a mixed method that combines first-hand narratives with the statistical authority of quantitative data.

SenseMaker© supports participative processes of collective inquiry and shared sensemaking and has been used for: monitoring and evaluation; impact assessment; and the facilitation of complex development and social intervention planning across various disciplines and sectors.

SenseMaker© comprises four iterative steps as shown in Figure 44: (1) the design and set up and deployment of the instrument; (2) the probing of a social context for narratives using distributed ethnography; (3) identifying and making sense of patterns across the narratives; and (4) response based on the insights which should adaptively nudge the system towards more beneficial futures.

A tailored survey was designed collaboratively with members of the Cynefin (SenseMaker©) team. Following its development, staff and service users within the NRH were invited to complete the survey between August 2020 and January 2021. The survey was accessed via an online portal and was also loaded on to a number of mobile devices to facilitate service users' access. These devices were made freely available to service users. Given that our patients have complex disabilities, we recognised that service users would require support in completing the survey, and a number of staff members were identified to offer and provide this support if required. The steps that were followed for this research project are shown in Figure 44.

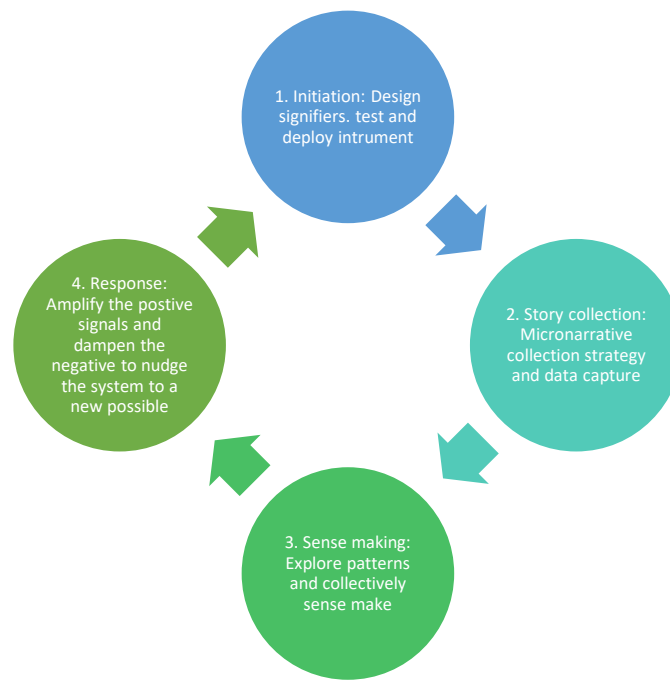


Figure 44: Four Steps of SenseMaker® used in the Study.

The methodological cycle is shown in Figure 45.

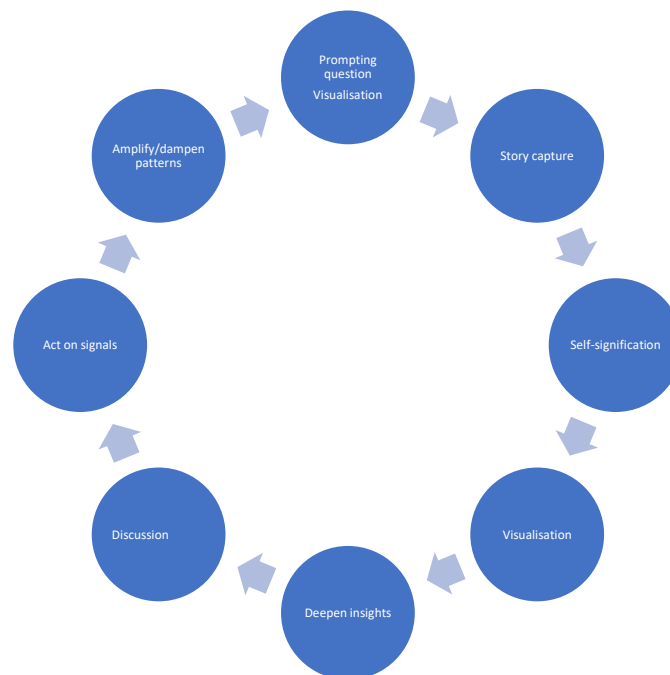


Figure 45: Methodological Cycle for NRH SenseMaker® Survey

Participants were invited to describe in their own words a recent experience of engaging with health and social care services. These experiences were then considered further using a number of questions represented in triad (triangle), dyad (sliding scale) and multiple-choice question form, focusing on key elements of person centred, co-ordinated care, including empathy and respect, shared decision making, communication and values. An exemplar triad from the survey is shown in Figure 46.



Figure 46: Exemplar Triad: Communication

Respondents were also given the opportunity to contribute further free text when asked to reflect on what improvements might be considered to help make the experience better.

Data was anonymised and any information which could identify individual respondents was removed by data cleaning by the researcher.

This tool was to be completed by staff and patients as often as they chose over the course of 3 months and the results were to be shared and used for discussion at the face-to-face sessions. This was to provide a rich tapestry of narrative that would form part of the discussion in the inquiry sessions.

Permission and license agreement for use of this tool in this project was granted by Cynefin.

Data Analysis

Data analysis is rarely the subject of focus in action research literature and yet is in many ways perhaps the most complex phase of qualitative research. Many authors have argued that researchers should give a clear account of analysis methods (Braun and Clarke, 2006, Malterud, 2001, Guest et al., 2012). In the action research scoping review, detailed in Chapter 2, the most common method of data analysis in the research studies was thematic analysis which can be seen as a foundational method for qualitative analysis (Braun and Clarke, 2006).

Thematic Analysis

Thematic analysis is a research method for the identification, analysis, and reporting of patterns within data. There are various differing approaches to conducting thematic analysis, each with distinct philosophical assumptions and procedural practices. According to Braun and Clarke, thematic analysis is a method for developing analyzing and interpreting patterns across a qualitative dataset (Braun and Clarke, 2006). Thematic analysis is an accessible, flexible, and increasingly popular method of qualitative data analysis. Thematic analysis involves the systematic process of coding to develop themes which is the ultimate analytic purpose of the research endeavour. Much like action research, thematic analysis is a family of heterogeneous methods that have a common interest in patterns of meaning that are developed through a process of coding and theme generation.

In this research, two forms of thematic analysis were used: Inductive, and reflexive thematic analysis.

Inductive Thematic Analysis (ITA)

This method was used to analyse the semi-structured interviews performed in the preunderstanding step of the research. Thematic analysis was used in this instance as a realist method to report on the experiences, meanings, and reality of participants.

The six phases of thematic analysis described by Braun and Clarke were observed (Braun and Clarke, 2006):

1. Familiarisation with data

The recordings were transcribed manually verbatim into word documents. The researcher immersed herself in the data by reading and rereading the transcripts many times until the researcher was familiar with the data, noticing and noting things that might be relevant to the research question.

2. Generating initial codes

Line by line coding of the interview transcripts was done manually with initial codes of interest highlighted.

3. Searching for themes

Common codes were initially grouped together due to frequency but then reorganised around patterns which created the initial themes. A theme *'captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set'* (Braun and Clarke, 2006 Pg 82). All the relevant coded data extracts within the identified candidate themes were collated.

4. Reviewing themes

Developing themes were then reviewed in relation to the coded data and entire data set. The initial candidate themes were then reorganised to ensure they captured something important about the data. Frequency did not necessarily reflect an important pattern.

5. Defining and naming themes

Through a process of refinement, final themes and sub-themes were identified with each theme unique and specific.

6. Producing the report

The process was written up and developed in PowerPoint presentation form and was shared with participants at a workshop.

See section 5.1.2 for results.

Reflexive Thematic Analysis (RTA)

Reflexive thematic analysis was performed on the transcripts of the inquiry sessions and other data sources (Table 10).

Similar to reflective practice described earlier in this chapter, reflexivity, according to Sparkes and Smith, refers to the practice of '*bend[ing] back upon oneself*' (Sparkes and Smith, 2013 p. 20) where the mind contemplates and explores its own experiences and feelings with intelligent self-awareness, and introspection (Sherry, 2013), ultimately critiquing (Hill and Dao, 2021) the impact of one's self upon the process of the research (Trainor and Bundon, 2021). Following on from their seminal 2006 paper, Braun and Clarke have subsequently published several papers on scholars' tendency to cite their 2006 article without fully engaging with or adhering to, their guidance (Braun and Clarke, 2013, Braun and Clarke, 2021b, Braun and Clarke, 2021a). They have acknowledged that their original paper left several aspects of their approach rather vague, and they have responded by publishing on reflexive thematic analysis to provide further guidance to researchers. Reflexive thematic analysis is a theoretically flexible interpretive approach for developing, analyzing, and interpreting patterns across a given qualitative dataset. A form of first-person inquiry (Reason and Torbert, 2005, Gearty and Marshall, 2020, Marshall, 2016), through reflexive inductive thematic analysis, the different perspectives were brought together through interpretative engagement with the data, what Tsoukas referred to as '*second-order complexity - the domain of the thinker thinking about complexity*' (Tsoukas and Hatch, 2001). A reflexive analysis is an explicit, self-aware meta-analysis that is used to compare experiences and procedures from participatory processes (Finlay, 2002). This was achieved through significant in-depth analysis and reanalysis and interpretation with themes generated through repeated engagement with the multiple sources of data mediated by the researcher's experience, practical knowing, theory, and interiority and then interpreted through the six properties of complex adaptive systems (van der Merwe et al., 2018) and complexity leadership theory.

See section 5.3.1 for results.

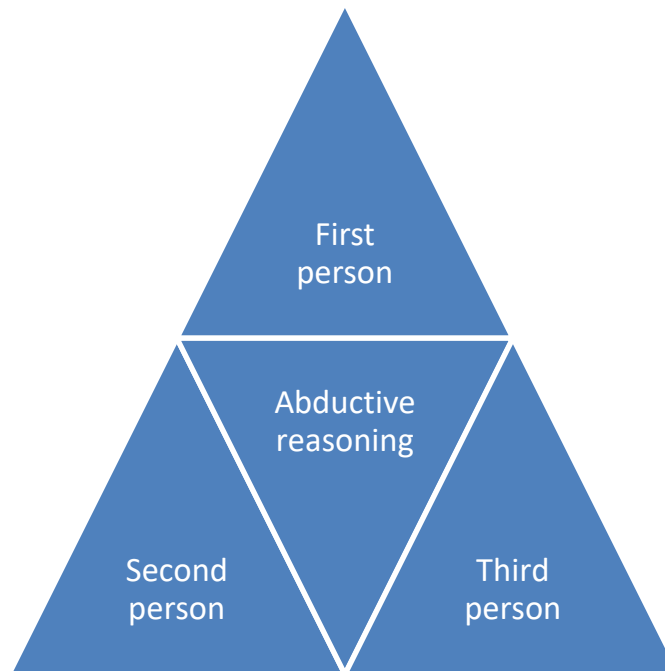
Triangulation

Triangulation is the term used by Torbert to describe the integration of first-, second- and third-person inquiry. He states that collaborative action research;

Seeks to triangulate among the subjective aspects of action and inquiry (within the first person), the intersubjective interactional aspects of action and inquiry (between second persons engaged with one another) and the objective aspect of action and inquiry (among a collection of third-persons-and-things at a distance from and often anonymous-to-one another) (Torbert, 2013 p. 265).

Triangulation is a technique used in qualitative research to develop a comprehensive understanding of phenomena and is also used to increase the credibility and validity or trustworthiness of research findings (Denzin, 2017). Such integration occurs within the action research process through abductive reasoning (Coghlan and Shani, 2021, Shani et al., 2019, Peirce, 1997). According to Peirce, abductive reasoning yields tentative answers and produces exploratory hypotheses in order to make sense of puzzling facts (Peirce, 1997). Abductive reasoning has also been described as the groundwork necessary to understand a system (Weick, 2005, Harrowitz, 1983) and as an appropriate form of reasoning for studying complex systems (Weick, 2005). It has also been described as a central foundation in Mode 2 organisation development and change knowledge production (Shani et al., 2019).

This integrating mechanism is shown in Figure 47.



Adapted from Coghlan and Shani 2021(Coghlan and Shani, 2021)

Figure 47: Abductive Reasoning in Present Tense: Integrating 1st, 2nd and 3rd Practices

Data analysis was ongoing, iterative, cyclical and reflexive, drawing participants into the sense-making process at each session. Shared sensemaking of the data collected took place at each face-to-face and virtual meeting, checking the meanings attributed to the data. In this way, as described by Coghlan (Coghlan and Shani, 2021), we engaged in abductive reasoning by attending both to the data of sense (of what we saw and heard), and to the data of consciousness (how we are thinking, experiencing, questioning, interpreting, understanding, and judging).

Analysis was continuous between sessions and cyclical in that the processes, data sources and analysis techniques were consistent for each session. The data analysis was reflexive in that the researcher and co-researchers had access to and opportunity to respond to, the results of the thematic analysis at each session and each session began with a summary of the themes, with meaning interpreted as a group. In addition, agreement was reached about what data would be feedback to senior management.

Qualitative Deductive Content Analysis

Qualitative deductive content analysis (Elo and Kyngäs, 2008, Mayring, 2019) was used to analyse senior management meeting minutes. As has been shown and explained in Figure 12, the Hospital Board and Executive management team are the most senior decision-making groupings in the hospital.

Qualitative Content Analysis is a research methodology for the systematic analysis and interpretation of contents of texts, images or any other reality (Mayring, 2019). It may be carried out either inductively or deductively. In inductive content analysis, categories are drawn directly from data collected and in deductive, a device, which Mayring refers to as a coding agenda, guides the data collection and analysis.

Qualitative deductive content analysis is used where a researcher wishes to reanalyse existing data in a new context (Elo and Kyngäs, 2008, Catanzaro and Woods, 1988) and allows valid inferences to the context of their use. The use of content analysis of meeting minutes in health research is well established (Endacott et al., 2013, Watkins et al., 2008, Lindsey and Rathbone, 2021). The research question for this piece of research was: *How is clinical leadership and teamwork being reflected in the discussions at Hospital Board and the Executive management team?*

Qualitative content analysis consists of three main phases: preparation, organisation, and reporting. The preparation phase involved the collection of suitable data for content analysis, making sense of the data, and selecting the unit of analysis. The organisation phase involved the development of a structured categorisation matrix, theoretically defining the main categories, determining coding rules for main categories and pre-testing the categorisation matrix. All meeting minutes for the preceding four months were collated and reviewed for content and coded for correspondence to the identified categories (Polit and Beck, 2004, Elo et al., 2014).

Permission to access the Hospital board and Executive management committee minutes was granted by the CEO and the pdfs of the minutes were obtained and printed off in paper format for manual coding. Guided by the work of Peter Senge in his book *the Fifth Discipline*,⁴ an *a priori* framework was developed. As this was a structured matrix of analysis, only aspects of

⁴ I was drawn to this book not only because it explores learning organisations but also because it refers to organisations as having learning disabilities which I found interesting as a Neurological Rehabilitation specialist

the minutes that were in keeping with the framework were chosen from the data. Any corresponding areas of text were highlighted with the category noted in the margin and counted. This produced counts of items in each category. The categories of interest were adapted from literature on learning organisations and concentrated on three of Senge's complexity informed five component technologies described in the five disciplines model: **systems thinking**, personal mastery, **mental models**, shared vision, and **team learning** (Senge, 2006). Vision was not included as the hospital has a clear statement of purpose and personal mastery was excluded as I was interested in organisation rather than individual. The categories of interest were any reference to (any) leadership (lead*); complexity (complex*); Systems thinking (system*); learning organisation (learn*) and teamwork (including team, multidisciplinary team, and interdisciplinary team). The wildcard string operator * was used⁵.

This process was repeated for the executive management team minutes.

The inquiry outcomes were also analysed through the Preiser CAS framework.

The results are presented in section 5.1.3.

Dynamic Interaction Between Data Sources

The data and preliminary themes that had been generate through data triangulation were agreed at inquiry sessions together with agreement to feedback to the senior levels in the organisation to promote discussion and change. How the data informed first-, second-, and third person practice is shown in Figure 48.

⁵ A wildcard character is used to substitute one or more characters in a string

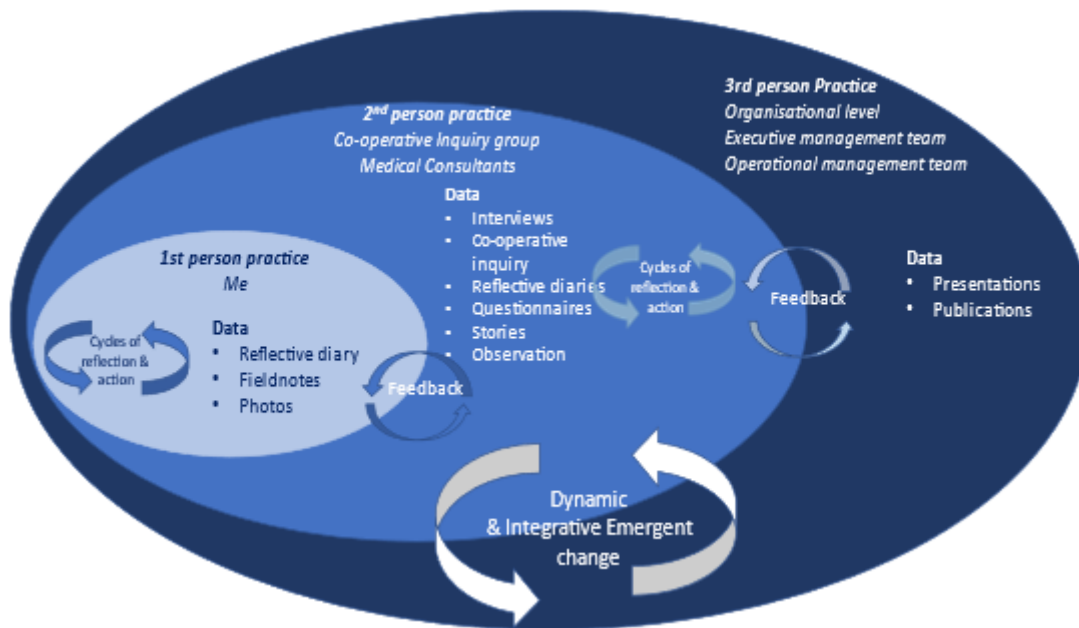


Figure 48: Dynamic Interaction Between the Data Sources.

Reflections on Methodology

As a novice qualitative and mixed methods researcher, I wanted to be rigorous and comprehensive in my approach to the different stages of this research. The multiple methods employed not only enabled me to engage in an extended epistemology of knowing about complexity and action research and ways to understand interventions in complex systems, but the diversity in approaches facilitated a richer and deeper understanding of our organisation that contributed to change practices that challenged the status quo.

4.8 Summary and Conclusion

This chapter has provided an outline of the focus, aims objectives and the research questions that underpin the study. This was followed by a discussion on the rationale for the approach to the inquiry and the methods used. Action research and co-operative inquiry was presented as the most appropriate approach to achieve the aims and objectives of the study. A seven-phase approach was presented incorporating preunderstanding, the co-operative inquiry, and data generation, including data collection and analysis methods in the inquiry process, which supports the quality criteria for AR described by Shani and Pasmore.

Action research is about practical knowing, building on what has taken place in the past, intervening in the present with a view to shaping the future. An integrative approach to research, action research incorporates three inquiries and voices: the first-person voice of persons inquiring into their own thinking and knowledge, the second- person inquiry into the collaborative interactions between co-researchers and the third-person contribution to knowledge for an audience beyond the inquiry group.

The next chapter will present the results of the research.

Chapter 5: Results

This chapter presents the results of this action research study in 3 sections:

- i. Preunderstanding
- ii. Co-operative inquiry
- iii. Metainquiry

The findings from this study seek to answer the research questions and are framed within the context of complex adaptive systems theory.

As described previously, the aims of this thesis are twofold:

- 1) To evaluate the value of co-operative inquiry as a vehicle for supporting leadership development and learning in a complex adaptive system during a period of change .
- 2) To establish how participants can work together to identify strategies for improving staff and patient experience during a period of major change.

The specific research questions to be addressed were:

- How can we, as medical leaders within the NRH facilitate transition to the new hospital and effectively manage staff and patient experience?
- How do we develop the leadership skills to do this?

5.1 Preunderstanding

This section presents the results from the preunderstanding activities; the patient experience mapping, a retrospective analysis of patient experience data, an inductive thematic analysis of the semi-structured interviews, qualitative deductive Content Analysis of senior board and executive minutes and Affinity diagramming.

5.1.1 Patient Experience Mapping

All programme managers (n=5) responded positively to my e-mail as did the Patient Services and Corporate Data Manager. Each respondent provided a detailed description of patient experience collection methods in each of the clinical programmes and also at corporate level. The mapping exercise revealed a wide variety of formal channels for the collection of data on patient experience both quantitative and narrative-based mixed methods. Table 14 summarises these patient experience collection measures.

Method	Reach	Frequency
Patient experience survey (National survey)	All patients	Annual
uSPEQ (Universal Stakeholder Participation Experience Questionnaire, a consumer survey questionnaire designed to capture common concerns and domains across varied settings and diverse populations)	All patients	6 weeks after discharge
Patient forum	All inpatients	Monthly
Parents Forum	All parents of inpatients	Quarterly
Family meetings	All patients and families	Weekly
Comment and suggestion forms	All patients, families and staff	Continuous
POLAR programme durable outcomes questionnaire	POLAR programme	3 months post discharge

Table 14: Patient Experience Collection Methods in the NRH

How these different patient experience data collection methods were used in 2019 is summarised in Figure 49.

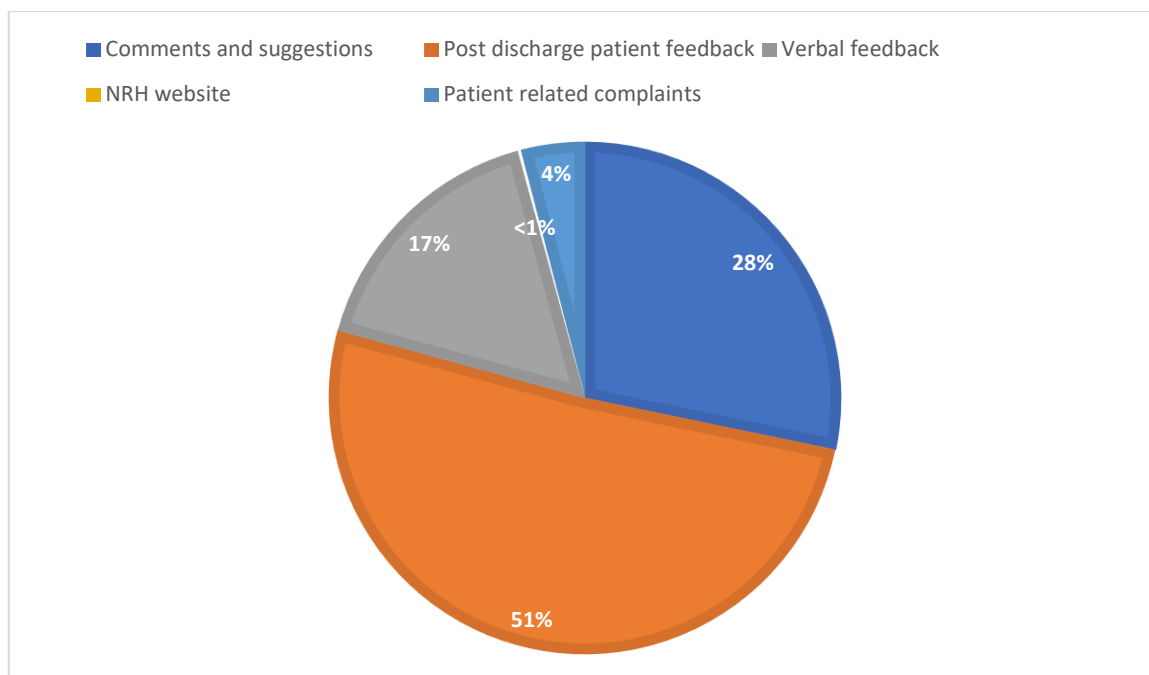


Figure 49: Pie Chart of Patient Experience Methods

The highest volume of data was from post discharge patient feedback with 51%. Comments and suggestions were the next largest category with 28% with verbal feedback at 17%. The NRH website only accounted for less than 1% of feedback.

After reviewing all the data, the uSPEQ reports did not provide useful information for the purposes of this research. The data that was most informative for answering the research question were contained in the comments and suggestions and the patient forum minutes which provided rich narrative data for analysis. A retrospective analysis of the comments and suggestions monthly reports from Jan-Dec 2019 was performed and analysed against the complaint coding taxonomy developed by Reader and colleagues (Reader et al., 2014). A similar process was performed for the patient forum meetings. This analysis is shown in Table 15.

Domain	Categories	Subcategories	Frequency	Comments and suggestions	Patient Forum
Clinical	Quality and safety	Safe and effective care	76		15
		Improving health	161		
		Accountability	14		
Management	Institutional issues	Catering	33		12
		Environment and maintenance	55		7
		Hygiene	5		
		Health and safety	3		
	Timing and access	Access	63		7
Relationships	Communication	Communication and Information	26		
	Humaneness and caring	Dignity and respect	8		
		Participation	10		
		Visiting	0		5
	Other	17			
	Total		454		46

Table 15: The Categories and Frequency of Comments 2019

When coded, the comments and suggestions and patient forum feedback in the NRH did fall into the three domains described in the Reader taxonomy. Most patient reported experiences

were aligned with the clinical domain (55%) but also the management domain (35%) with rehabilitation process related issues such as access to rehabilitation activities and participation in a community the commonest comments raised. Most comments were positive. Delayed access to the hospital was a recurring code (14%) and a less frequent code was communication and information (6%). This finding is at odds with substantial literature that reports major issues in staff–patient relationships and in communications between staff and with patients (Mirzoev and Kane, 2018).

5.1.2 Inductive Thematic Analysis

All members of the medical board (n=20) were invited by e-mail to participate in the semi-structured interviews. One e-mail address was incorrect, one colleague was on sabbatical, and one was on maternity leave. Two colleagues sent me written feedback, but this has not been included in this analysis as that would require a different data analysis technique. In total ten colleagues, all rehabilitation medicine consultants, participated in the semi structured interviews. Five were male and five female revealing good gender distribution. There was also a reasonable distribution of new appointees (less than 10 years appointed n=4) and more well-established colleagues (more than 10 years n=6) which is in keeping with the distribution of the consultant body as a whole. The inductive thematic analysis was performed in accordance with the six steps outlined by Brain and Clarke and are summarised in Figure 50 (Braun and Clarke, 2006).

Phase 1:	Phase 2:	Phase 3:	Phase 4:	Phase 5:	Phase 6:
Data Familiarisation	Illustrative Initial codes (234 generated)	Search for themes	Candidate themes	Review and refine themes	Produce report

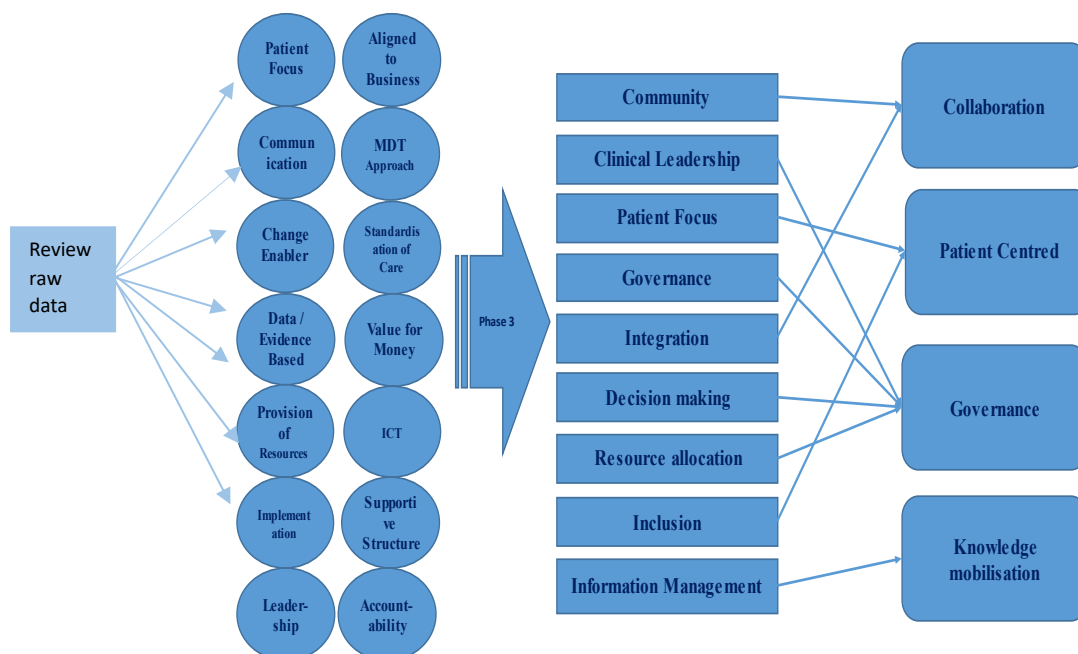


Figure 50: Coding Tree and Phases of Inductive Analysis

5.1.2.1 Key Themes Generated:

The Importance of Collaboration amongst Consultant Colleagues

This theme consisted of the subthemes of community and integration. I have interpreted these to mean a collective of senior medical colleagues working together in an integrated manner with a shared purpose.

Colleagues valued the opportunity that medical board afforded for coming together as a group.

P10: 'It's good for colleagues to be able to come together to share understanding' and P5: 'It's good for finding out about things that affect us all'.

Some colleagues felt that senior medical colleagues were not collaborating as well as they might with a colleague (P2) expressing the view that *'I feel like an outlier'* and that communications especially e-mails were *'more like a bickering forum'*. Another stated (P4) *'I feel out of the loop of decision making'*.

Improving communication and promoting integration were identified as important by a number of colleagues. P6: *'We need to maximise participation of all medical board members'* and P10: *'It would be good to have a forum, a supportive environment to discuss issues'*. A colleague (P3) expressed the view *'there are such dominant voices and I wonder what contribution I can make'*. Colleagues also raised the challenge of time and conflicting demands and initiatives P2: *'We don't have the time to make time for coming together'* and P5 *'Some of these so-called innovations end up causing a Dante's inferno'*

Some colleagues expressed feelings of isolation and exclusion and feelings of disillusionment as one colleague (P10) stated: *'I am an outsider to the process. It is irrelevant to me'*. Another colleague suggested self-management support as a mechanism to bring us together: (P9) *'Peer support is important perhaps we should have a Balint group otherwise how does self-care happen?'*.

Patient-Centredness

This theme is a synthesis of the sub-themes patient focus and inclusion. There was a clear desire for services to be more responsive and patient centred but there were concerns that nothing would change by the move to the new hospital and that the same issues would persist. One colleague (P1) commented: *'nothing new – same issues, new building'*. Another (P7) stated: *'we might be in a shiny new building, but will patient care suffer?'*. One colleague (P10) declared (in the context of not being able to get patients admitted): *'I am tired of apologizing to colleagues and staff and patients in the acute hospitals for our unresponsiveness even though it's not my fault. I feel like I'm fighting with everyone all the time'*. Another colleague (P4) asserted: *'there should be more focus on advocacy for our patients illustrating the challenges facing the patient and care givers'* and another (P6): *'The medical board needs to bridge the gap and ensure the patient voice is included in all major decisions'*.

Governance

There was a general acknowledgement that the medical board needed to have a clearer governance structure with a clearly defined role and that the hospital executive needed to get things done. It was felt that the governance was currently unclear with one colleague (P7) describing it as *'fuzzy'* and *'mushy'* and *'what does it do anymore?'*. One colleague (P2) wondered *'where are decisions made?'* and another (P5): *'There is a disconnect between the Executive and Medical Board, we have all the responsibility without the authority'* and P4: *'the Executive don't pick up leadership'*. Co-researchers felt that governance could be clearer with one colleague (P7) saying *'The (hospital) constitution is at odds with the new clinical governance structures'*. Another colleague (P9) indicated *'we need to clarify the medical board's purpose in the hospital'* and another (P6): *'we need to clarify the remit of the medical board'*. Another stated (P4) *'there is lack of clarity of the role of the medical board and where it fits in vis-à-vis Clinical director – who has responsibility for what – blurred'* and another wondered (P1) *'Are we (the medical board) just a talking shop?'*. There was also a sense of futility and disillusionment of getting involved in change initiatives (P3) *'why bother designing if the designs aren't implemented?'*.

Knowledge Mobilisation

This theme was generated from many codes that related to data, ICT and information and evidence. I had initially assigned a subtheme of information management but as I engaged with the data, knowledge mobilization emerged as a dynamic theme linking data and knowledge and people to enable better care for patients.

Creating opportunities for sharing different types of information was identified as important and that the absence of such opportunities as one colleague put it (P7) *'takes my goodwill away'*. Another colleague stated (P10): *'we need somewhere we can talk about stuff, you know, patients, a new journal paper and the football'*. Another felt we needed to accelerate academic activities and teaching (P2): *'all the other hospitals have active academic departments – why don't we?'*. Another stated (P3): *'medical board has a major teaching and research role but no control of funding or separate budget – should we have a say in where the funding provided by the Universities for teaching by consultants goes?'*. Colleagues felt that

additional resources were required to support knowledge mobilization and improvement activities (P5) '*We cannot continue to do more with less – we're starting to do less with less – we're at a tipping point*'.

Personal reflections on the interviews (notes from reflective journal and fieldnote with quotes in italics)

Although I felt that I had been conscientious and attended to all my responsibilities as a researcher in maintaining the quality of the inquiry, in my journal I reflected on how saddened and upset I was to witness '*the distress of colleagues*'. However, I also noted how honoured and privileged I felt that colleagues had trusted me with their stories and that they had been so honest and open. I noted the '*overwhelming sadness*' of my colleagues, and I was concerned that some colleagues were '*burnt out*' and also reflected on what a pejorative term that was. I felt there was a sense of anger and frustration among colleagues, and also of detachment from the organisation and each other with poor collaboration and also a sense of inevitable failure. I noted one colleague's comment '*things will continue to get worse despite all this improvement – we will retire, and things will get worse*' and '*I am an outsider to the process – it's irrelevant to me*'. I reflected that colleague expressed more attachment and seemed to identify more closely with their acute hospital than the NRH⁶. I noted a colleague's comment that '*there's a coffee room and we can meet and chat*' and also a colleague's comment that they felt powerless to change things '*I don't bother any more to burn energy*'. I noted that I felt a '*heavy responsibility on my shoulders*' to be able to respond and I was concerned that colleagues were putting the responsibility for solving these problems on my shoulders. I then recalled the work of Albert Bandura on mechanisms of moral disengagement. I had been introduced to the work of Bandura during training as an ethical mentor. Moral disengagement was originally described by Albert Bandura in his groundbreaking book on social cognitive theory (Bandura, 1986) and subsequently elaborated in further publications (Bandura, 2016). Moral disengagement refers to eight interrelated cognitive mechanisms that enable us to circumvent our internalized moral standards and violate ethical conventions and standards without that immoral behaviour resulting in distress. The eight mechanisms are: (1) moral justification; (2) euphemistic labelling; (3) advantageous comparison; (4) displacement of responsibility; (5) diffusion of responsibility; (6) distortion of

⁶ At the NRH, all Consultant contracts require them to work across at least two sites; the NRH and an acute hospital. Some colleagues also have a community component in addition.

consequences; (7) dehumanization and 8) attribution of blame. I recognized in my colleagues' behaviour two of the eight behaviours. I recognized displacement of responsibility as I felt colleagues did not recognize that they were agents of their own actions and I also recognized diffusion of responsibility where colleagues were diffusing responsibility as they were engaged in the same behaviours. However, on further reflection, I recognized that colleagues could only shift that responsibility to me if I chose to accept it. I also acknowledged that I could not fully appreciate the intention of colleagues without further exploration. Therefore, I took the decision not to accept that responsibility and also to give colleagues the benefit of doubt.

I reflected on the themes that had been identified through the inductive thematic analysis; collaboration, patient centredness, governance and knowledge mobilization, and from my reading on methodologies, I felt these themes and issues could be addressed by utilizing a participatory approach to problem solving and leadership development. I reflected on the many different articulations of action research and in choosing the method of co-operative inquiry, I believed we had a real opportunity to potentially address these issues together in a spirit of partnership, harking back to the influence of my father on me (section 2.6) and also the 'nothing about me without me' philosophy (section 4.6). The experience also emphasized to me the importance of a researcher's ethical responsibility to oneself as well as to others. I also noticed paradoxes that had emerged in the data analysis including: *'Some of these so-called innovations end up causing a Dante's inferno'* and *'We cannot continue to do more with less – we're starting to do less with less – we're at a tipping point'* and *'We don't have the time to make time for coming together'* and *'things will continue to get worse despite all this improvement'*. I reflected that these paradoxes might be indicative of a fundamental tension between individual consultants practice and the hospital system.

5.1.3 Qualitative Deductive Content Analysis

I obtained the meeting minutes of the Hospital Board and the Executive management committee for four months prior to the planned move to the new hospital. Both sets of meeting minutes are kept on file in the CEO's office. As discussed previously, I obtained written and verbal permission from the Chair of the Hospital Board and the CEO to access the meeting minutes in advance of the commencement of the research.

Hospital Board Minutes

On obtaining the requested Hospital Board minutes for four months, I realized that the Hospital Board did not meet in August. When I enquired, I learned that there is a long-standing tradition in Ireland for no meetings to occur over August and although I tried to find out why this was the case, I was unable to find one. I thought it was surprising that the most senior decision-making group would not meet so close to one of the most important strategic events. However, when I explored this with the CEO, I was advised that the Chair and Executive team meet on a regular basis and there was the facility for the Chair to call an extraordinary meeting of the Board if required.

In order to have a four-month set of minutes, I was required to make further contact with the CEO's office to request a further set of minutes. These were provided without issue.

I then followed the three phases of qualitative content analysis (as described on page 171): preparation, organisation, and reporting, and applied the structured categorisation matrix. The results of the qualitative deductive content analysis of the hospital board minutes are summarised in Table 16⁷.

	Keyword					
Hospital Board date	Leader*	Complex*	System*	Team*	Learn*	New hospital
2019						
July	0	0	0	0	0	Handover
September	0	0	0	0	0	Handover
October	0	0	0	0	0	Overspend
November	0	0	0	0	0	Finance

Table 16: Structured Categorisation Matrix for Hospital Board Minutes

⁷ * is the wildcard string operator. Using wildcards in a search strategy allows the researcher to easily search for all the variations in how a word is spelt without having to explicitly spell them out. These can be used internally i.e. colo*r will search for Colour or Color or at the end e.g. Medic* will search for medic OR medics OR Medicine OR medicines OR medicinal, etc. They are very powerful in helping a researcher to make sure they have searched comprehensively for all variations of any keyword.

As can be seen from the matrix, the hospital board minutes did not record any aspect of leadership, complexity, systems or teamwork or learning and references to do with the new hospital were mainly to do with handover of the new hospital and financial aspects.

Executive Management Committee Minutes

The full four months of meeting minutes of the Executive management committee were available as that grouping does not take a break over August. I once again followed the three phases of qualitative content analysis: preparation, organisation, and reporting, and used the structured categorisation matrix. The results of the qualitative deductive content analysis of the Executive Management Committee hospital board minutes are summarised in Table 17.

EMC Meeting date	Leader*	Complex*	System*	Team*	Learn *	New hospital
2019						
July	0	0	0	1	0	Sale of land
September	0	0	0	1	0	Handover Manual swipe exceptions
October	0	0	0	0	0	Transfer to the new hospital
November	0	0	0	0	0	Transfer to the new hospital

Table 17: Structured Categorisation Matrix for EMC Minutes

The Executive Management Committee minutes reflected references to ‘team’ on two occasions, in July and September. These references were with regard to two project teams in the hospital. The excerpts are provided below with names removed for anonymity.

July: ‘X presented the feedback from the Patient Experience Project on behalf of the IDT Working Project Team. The presentation provided an overview of the findings of the Patient Experience Survey, which is a national HSE initiative, undertaken at the NRH.’

September: ‘the CRMS team are conducting the technical assessments.’⁸

The minutes did not reflect any discussion about leadership, complexity or systems and references to do with the new hospital were mainly to do with transfer to the new hospital and handover of the new building and the sale of land.

The minutes therefore did not reflect the supportive leadership that might be expected of the most senior leadership committees at a time of significant disruptive change.

5.1.4 Workshop with Colleagues to Discuss the Findings

In September 2019, eleven colleagues, all rehabilitation medicine consultants, participated in the away day workshop. Six females and five males participated. The purpose of this workshop was to share the results of the inductive thematic analysis and also the outputs from the other preunderstanding activities and also to reach agreement about how we wished to tackle what was raised, as a collective.

The workshop was held offsite (but close enough to facilitate ease of access with taxis organised for anyone who needed them) in a comfortable setting with lunch and refreshments provided. There was sufficient space to sit everyone round the same table and water, fruit and mints were provided for the table. A trolley with tea and coffee and biscuits was in the room as well. A notebook and pen were provided for each participant with post-its and flip charts and space for people to physically move around. The room was close to a bathroom. The workshop was facilitated by an external facilitator as I wanted to participate in the group as a participant rather than a facilitator. I felt this was important to embed me as an insider.

I introduced the objective of the meeting: ‘*to engage in a collective inquiry in pursuit of maximising patient benefits from our collective leadership and the opportunities presented by the new hospital development*’.

I then presented the pre-step/preunderstanding outputs in PowerPoint from at the initial stage of the workshop. This included the patient experience analysis, the inductive thematic analysis and the qualitative deductive content analysis. We then had a facilitated brainstorm to discuss the findings and make sense of them together. We then identified the most

⁸ CRMS is the Clinical Rehabilitation Management System team which are responsible for the introduction for a new electronic health record, a major transformation project underway in the hospital

important challenges out of those that had been presented and also identified any additional challenges that colleagues felt had been omitted.

Attention was taken to ensure that everyone present contributed and the discussion was lively.

Notes were taken on post its and an affinity chart, a form of thematic analysis used in quality improvement, also known as K-J method, was used to organise the output (Plain, 2007). More detail on this method is provided in chapter 4 on page 153. In the workshop we used multicoloured Post its and whiteboards to record the data from our brainstorming and we moved through the four steps: 1) label making, 2) label grouping, 3) chart making and 4) written or verbal explanation (Scupin, 1997).

A photo showing the affinity diagram process is shown in Figure 51 with permission.

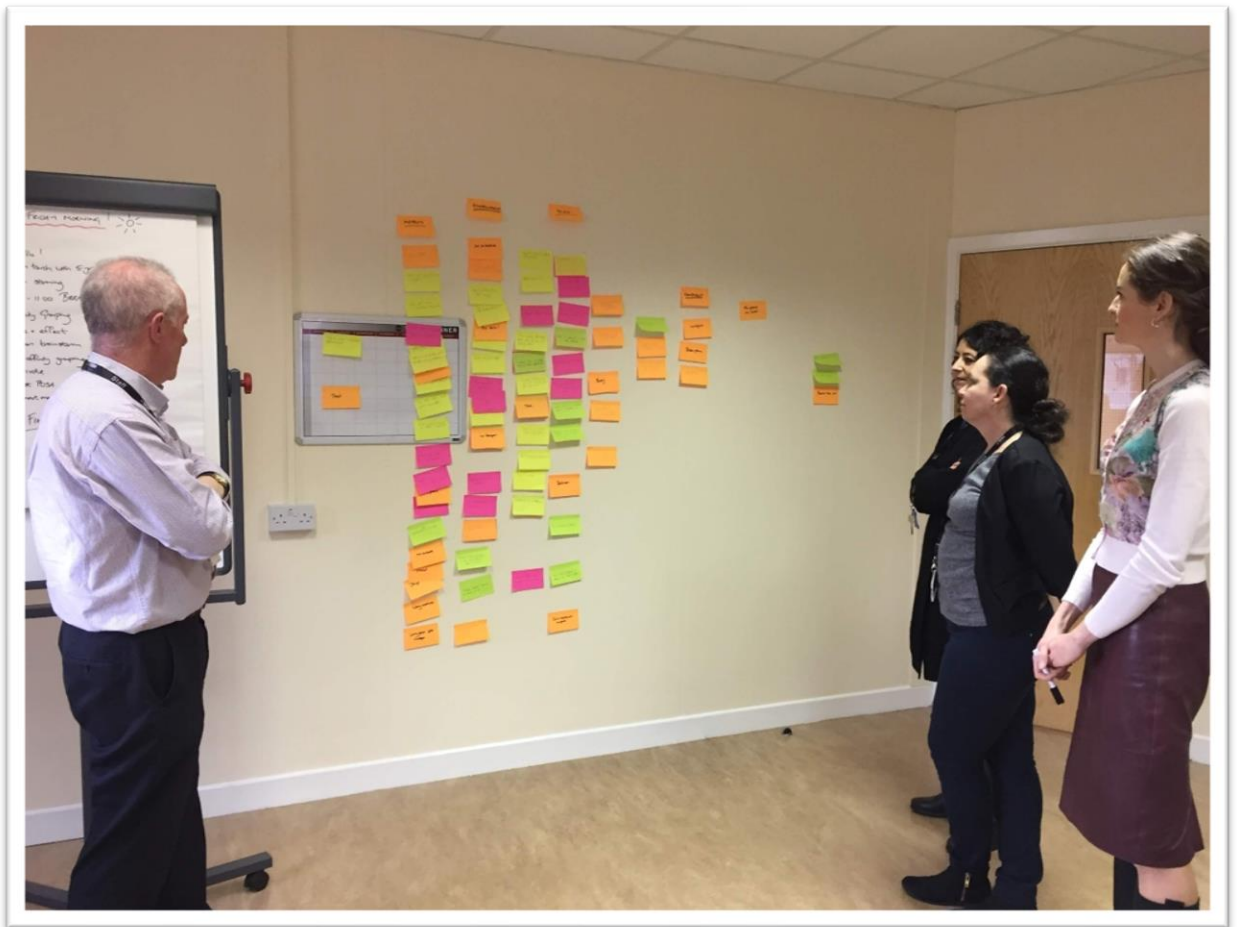


Figure 51: Picture of the Affinity Diagram Process

Current Strengths Identified.

People

There was a general positivity towards the move to the new hospital and a sense that people were doing their best. There was also agreement that colleagues could and should persevere with trying to make change happen, which countered the suggestion that 'nothing can be done'. It was acknowledged that we needed to work with the wide variety of personality types whilst striving to attain the best results. It was felt that it was important to see through the eyes of the patient –especially the impact rehabilitation can have on family members –and act accordingly.

It was seen as important to give and receive feedback and that we should aspire to person-centred integrated care –looking after the entire person (and their family). It was also identified as important that we should listen with compassion –providing hope –being the trusted provider of care.

Processes and Protocols

It was agreed that the new medical board meeting structure that had been put in place was working well and that cross-programme issues were discussed. Colleagues felt that we needed to find innovative ways of overcoming wait times, shortages, and other impediments to timely, effective treatments for patients in need.

Communications / Knowledge Sharing

Colleagues felt that a more streamlined approach to mandatory training arrangements could be taken and also knowledge sharing generally.

Technology

It was felt that it could be really helpful if we had live streaming of educational events.

Challenges Identified

Participants reviewed the list of challenges prepared in advance of the meeting and then brainstormed to identify the most important challenge. The following additional issues arose from the discussion:

- How do we 'find our voice' as Clinicians –and ensure that it is listened to by the Board and by Management?
- How do we better articulate our case in terms that will appeal to our key stakeholders (e.g., through the eyes of a politician or senior HSE manager)?

Results:

The key result of this workshop was that colleagues agreed that the best way to proceed in addressing the issues identified was to undertake a co-operative inquiry together to explore these challenges. Agreement was unanimous and we proceeded to commence the co-operative inquiry.

I followed up with participants with an individual appreciation e-mail which contained a workshop report and also outlined the next steps which had been agreed. Verbal, text and e-mail communication in response to the event was on the whole very positive. However, not all feedback was positive though with one colleague e-mailing: *'I'm all for getting out of the quagmire we're in but to be honest (and I don't want to sound harsh) I didn't find X's session helpful...I thought you'd achieve more on your own!'*

Personal Reflections:

These activities combined with reflection and deep inquiry about myself, my assumptions and practices helped provide me with a much better understanding of the organisation and my colleagues and also created a strong platform upon which to build the co-operative inquiry. The one-to-one interviews and workshop had the benefit of generating useful data but had the unexpected benefit of helping to embed me as an insider and the workshop also helped to create a shared understanding of what we wanted to address together as a group.

5.2 Co-operative Inquiry Results

This section will detail the results of the core action research project and the Metainquiry.

5.2.1 Core Action Research Project

Data were generated over the course of 6 action research cycles, with participants engaging in an 'extended epistemology' of experiential, presentational, propositional and practical ways of knowing. All consultant colleagues were invited to participate and participation in the face to face/virtual meetings varied with a core group of four colleagues who attended all sessions, however participation varied from 4-12 depending on the session. All however, remained actively involved with 2 participating as observers but choosing not to take action.

As discussed in chapter 4, data analysis involved an integrative abductive triangulation approach incorporating the first-, second- and third- person inquiries. As we moved through the cycles of reflection and action, initial themes were generated through abductive reasoning that altered, expanded and diverged and as we moved through the dance of the inquiry, other themes become apparent as colleagues reflected on their leadership in the hospital and also on regional and national roles they held and also as we reflected as a leadership collective. Figure 52 shows the flow of the cycles, the ten-step process and the emergence of learning.

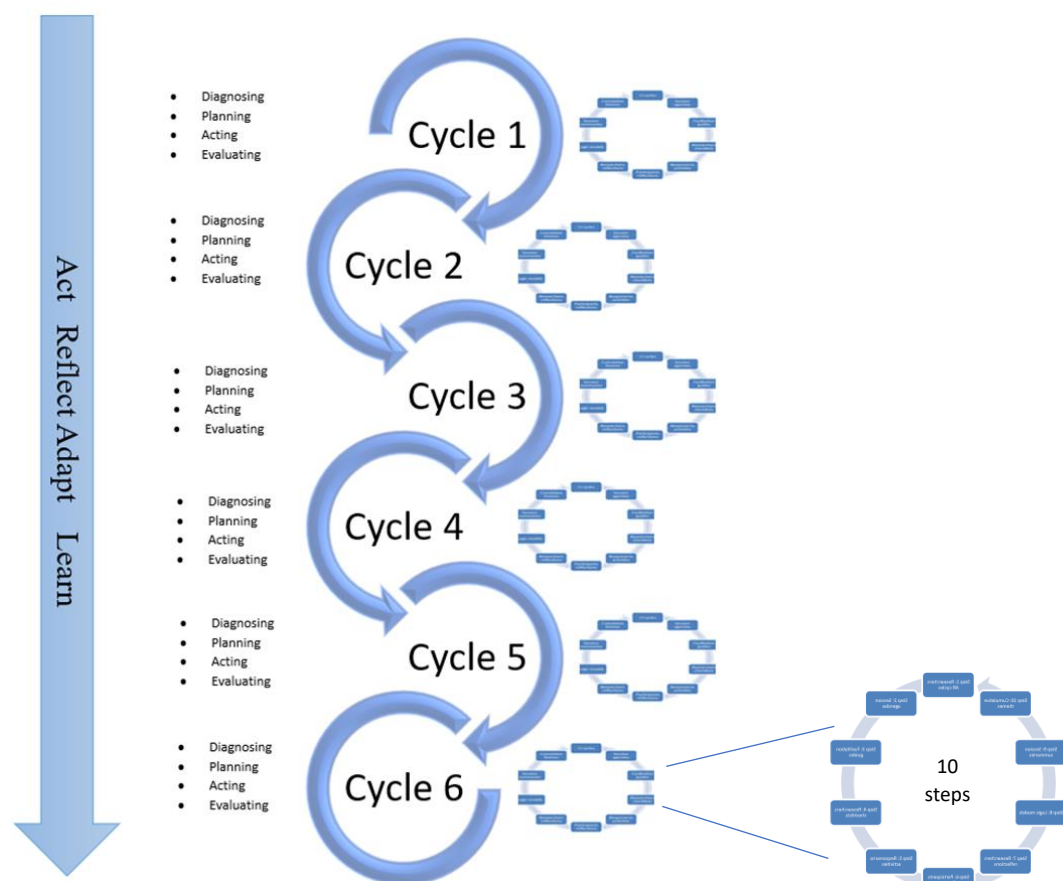


Figure 52: Flow of Action Research Cycles Together with the Ten-Step Process and the Emergence of Learning.

Table 18 summarises the six action research cycles for the development of leadership in complexity. This includes the theory and literature that informed each session (extracted from the logic models (James et al., 2008)), the actions taken, and the relevant connection of adaptive space as described by Arena (2018).

Cycle and number of participants (i)	Constructing/Planning action	Themes generated	Actions taken by CI participants (<i>Development and Disruption connections</i>)	Evaluation of actions by CI participants (<i>Development and Diffusion connections</i>)	Theory (<i>Discovery connections</i>) [from logic models]
1 (6)	First meeting planned.	<p>Practicalities of running the inquiry</p> <p>The importance of trust</p> <p>The need for collaboration</p>	<p>To be flexible and available to meet together.</p> <p>WhatsApp group established.</p> <p>Exploration of physical space</p>	<p>Inquiry schedule formalised.</p> <p>Challenges of identifying space and decision-making processes around space allocation</p>	<p>Complexity theory (presentation of evidence synthesis)</p> <p>Leadership theory (presentation of</p>

Cycle and number of participants (i)	Constructing/Planning action	Themes generated	Actions taken by CI participants (<i>Development and Disruption connections</i>)	Evaluation of actions by CI participants (<i>Development and Diffusion connections</i>)	Theory (<i>Discovery connections</i>) [from logic models]
		The need for increased communication and connection	<p>options to meet either in the legacy building or the new hospital</p> <p>Outputs of each cycle to be brought shared with the CEO and other consultant (third person inquiry)</p> <p>To commence reflective practice (inquiry group members)</p> <p>To commence reflective practice with NCHDs</p>	<p>unexpectedly complex</p> <p>Challenging to find time in CEOs diary to bring outputs from sessions</p> <p>Unexpected challenges in getting NCHDs together as a group</p>	evidence synthesis)
First Wave of COVID 19					
2 (4)	<p>Second meeting planned.</p> <p>Action research Session checklist</p> <p>10 -step framework.</p> <p>Exploration of virtual videoconferencing and Virtual meeting attendance arranged</p>	<p>COVID-19</p> <p>Complexity of intervening in messiness and paradox</p> <p>What decision making frameworks might help?</p> <p>Change is difficult and time is limited but action is necessary</p>	<p>Regular meetings to connect with teams outside inquiry group</p> <p>Continue WhatsApp group and analyse activity⁹ (sharing of COVID information and innovative solutions)</p> <p>Continue exploration of physical space and identify and test virtual platforms for meetings and clinical activities (Zoom, Microsoft Teams, Webex, Google Meet).</p>	<p>Team really valued WhatsApp and its contribution to improved communication and connection</p> <p>Team appreciated the opportunity for open dialogue about challenges and shared exploration of solutions (leveraging adaptive tension)</p> <p>Following meeting with CEO, CEO invited presentation on the inquiry at EMC</p>	<p>Complexity theory (second presentation of evidence synthesis)</p> <p>Leadership theory (Northouse, 2021)</p> <p>Cynefin framework (Snowden and Boone, 2007)</p>

⁹ WhatsApp analysis for each session in Appendix P

Cycle and number of participants (i)	Constructing/Planning action	Themes generated	Actions taken by CI participants (<i>Development and Disruption connections</i>)	Evaluation of actions by CI participants (<i>Development and Diffusion connections</i>)	Theory (<i>Discovery connections</i>) [from logic models]
			Continue to develop reflective practice Sharing of COVID19 updates		
Hospital Move					
3 (9)	Third meeting planned Action research Session checklist. Virtual attendance arranged using Microsoft teams	Complexity Impact of COVID (Exhaustion, Stress and burnout were subthemes) Collegiality Respect Feelings of exclusion Time Safe space Listening Relationships Adaptability (amplified during COVID) Importance of Feedback	Complete complexity leadership questionnaire CAL TM Continue to use WhatsApp as a communication tool Reflective practice to continue & grow (2 colleagues) Contact the space utilisation decision makers to identify a space for consultants to meet (2 colleagues) Develop a presentation to PWEG to support the space from a health and wellbeing point of view (2 colleagues) Invite the Director of wellness RCPI for a discussion at medical board Explore a day in the life series for Grand Rounds (3 rd person) Agreement to hold Action research Masterclass (David Coghlan and Mary Casey) [2 nd and 3 rd person]	Improved appreciation of Consultants issues in Occupational health service. Available supports necessary for consultant wellbeing emerging Methods for developing reflective practice valuable and skills growing Experiencing the vitalising effect of feedback and collective action Virtual platforms effective for meetings and also clinical work	Complexity leadership theory (Uhl-Bien et al., 2007) Complex adaptive systems approaches in health care (Martin, 2018)
4 (6)	Fourth meeting planned	Complexity	WhatsApp will continue	Great interest in Action research	Co-operative Inquiry as a

Cycle and number of participants (i)	Constructing/Planning action	Themes generated	Actions taken by CI participants (<i>Development and Disruption connections</i>)	Evaluation of actions by CI participants (<i>Development and Diffusion connections</i>)	Theory (<i>Discovery connections</i>) [from logic models]
	Action research Session checklist. Hybrid	Teamwork Collegiality Work satisfaction Burnout Space (safe; physical; virtual; head) Connections (lack of: formal and informal) Distance (Physical and psychological) Detachment Isolation Adaptability Humour (the healing power of laughter)	Reflective practice to continue & to be commenced in other teams Possible day in the life series for Grand Rounds Regular medial board agenda item for each Consultant to share their work and open agenda item for areas of concern NCHD forum established EMC to complete CAL™ Patient safety forum established David Coghlan's and Gaye Cunnane's presentations circulated	masterclass and desire for further sessions. One colleague commencing their own action research project (Doctor of Medicine) As a consequence of inquiry, beyond immediate inquiry group, another colleague undertaking a PhD on learning organisations and another colleague starting a DBA. Greater understanding of complexity leadership Greater understanding of well-being resources internal and external WhatsApp working well and keeping colleagues informed of issues and events. Some colleagues have team WhatsApp groups now. Old hospital might be used as post COVID facility so no available space Handover survey completed and results circulated	Discipline of Professional Practice (Reason, 1998) Making Sense of Complexity: Using SenseMaker® as a Research Tool (van der Merwe et al., 2018) The Importance of coffee (Salisbury, 2019) [co-researcher suggestion] Professional loneliness and the loss of the doctors' dining room (Frey, 2018) [co-researcher suggestion] Physician burnout, interrupted (Hartzband and Groopman, 2020) [co-researcher suggestion]
Second wave COVID-19					
5 (6)	Fifth meeting planned	Context	Consider ways to develop meaningful connections	WhatsApp an effective communication	What's up doc? A national cross-sectional study of psychological

Cycle and number of participants (i)	Constructing/Planning action	Themes generated	Actions taken by CI participants (<i>Development and Disruption connections</i>)	Evaluation of actions by CI participants (<i>Development and Diffusion connections</i>)	Theory (<i>Discovery connections</i>) [from logic models]
	<p>Action research Session checklist.</p> <p>Hybrid and change venue to academic building</p>	<p>Cohesion</p> <p>Governance</p> <p>Communication</p> <p>Connection</p> <p>Reflection (and reflective practice)</p> <p>Presence</p> <p>Listening</p> <p>Team</p> <p>Gratitude</p>	<p>(including engaging tension) and also ways to proceed with action research</p> <p>Develop a new handover meeting and commence a cross programmatic governance activity group in the new year</p> <p>WhatsApp will continue as a communication tool long-term</p> <p>Investigate president's letter of appreciation</p> <p>Present SenseMaker© results to OMC and EMC</p> <p>Participation in Hospital Strategy planning (3rd person)</p> <p>Commitment to sending feedback</p> <p>Commitment to try and meet colleagues for coffee more often</p> <p>Investigate the impact of distance on connection and possible solutions</p>	<p>tool for the inquiry group and teams.</p> <p>Old hospital might be used as post COVID facility so no available space</p> <p>Handover survey completed and results circulated</p> <p>Positive response from NCHDs</p>	<p>wellbeing of hospital doctors in Ireland (Hayes et al., 2017) [co-researcher suggestion]</p>

Cycle and number of participants ()	Constructing/Planning action	Themes generated	Actions taken by CI participants (<i>Development and Disruption connections</i>)	Evaluation of actions by CI participants (<i>Development and Diffusion connections</i>)	Theory (<i>Discovery connections</i>) [from logic models]
			Action research masterclass		
Third wave COVID-19					
6 (4)	Sixth meeting planned Action research Session checklist. Audience response system identified Hybrid and change venue to academic building	Connection Community Change Creativity Space Learning Voice	Continue to practice as a learning community	No actions taken following presentation at OMC/EMC. Committee set up to consider findings. Reflective practice well developed 4 ways of knowing demonstrated Agreement that we achieved what we set out to do Many complexity leadership skills developed Recognition of and management of paradox Improved well being Organisational processes improved: increased medical participation in priority meetings and feedback loops developing Hospital foundation investment in further research	Reflective practice (Schön, 1987)

Table 18: Action Research Cycles for the Development of Leadership in Complexity

5.2.1.1 Questionnaires:

The full results of the workforce dynamic questionnaire (WDQ), the Complexity leadership questionnaire (CAL™) and SenseMaker© are presented in the appendices (Appendix L, N and O).

Workforce Dynamics Questionnaire

Only two medical colleagues responded to the WDQ rendering any conclusions with regard to medical staff invalid. However, the overall results were shared with colleagues in the second face- to- face meeting for information. There was discussion about the lack of medical participation in the survey, however, as this session took place just as the COVID-19 pandemic was affecting the hospital, this was not identified as a priority for the group and was therefore not repeated. The full results are shown in Appendix L.

The Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ) Results

This questionnaire was only administered once over the course of the inquiry. The purpose of this tool is not about gaining a numeric picture of complexity leadership in an organisation, its real value lies in people coming together to discuss the results and engage in sensemaking together. The key to interpreting the results is balance. According to Obolensky (2010), more than two percent difference between yin and yang indicates a lack of balance. When the results were presented to colleagues, they became very preoccupied with the raw scores rather than the signals the results were telling us.

The questionnaire consists of 16 questions on a 10-point Likert Scale (Appendix M). The scores are added up (minimum 16–maximum 160), with a higher score signifying a higher degree of team functioning according to complexity principles. The results are interpreted as follows in accordance with Obolensky (2010): '60–100 = Danger zone – the organisational effectiveness is sub-optimal, attention across the board is needed; 30–60 = Severe danger – action needs to be taken if individual and organisational effectiveness are to be safeguarded and Less than 30 = still existing?'.

There was initially a poor response to the Complex Adaptive Leadership (CALTM) Organisational Capability Questionnaire. Only two colleagues responded to the first e-mail. I followed up with a further e-mail with little effect. When I gained access to the online survey tool, participation improved and when the survey closed, there were ten responses (50%) in total. The raw scores are shown in Table 19.

Respondent	Purpose	Objectives	Skill/Will	Rules	Feed Back	Ambiguity	Freedom	Boundaries	Yin	Yang	Total	
1	45	35	70	30	35	50	35	50	49	39	70	
2	75	45	80	30	40	60	30	35	58	41	79	
3	80	55	90	55	80	70	70	45	74	62	109	
4	65	50	80	50	40	60	55	45	63	48	89	
5	75	40	65	35	20	70	30	40	56	38	75	
6	65	60	75	35	35	50	60	75	62	52	91	
7	65	50	75	40	30	60	40	60	58	47	84	
8	65	80	100	65	60	60	75	70	77	67	115	
9	70	65	80	55	60	75	60	70	71	63	107	
10	60	50	80	20	30	50	40	30	56	34	72	Total in %
Average	67	53	80	42	43	61	50	52	62	49	89	56%
Max	80	80	100	65	80	75	75	75	77	67	115	72%
Min	45	35	65	20	20	50	30	30	49	34	70	44%

Table 19: CALTM Raw Scores

How these scores relate to one another and the Yin/Yang of the Four + Four with Scores and interdependencies as per the Obolensky method are shown in Figure 53. The scoring method is in Appendix N.

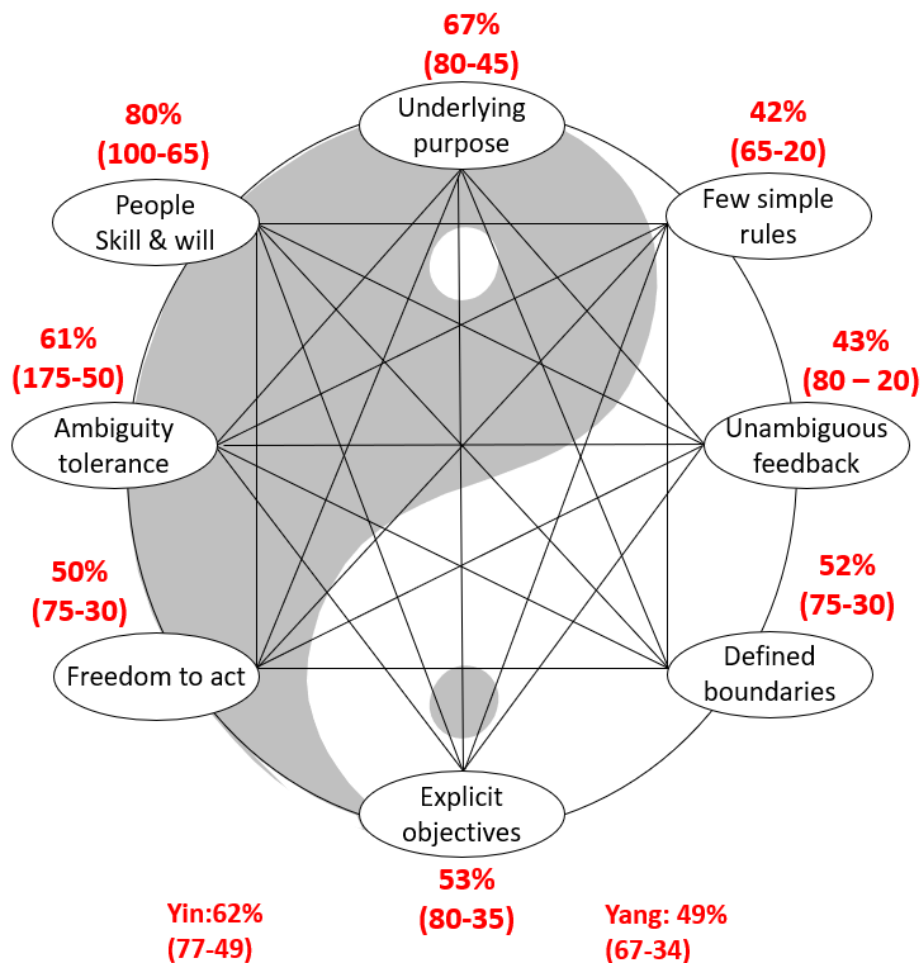


Figure 53: Yin/Yang of the Four + Four with Scores and Interdependencies

All scores were less than 100, signifying a lesser degree of team functioning according to complexity principles. The strongest area was people skill and will (80% range 65-100) and the weakest areas were: few simple rules (42% range 20-65), unambiguous feedback (43% range 20-80) and freedom to act (50% range 30-70). Yin and yang were different by 13 suggesting imbalance. This suggests that staff have the skills to do their job, act in a polyarchic way and have the will to do so. However, relying on people's skill and will alone is insufficient to achieve optimal organisational outcomes. The presence of a few simple rules or guiding principles are required. In the hospital, there are a myriad of policies, procedures and guidelines with many mission statements making navigation challenging with no feedback mechanisms. Feedback is vital for an organisation to be adaptive and to be able to meet the challenges of constantly shifting context. The low score on freedom to act could reflect a lack of empowerment of staff, a 'command and control' culture and a lack of self-organisation.

The results from the Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire resulted in a prolonged discussion at two of the co-operative inquiry sessions; session three and session four. The discussion focused on the actual numbers and how they were calculated rather than what signals the results were telling us. I decided not to repeat the questionnaire as I felt the results were nudging us back into a positivist paradigm and that the discussions had detracted from the spirit of the inquiry.

SenseMaker© Survey Results

There were five medical responses to the SenseMaker© survey. One respondent requested that the data was available for researchers only. There were four female respondents and one male. There were too few responses from colleagues for any signals to be detected, however, I shared the micro narratives from medical colleagues and also the overall survey results (Appendix O). The micronarratives provided by medical colleagues are detailed below. Any reference to individuals and ward has been removed and replaced with X

Respondent 1 micronarrative: *‘Over the last few days I have heard several stories about how colleagues feel distanced not only physically from the new building but also from the team. There is a sense that they are visitors rather than a fundamental part of the team. What made me rather sad was that my colleagues felt powerless to do anything about it’.*

Respondent 2 micronarrative: *‘when it comes to a crisis and a crunch it is wonderful to know that you are part of a team that can down tools and refocus pull together to help a youngster in crisis. Early in the pandemic crisis, the paediatric MSW, PDOC BI¹⁰ liaison and preadmission team, downed tools for the plight of X, long on the waiting list for PDOC bed and destined to be the first admission to new X unit with the opening of the new hospital. Patient immunocompromised, respiratory insufficiency, trach anticipated to be transferred out of single room in an acute hospital to a general ward with the onset of COVID-19, family and team fearful of the potential risk of COVID -19 if the child contracted on open ward. Team advocated for admission earlier to NRH with a view to already planned admission, move sooner than later to accommodate in NRH PDOC team rather than risk open ward infection and compromise. This was accomplished, but unfortunately clinical deterioration and stormy hospital course NRH SVUH ultimately returned to NRH. Patient remained stable and well*

¹⁰ MSW (medical social worker), PDOC (person with disorder of consciousness)’ BI (brin injury)

completed SMART in the new Rose/Holly unit and ready for discharge to LTC. The new unit at NRH X unit designed and built for PDOC patients and their families, single on suite rooms and safety in infection prevention and control, plus fit for purpose facility and specialized PDOC team - I hope the X unit can be staffed and open to other clients ASAP.'

Respondent 3 micronarrative: 'Truly, I feel I have had enough of the NRH. If I had an alternative place to work in Ireland, I would have resigned by now. In fact, I might yet leave but have to be considered in my decision as I would need to be prepared to work in an area of less interest to me or to move overseas. I feel I can no longer carry the burden of trying to deliver such a poorly accessible service. Patients are not getting what they need when they need it. The system of care incl. the NRH portion of this care, have declined over the past 10 years. We have contributed to the HSE clinical care programmes, to the development of a trauma & a neuro-rehabilitation strategy & all we have to show for it is less beds, longer waiting lists & patients being admitted with complications. This worry of this causes sleep disturbance and then fatigue during the week, longing for the weekend to come when I can sleep easy knowing that I do not have to face the NRH for 2 days. Sometimes I have suggested ways of working to try to overcome these challenges or I have asked questions of what we are doing/how we are doing certain tasks - but I am either oppressed or I am criticised for questioning. The new hospital is a beautiful building and a lovely working environment, but I am not based there. It is ironic that we are being asked to review our team working but half the team are far away from our patients and working area. The technology also leaves a lot to be desired - one would expect state-of-the-art IT in the new building but alas, this isn't so. In summary, I used to love coming to work every day but sadly, no longer do'.

Respondent 4 micronarrative: 'Over the course of the 2 day move, I remember thinking how like the London Olympics it seemed (the NHS piece) - the beds moving, the roles and responsibilities being clear - everyone involved - volunteers - clapping and party bags. It made me proud to be part of team NRH. We must hold onto that feeling'.

In the session where the results were discussed (session 4), colleagues acknowledged the emotion in the stories and expressed a shared desire to take collective action to improve things.

5.3 Meta-cycle

As described in chapter four, the meta-cycle is a reflection cycle which is an action research cycle about the action research cycle. This was achieved in this research by using Reflexive thematic analysis.

5.3.1 Reflexive Thematic Analysis

As discussed in chapter four, reflexive thematic analysis (RTA) is '*a theoretically flexible method... for 'developing, analyzing and interpreting patterns across a qualitative dataset'*' (Braun and Clarke, 2022 Pg 4). Through reflexive thematic analysis, the different perspectives that were generated over the course of the inquiry were brought together through interpretative engagement with the data (see Table 10: Summary Data Table) with particular emphasis on the session recordings and transcriptions. The six-phase process recommended by Braun and Clarke was followed with the recursive and iterative analysis (Braun and Clarke, 2021b). During the process I engaged in explicit self-aware meta-analysis using the three different forms of reflexivity as described by Finlay (Finlay, 2002, Finlay, 2017); introspection, intersubjective reflection and mutual collaboration. This was achieved through significant in-depth analysis and reanalysis and interpretation with themes generated through repeated engagement with the multiple sources of data mediated by the researcher's experience, practical knowing, theory, and interiority and then interpreted through the six properties of complex adaptive systems (van der Merwe et al., 2018) and complexity leadership theory. This reflexive thematic analysis is a reflection of my interpretive analysis of the data performed at the intersection of: (1) the dataset; (2) the theoretical assumptions of the analysis, and; (3) the analytical skills/resources of the researcher as described by Braun and Clark (2019).

Reflexive thematic analysis patterns meaning at three different levels: overarching themes, themes and subthemes (Braun and Clarke, 2022). In my analysis, I attempted to surrender myself to what the data were really saying. Rather than getting distracted by recurring words, I allowed myself swim and then float and only when I had become fully acclimatized to the data did, I feel sufficiently confident and safe to become fully immersed within the sea of words and sounds. Gradually, meaning crystallized from the depths, that I felt bore adequate witness to the experiences of my colleagues.

Two overarching reflexive themes comprising four subthemes, were constructed through the reflexive thematic analytical process that reflected what colleagues felt was most important to support complexity leadership development and leading in complexity:

1. the development of communicative space and
2. the enactment of teamwork

These themes were verified and validated with co-researchers.



Figure 54: Final Thematic Map for Leading in Complexity Analysis

5.3.1.1 The Development of Communicative Space

At the initiation of the research, colleagues were experiencing significant challenges in managing the tension between the operational demands of their jobs and yet further demands were being asked of them (summarised in the preunderstanding results section). They felt they had no time for creativity or to explore possible improvements.

This overarching theme encompasses the structure related features of a complex adaptive system (CAS) as outlined in chapter 3: relational, open, and contextual, and reflects the requirement for leaders and organisations to ensure such a communicative space exists.

At the commencement of the inquiry there were very few opportunities for colleagues to connect or have any meaningful engagement. As one colleague put it:

P2 (session 1): 'we don't get many opportunities for coming together' and P2 (Interview): 'We don't have the time to make time for coming together'

There was also a sense of dis-connection:

SenseMaker© micronarrative 1 (about consultants): *'There is a sense that they are visitors rather than a fundamental part of the team'*.

As I immersed myself in the data, there were different, and occasionally conflicting, views of what this meant to colleagues. Through the process of interpretation and sensemaking, there were different thematic elements of what this meant for us as a group expressed in the following themes: The need for human-to-human connection (physical, virtual, spiritual) and relating which will now be discussed in turn.

Human to Human Connection

Through repeated engagement with the data, I interpreted the theme of the need for human-to-human connection. Similar to Bourdieu's concept of social capital being about connections between people (Bourdieu, 2018) and Arena's description of adaptive space creating connections (Arena, 2018) this comprised the subthemes of physical, virtual and spiritual connections.

Physical Connection

The development of this particular theme evolved throughout the analytical process and was a useful organising concept for a number of sub themes (collaborative workspace, social gatherings, networking events and shared learning). The process for the development of this theme is shown in Figure 54.

It was clear from the data that opportunities for colleagues to actually, physically meet were few and far between.

P7 (Session 1): 'there has to be some way of people being able to meet and communicate. I mean this is the first time I think I've set eyes on X and X in I don't know how long. Seriously, you know? So, it's and it's easy to do in other hospitals because they have dedicated consultant meeting rooms. So, Beaumont Hospital would have had that, Vincent's Hospital have that. All other hospitals would have that. But here meeting with another consultant, takes organisation and in fact, it takes a formal meeting'.

Colleagues shared an emotional sense of isolation, detachment, and loneliness. As colleagues described:

P1 (session 3): 'I think we were disconnected and distant before, but we are even more so now'.

SenseMaker® micronarrative 1: 'Over the last few days I have heard several stories about how colleagues feel distanced not only physically from the new building but also from the team'.

And another:

P2 (session 3): 'It's very lonely over there yeah, and I certainly value any opportunities to come together with colleagues'

P1 (Session 3): 'It already it feels here like we are miles from the epicentre and it's like a ghost town in this corner now'.

Co-researchers identified the importance of a physical space to come together to facilitate working together collaboratively and also to enable them to work effectively:

P3 (session 4; reflecting on a conversation with the Clinical Nurse Manager Occupational Health): 'It's become very difficult, we feel as a board. You know? We're over here and and. Then she said again well, do you have lockers? We don't no no. And do you have do you have actual office space? And X and I share an office right? Why is that? Why are we scrambling around to find room here in the new hospital and we- well, no, we actually don't have the basics. We are not recognized as needing offices or changing space or and we're actually very poorly off compared to the rest of the departments, and she said, well, I think you certainly have a case there, yeah. And so why should we be footsling around about it? You know? And yeah these are basic things that people should have, yeah. And we've been sharing space, which is absolutely fine, and I'm making space for X now she's out of her office but what the hell is that? Just just because she's a locum and part time you don't get your own office? Is that

crazy? You know you have to have a space to put your books to bring your own lunch, you know and then if the two of us are here together X has nowhere or I have nowhere'.

P3 (Session 1): 'if we can find a space where we can meet and talk, then that will improve communication, team working and clarifying who's doing what'.

P4 (session 4): 'The use of a room.... is a positive thing that can support your consultant body'

P7 (session 3): You know you have to have a space to put your books and charts to bring your own lunch, you know and get work done'.

There was not universal agreement about the necessity for a dedicated physical space but there was an acknowledgement that we needed a variety of meetings for and including educational and learning activities.

P8 (session 1): I feel that there are two separate things, so a physical space in the building for people to come together and then social fora where we actually we go out and meet each other and do other nice things'

P3 (Session 1): Potentially, although you have to then get people into that room. If they're all scattered all over in different places, then you might find that you are never in the room when there's anybody else around in the building?'

P5 (session 4): 'Would it not be better to organise our time to be in the same place at a particular time rather than having a room that nobody is ever in?'

P4 (Session 3): 'I do think that people will meet if there's reason to meet'.

P6 (session 4) 'as well as not having geographical focus as consultants, we don't have even have a shared clinical focus. There should be sacrosanct times in the week where a key teaching or say governance function happens. And everything rotates around that. So increasingly it might be handover meetings or complex reviews meeting those types of meetings. And I think that they could act as a stronger focus. No, it's actually it's very easy to find a geographical space. We find a broom cupboard somewhere that nobody wants, and we could hang our coats there. But I think we need something with a purpose that brings us together'.

Actions were identified and taken around mechanisms to meet physically including scheduling coffee, lunch and informal dinners as well as committing to coming together as an inquiry group. The inquiry group was seen as an opportunity for learning about complexity theory and complexity leadership. In addition, colleagues took actions to commence the process of the

identification of a physical space within the legacy building of the hospital, after the move to the new building, where colleagues could meet. A number of different fora were convened including scheduled medical handover meetings and NCHD meetings.

P3 (session 6): 'So as we're going back to the future, we'll have forums that are on site or together and dinner and then there'll be times where we might do a little bit of a different meeting with a presentation or something that we're interested in'.

Virtual Connection

Interpretation of the data revealed that colleagues felt that virtual connections could work in addition to, and at times instead of, physical meetings.

P5 (session 4): 'I think for the virtual meetings, they do facilitate us when we get busy'.

And

P2 (session 5): 'These are extraordinary times, and it just shows the strength and resilience of colleagues that were even able to come together today virtually to talk about to come together and just talk really'.

Co-researchers expressed a preference for video conferencing rather than teleconferencing.

P5 (session 5): 'I think the virtual meetings can work very well. But I think it's much better when you have these words face to face where you have a video of somebody's face on the screen and that makes it much more interactive, I think because you can then read the body language'.

P8 (session 3): 'And I think if you think about in a normal year, we would have opportunities. Now, they may not be terribly plentiful, but the IARM (the Irish Association of Rehabilitation Medicine, a society representing doctors who practise in Rehabilitation Medicine in Ireland) for example, we would definitely met at the IARM, perhaps at the BSRM (British Society for Rehabilitation Medicine a learned society representing doctors who practise in Rehabilitation Medicine in the United Kingdom and Ireland) perhaps at the likes of the Ernest Goulding (an annual lecture in the hospital in memory of the first Chair of the Hospital Board) but those have been completely absent. Everything has been done remotely, and it is different. I think it's

a different type of connection. It's not the same as meeting face to face, but I suppose it's better than nothing for us to be meeting like this'.

Colleagues also identified the need for good technology for this to work which was not being provided.

P4 (session 2): 'I see that the (physical) disconnection from the hospital board level and the executive level is actually worse and our technology is not good enough to connect us up. And I don't think that that is recognized'.

P1 (session 4): 'the technology also leaves a lot to be desired. One would expect state of the art IT in the new building, but alas, this isn't'.

The ability to access to the many educational events that arose as a consequence of the pandemic virtually was seen as a very positive development:

P8 (session 6): 'the virtual access to lectures and webinars and online is amazing'.

Actions identified and taken included the establishment of a WhatsApp group and the testing of different video conferencing platforms including Webex, Zoom and Microsoft Teams. Inquiries were commenced into procuring individual computers for the NCHDS to facilitate participation in virtual meetings both operational and educational. After testing the different platforms, although the inquiry group preferred the Zoom platform, a decision was taken centrally within the HSE that Microsoft Teams was chosen as the virtual conferencing platform of choice due to a better security profile.

Spiritual Connection

I abstracted this theme from the data as I interpreted the importance of meaning and purpose and the desire for growth and development which are recognised as seminal constructs of spirituality (Pryor and Bright, 2011, van Saane, 2019). Meaning and purpose are also well documented as important in employee engagement literature (Kahn, 1990, Kahn, 2010). Spirituality is also increasingly being recognised as important to human flourishing (Zsolnai and Flanagan, 2019) and is a search for meaning that connects all living things and ultimate reality. Medicine is often seen as a vocation or calling, with a responsibility to a greater good as articulated in the Hippocratic Oath (Miles and ProQuest, 2004) which are also dimensions of spirituality (Pryor and Bright, 2011).

At the beginning of the inquiry, colleagues struggled to find clear meaning and purpose in their work.

P7 (Session 1): I have no understanding of the interface between consultants, the medical board and the hospital the (clinical) program and the managed clinical network. Who does what?'

Co-researchers recognised the importance of having a common purpose.

P8 (Session 3): 'when you're working within a complex and adaptive system, there should be clear purpose'.

P6 (session 3): 'I think we need something with a purpose that brings us together and that has a purpose for our practice and that becomes the collegial focus'.

Colleagues established that such purpose wasn't apparent in the organisation.

P7 (Session 1): 'I am optimistic and positive in every other aspect of my life, except when I come here and get lost'.

P7 (session 2): I came out of training with a clear role and purpose, but I just don't know what that is anymore – what's the point of working so hard when all you get is no no no?'

P3 (session 2): 'Everybody was doing their best but it wasn't working well with many issues, governance, lack of clarity of roles, silos and lack of collegiality'.

There was a sense that the medical voice and role had diminished in the hospital over time:

P7 (session 1): 'the medical board was used to be a much more powerful group than I think it probably is now'.

And

P8 (session 2): 'we were little shining stars and full of enthusiasm, vigour. And then we came to work in this organisation. And systematically, it just gets absolutely beaten out of us'.

This lack of purpose was also reflected in the CAL™ scores with the average score for purpose being 67% but with a range of 45-80.

Clarification of roles especially that of the medical board, within the new organisational structure was identified as necessary.

P7 (session 1): 'we need to clarify the role of the medical board'

And

P8 (session 2): 'I think that that is a real bone of contention in this organisation, and actually in other rehab organisations. I think that there is a real problem with consultants being team leaders'

The need to identify together our shared purpose also developed over the course of the inquiry.

P7 (session 1): 'How are we working as a consultant body? What's not working and what we do we need to change?'

Participation in the co-operative inquiry and actions taken helped impact positively on this theme. The co-operative inquiry offered a spiritual space for colleagues to pause and reflect and make sense together of how we were leading and being led in the complex organisation, engaging the head and the heart (Rynes et al 2012, Galinsky et al 2011), not only about the outer world but also our inner world. The co-operative inquiry facilitated a deeper self-understanding. Participation in the inquiry group and sharing of leadership and teamwork literature as well as organisational documentation such as the hospital constitution and CARF standards helped clarify the role of the consultant, the role of the medical board in the new organisational structure and helped create a shared group identity and purpose. In addition, the actions of the handover survey and subsequent establishment of the regular handover and NCHD meetings also contributed to a sense of belonging and shared purpose.

P4 (session 4): 'They very much appreciated...feeling a bit more part of the organisation'.

P8 (session 6): 'So the Medical Board will be a forum to discuss non-operational issues. So, I suppose training, research, any ideas that we have and also it is a place for colleagues who don't go on to those clinical program meetings. It's really important that they have a voice too, that we all have a voice. So, I think that we shouldn't lose sight of the importance of having a forum like the Medical Board now whether we keep calling at the Medical Board that's up for us to discuss. So, continuing the Medical Board in some shape or form, but coming together as a group like we have been doing and then also being able to go out for dinner, meet for coffee, do things like that'.

And

P2 (session 5 feedback sheet) 'I just think this is such a great opportunity to come together as a group to vent, problem solve and bond. I think it provides a massive opportunity for us to be a

more cohesive and collegial group. When coop inquiry sessions have finished, I think these group reflective sessions should continue (separate to medical board)'

P5 (session 4 feedback sheet) 'The whole thing just felt like such a psychological safe space to share, vent and explore possibilities'.

P5 (Session 6): 'I think I know where I'm going now, and I know I'm not alone and that's a nice feeling. I feel calm and safe'.

P8 (session 6): 'I feel that we've gone from surviving to recovering, and we're on our way to flourishing, if that makes sense. And flourishing as a community of friends and colleagues within the .. organisation'.

P3 (session 6): 'One of the pearls that I have learned, or at least I'm learning, is that actually the excess of busyness is impeding creativity. You have to free mental space. You have to actually allow the brain to rest and have no agenda. And when you don't do that, you lose eons because you're not creative. You're just in your busy mode and you're getting things done. But you actually don't capitalize on what you've got. Especially for critical thinking or more bigger concepts or figuring out how to prioritize or manage things and things like that. I'm not good at it yet. But actually, to be effective at work, you have to learn to give yourself mental space. You're losing the essence of what you got to offer because you haven't got the space, the mental space to do it'.

Relating

Analysis and interpretation of the data generated a theme of relating. This I have interpreted to mean the cumulative experience of feeling connected, attached, and close to others at work and incorporates the subthemes of availability, openness, respect, listening and honesty and Integrity. This theme rests in the relational feature of a CAS where a CAS is defined more by the interactions between agents than by the agents themselves (Preiser et al., 2018).

Relating and relations can be defined as processes of engagement, as well as the outcomes of such processes and can give rise to rich interactions within the system such that any agent in the system influences and is influenced by positive (stimulating) or negative (inhibiting) feedback loops. Therefore, there is a need to attend to the nature of the relations between agents, and also the interactions that occur between a system and its wider environment.

This theme is reflected in the following representative quotes:

P3 (session 4): 'I might be more confident in relation to working with an IDT or J and figuring something out or sitting with M or the medical board and figuring out. But when I looked at the NCPRM (Clinical programme) and I'm trying to deal with S or C or P (hospital) or whatever else is going on, that's very different. I'm out of my comfort zone'.

And

P8 (session 5): 'I didn't feel that there was a group of colleagues ... that I could trust well enough to have an open and trusting relationship'.

P7 (session 2): 'Hopefully ...over the course of this inquiry ...our relationship with with one another will improve, as will our leadership and skills'.

Through the process of the inquiry, a relational network was created. Colleagues recognised that the nature of communication and the type of interaction was important and developed relational skills that improved communication. Co-researchers learned to engage with each one another, build bonds and communicate in a manner that was respectful and appreciative. Colleagues felt they had a more positive work experience as a result.

P3 (Session 4): 'maybe it is more important to understand your relationships...and pay attention to your relationships you know within the team'

P6 (Session 6): 'it has really actually been essentially important for us not just from a wellbeing point of view, but from you doing your job well and serving your patients well, that we have to take the time to be able to think connect and to exchange ideas and be creative'.

P3 (session 5 feedback sheet): 'We are all the better for participating. I think I am, and we are, on the right track. Is participation its own reward?'

Subthemes

i) Availability:

A pattern of data was identified around the subtheme of availability. Availability of time, space and resources was a particular challenge for co-researchers, but I have also taken this to mean intent to be present physically and spiritually.

An example of the challenge of the availability of physical space is demonstrated by the quote below:

P6 (session 4): 'there is not an inch of space available in the new hospital for anything that hasn't been set'

However, availability was seen as an organisational asset:

P8 (session 5): 'There was an appreciation of the availability of senior decision makers over the course of COVID and that clearly resonated a lot with individuals within the organisation'.

The importance of scheduling to be as inclusive as possible was a recommendation:

P8 (session 3): 'Have you checked to see if anyone is actually available on a Thursday when you hold those meetings? Or have you taken the time to find out if anyone is available?'

Being intentional around availability was recognised and commitments around actions were taken.

P9 (session 6): 'I find that even the WhatsApp saying, let's meet for a cup of coffee, it seems to be like a huge effort, which is daft. I know it's just a matter of forming a new habit, but I'll start again. And I know it's difficult because we're not supposed to sit together and all that stuff (due to COVID19 restrictions and safe distancing rules). But hopefully when things get freed up a little bit, I commit to seeing if anyone's available for coffee on at least a once-a-week basis. Here's my commitment'.

ii) Openness:

Throughout the course of the inquiry as trust and sharing increased colleagues became more forthright and open with sharing feelings:

P2 (session 5 in response to a SenseMaker© micronarrative): 'I actually, I can relate to some of the points that that person made and feel the same way. It's really sad'.

Colleagues valued the opportunities to share:

P9 (session 3): 'I have to say I really enjoy, uh, some of the light-hearted stuff that that we share'.

And

P2 (session 6): 'There was a lot of sharing of information and yeah, that just really felt quite collegial'.

It was recognised that connecting and relating to colleagues was a positive development and that that extended beyond the inquiry group and skills in this area developed over the course of the inquiry.

P8 (Session 3) 'So if you think about the teams that we work in, they're not neatly bounded. You know that we we, each of us work across different organisations. We work in different teams. We boundary span all the time. We work across academia, acute, community, so even though we say that we work in teams. There's actually that those those boundaries are are open and in rehab a lot of our roles are work across those boundaries, so our work is radically open'.

And

P3 (session 6): 'Yes, the importance of connecting with colleagues. And connecting with your colleagues, fostering friendships and and all that'.

And

P3 (Session 4): 'So that was one of the things I learned - just stepping back and just being in the moment just being there and allowing it to happen'.

iii) Respect:

Interpretation of the data revealed that co-researchers recognised the importance of respectful interactions with each other in an environment characterised by trust and mutual respect, where colleagues are comfortable being themselves and expressing themselves.

P8 (session 2): 'if we feel that we're not being respectful of each other, then this space is safe enough for us to call each other out'.

It was also recognised that perhaps this had not been given enough attention prior to the inquiry:

P6 (session 3): 'I think we've been very, very much less effective or disenfranchised or perhaps not the collegiality or respect that we could have brought to the plate'.

And

P3 (session 4): 'maybe it is more important to understand your relationships. And that relationships that are respectful and professional and on the point are always helpful'.

The inquiry facilitated the development of supportive practices and respectful relationships which enhanced psychological safety.

iv) Listening:

Analysis of the data disclosed that co-researchers recognised the importance of listening as a key leadership skill which was developed over the course of the inquiry:

P2 (session 5): 'So some simple things that I learned - being in the moment and really listening to the person or really being open to what they have to say about why they are saying it'

And

P3 (session 5): 'listening, you know, is really, really an art that I personally have to work on it a bit more'.

Through the process of the inquiry, co-researchers developed skills in this area.

P8 (Session 3 reflective diary entry): 'I talked less and listened more and really tried to listen to understand rather than just listening to respond'.

v) Honesty and Integrity:

On analysing the data, a pattern of behaviours and beliefs was identified that co-researchers valued:

P1 (session 3): 'I think open and honest conversations about our differences and having a better understanding of our differences and that just having a difference in opinion doesn't mean that you're in conflict it doesn't at all. It just means they have a different perspective and that's OK'

The data also revealed that colleagues felt that the inquiry group created the right conditions to facilitate honesty:

P2 (session 5): 'I don't know why actually. I think it allowed me to be more honest'.

And

P4 (session 3): 'Right, I mean it ticks all the boxes about relationships through collegiality about professionalism, but in the bigger picture, a collaborative and a co-operative element I thought had a load of merit in it.'

In summary, there was a real richness of data in this overarching theme illuminating the importance of connection for the group and, the different dimensions of that theme. This concept of connection is reflected in the complexity literature particularly with regard to the move towards social capital (Rena and Uhl Bien, 2016, Bourdieu, 2018) and the creation of adaptive space (Arena, 2018). The co-operative inquiry triggered an awakening in the group of the importance and necessity of connection and to seek opportunities within and outside the group to connect and the transformational potential of those connections.

5.3.1.2 The Enactment of Teamwork

Over the course of the inquiry, through the process of reflexive interpretive data analysis, a pattern became apparent around the theme of teamwork which was interpreted to mean the complex processes in which different colleagues work together to share expertise, knowledge, and skills to impact on patient care. This comprised the themes of collegiality and agency.

Collegiality

Collegiality was identified as a frequent code (n=20). As I engaged with the data, I came to recognise that this was a complex and multifaceted code. Whilst in medicine collegiality is perceived as a distinctive and symbolic core value, in reality, its meaning is ambiguous and ubiquitous. This was also the case in how collegiality initially appeared in the data.

This ambiguity and ubiquity is reflected well in the following quote:

P2 (session 3): 'It feels really collegial, and I suppose for COVID and me being more one of the more junior consultants, I suppose it ...was very reassuring for me because you know, we it felt like we were all in it together. We were all in the same boat. There was a lot of unknown. There was a lot of sharing of information and yeah, that just really felt quite collegial'.

And

P6 (session 2): 'I think it would be really nice to just build on collegiality for us'

As I engaged repeatedly with the data and engaged with colleagues, our interpretation of collegiality through this inquiry emerged as a conducive working environment that values the expertise and contributions of everyone, where decisions are made, and actions taken through dialogue and interaction which may result in more than the sum of the individual parts. I therefore promoted the code to a theme.

This multidimensional theme is composed of the following subthemes: Care, Collectivism and Positive Culture

i. Care

This subtheme incorporated many codes and second level categories, but it became clear through the analysis and interpretation of the data that the concept of care was essential to co-researchers and the organisation. This included self-care, care for patients, and also care for us as a group of colleagues and our teams.

Self-care was identified as important but co-researchers were less clear about how that might be achieved.

P3(session 4): 'There's a lot of discussion on, especially on social media with medics and health and social care professionals, about the challenge of knowing that you need to take care of yourself but also the pressure that we put on one another to, you know, to come in when you're sick and to come in or take your leave. So, I wonder, do we always enable each other to look after each other?'

Co-researchers recognised the link between leadership, caring, the organisation and care for our patients.

P6 (session 4): 'Leaders are there to care for workers. And then when they care for their employees they care for the customer in our case, the patient'

And

P4 (session 5): 'well-being as a staff member or as a patient is really important'.

The inquiry group acknowledged the need for us to care for each other as a group.

P3 (session 5): 'Just like everybody else, we require care and support, we need that through our colleagues'

And

P2 (session 2): 'I think as a group of colleagues we need to be supporting each other a bit more and it would wonderful if we can find opportunities to do that'.

Key elements that were identified as being important to enable care were:

I. Trust:

P8 (session 4): 'I didn't feel that there was a group of colleagues ... that I could trust well enough to have that sort of an open and trusting relationship'.

II. Support:

P3 (session 3): 'if we can be a support to one another and use that combined energy to change a bit of the organisation for the better I think that can only be a good thing'.

III. Compassion

Drawing on organisational literature, my understanding and interpretation of compassion in the context of this inquiry is the capacity for noticing distress, being concerned, empathizing, appraising and responding (dle Zulueta, 2016, Blake et al., 2022, Bartunek, 2019, Kanov et al., 2004).

P8 (session 2): 'I believe that what I should be doing is finding out the concerns of my colleagues and finding ways to bring those concerns to management'

And

P3 (session 4) : 'you kind of have a duty in relation to minding yourself because If you don't take time out or actually acknowledge the distress, you're actually probably doing everybody a disservice, not only yourself'

And

P4 (session 4): 'Let's have a very reasonable chat about the things that are stressing us and that could make staff and patient experience better'.

Through the inquiry process, co-researchers developed the courage and ability to have conversations with each other about the emotional impact of their work. The sessions

provided a valuable opportunity for reflection through sharing and dialogue and also a place to support each other.

ii) Collectivism

Through data analysis and interpretation, I identified the theme of collectivism, as a form of activism, to reflect how co-researchers were orientated toward group goals and actions, a concern for group as well as individual well-being, and the tendency toward a desire for group collaboration and cooperation that extended beyond the inquiry group and into interdisciplinary teams.

This was reflected in the expressed understanding of leadership by co-researchers:

P8 (session 1): 'leadership is a process that involves influence that occurs in groups'

And

P4 (session 1): 'leadership involves us all working towards common goals'

This orientation was also reflected in the choice of a co-operative inquiry as a method of inquiry and the group choosing to have me as a co-inquirer.

P8 (session 1): 'In a co-operative inquiry ...the group decide ...how many cycles you want to do, how frequently you want those cycles to happen and how long you want it to go on for'.

Co-researchers acknowledged that perhaps as a collective of medical consultants in the NRH, we were perhaps not functioning as well as we might:

P7 (session 1): 'the medical board used to be a much more powerful group than I think it probably is now'

The inquiry group recognised that the solution was in us working together:

P2 (session 2): 'It's about us working together, coming together ...as a group of colleagues who are interested in improving things'

And

P5 (session 2): 'If we can be a support to one another and to use that combined energy to change a bit of organisation for the better I think that can only be a good thing. Because on our own we are powerless'.

The ability to do this over the move to the new hospital was evidenced in the following:

SenseMaker micronarrative 2: 'when it comes to a crisis and a crunch it is wonderful to know that you are part of a team that can down tools and refocus pull together to help a youngster in crisis'.

Learning together was also abstracted from the data as a collective activity:

P3 (session 3): 'by interacting with one another, we change.... we work and learn across the different teams and systems And those behaviours can result in changes not just in us as individuals, but across us as a group, in our teams and then as a system as a whole'.

And

P5 (session 5): 'We need to learn from one other, about what works to improve relationships within this group and in our teams'.

P3 (session 3 presentation): 'So keeping it simple there are I suppose very common ground on one's own interpersonal skills, listening, communication, interactions, and adjusting your style to meet the circumstances – one can think about well once you've got it (good communicator, good listener, skills, motivations, team work, team building etc.) but not too simple - it's not that simple because it all depends on the circumstances of each interaction, and so each encounter, the relationship, your role, the context, the other person, their personality, role context is actually totally new and different but also the same – if that makes any sense'.

Actions taken included the sharing of information and literature on burnout and also seeking outside expertise about what supports were available to support wellbeing (Dr Gaye Cunnane, Director of Health and Wellbeing at RCPI). Actions were also taken around increasing awareness on internal mechanisms through the Positive Working Environment Group (PWEG) for seeking support. See Table 18 for all actions.

P3 (session 4) 'Well, we just went to speak to X and I suppose we really laid our hearts on the table we told her how we were feeling And and she was great. She we talked to her from a PWEG¹¹ perspective that we were feeling kind of left out and we really focused on the importance of trying to get a space together, consultant space, and I mean she was great. She really saw the benefit to that from a positive working environment. But also, you know, burn

¹¹ PWEG: Positive Working Environment Group

out, and being more collegial and and so she was really supportive and said that she would support us in any way she can'.

It was felt that the active feedback generated through the process of co-operative inquiry had resulted in a non-linear feedback loop that amplified the actions we took individually and as a collective and also the impact of actions.

P2 (session 6): 'We have achieved more together than each of us could possibly have done on our own'.

iii. Positive Culture

A subtheme that emerged was organisational culture, which was interpreted as a dynamic phenomenon of a supportive responsive senior management that enabled and included the medical leadership. Co-researchers felt distanced and excluded from senior management and identified the importance of having a positive culture in the organisation and the problems of having a negative culture and also the importance of feedback to facilitate adaptation and change and a positive working environment:

P10 (session 1): 'And the thing is about trying to interact with management. I haven't spoken to X (Senior leader) probably in about three or four years'.

P5 (session 5): 'there's very little real time communication or decision making. And sort of just in in my very limited exposure to unit 4 (where senior management and administration are based) it's all about having meetings where actions that have been decided by a very small group in a sort of echo chamber that are retrospectively communicated without the input of stakeholders who are involved'

P7 (session 2): 'Decision making here is opaque, no one seems to know who makes the decisions apart from a small clique of Xs friends at the top'.

P7 (session 2): 'we have no culture of feeding back in this organisation'

The lack of feedback was also reflected in the Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ) results where the accumulated scores gave unambiguous feedback a score of 43% (range 20-80) indicating a need for attention.

The unsupportive organisational culture was also reflected in the following statements:

P1 (session 2): 'there hasn't been that (necessary) cultural change, but now with an even greater physical distance, I feel the Consultants are feeling it. I feel it'.

And

P3 (session 3): 'We're not able to avail of the general supportive culture that used to be around'

P6 (session 5 referencing a letter of gratitude that other hospitals had received from the President of Ireland): 'My brother said this looks like a sort of letter all of the hospitals would have gotten and you clearly didn't get it from the NRH, and he was the one who pointed it out. And he said, different, you know, different ethos, it's interesting. As a complete observer with nothing to do with healthcare, but he noticed'.

Where there were opportunities for feedback and input into decision making, it wasn't always appreciated or valued and resulted in tension and constraint:

P1 (session 5): 'Sometimes I have suggested ways of working to try to overcome these challenges or I have asked questions of what we are doing/how we are doing certain tasks - but I am either oppressed or I am criticised for questioning'.

However, it was recognised that the process of the inquiry had facilitated the identification, recognition of and response to, feedback routes that hadn't been recognised heretofore and also that feedback could be enabling for the group, but also for senior management to be made aware of issues and challenged to respond.

P8 (session 2): 'So we have got adaptive capability and that is dynamic. So, we have within our own organisation lots of feedback loops from colleagues from data, our team meetings, patient feedback, peer review, adverse incidents, et cetera, et cetera'.

Agency

As I analysed and interpreted the data, I identified a pattern of data around agency which I interpreted to reflect the capacity of co-researchers to act in accordance with their will, independently or collectively. This theme incorporates the subthemes of influence, autonomy and authority.

At the commencement of the inquiry, colleagues felt they had no involvement in decision making.

P7 (Session 2): 'How can we have no input into how decisions are taken. I don't understand that, and it doesn't make any sense to me and it's clearly having an impact on colleagues'.

This finding was supported by the Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ) scores, which had a cumulative score of 50% (range 30-75) for 'freedom to act' indicating a need for attention.

Subthemes:

The subthemes of influence, autonomy and authority are now discussed:

Influence

The co-researchers recognised influence as an important part of the process of leadership:

P8 (session 1): 'leadership is a process that involves influence that occurs in groups'.

Yet co-researchers felt they did not have any influence on prioritisation in the hospital and initially did not see their own roles in shaping organisational outcomes:

P10 (session 4): 'one of the things was about, you know, no sense of say and of influence'

Being involved in decision making was seen as important in influencing and effecting change and there was a perceived power inequality.

P4 (session 5): 'when it comes to the next big decision perhaps it would be a good idea to try and get somebody involved in the same fashion as the other disciplines do'.

P1 (session 2 feedback sheet) 'I am frustrated with NRH management not wanting to rock the boat. It has got us nowhere'.

Co-researchers valued the learning about leading in complexity and felt it helped with their understanding and therefore their ability to influence more effectively.

P2 (feedback sheet session 3): *'I can't get enough of all the leadership theory and complex adaptive systems theory so please continue to share all your knowledge on this with us. It's helping me to understand why there are so many problems and it's so useful to have all that background knowledge'.*

Autonomy and Authority

Colleagues recognised the importance of autonomy and authority in effective leadership, but they felt unable to be autonomous and felt caught between competing demands.

SenseMaker micronarrative 3: 'Sometimes I have suggested ways of working to try to overcome these challenges, or I've asked questions of what we are doing, how we are doing certain tasks, but I'm either oppressed or I'm criticised for questioning'.

And

P4 (Session 4): 'it would appear that was happening without input from the from the consultant body who are supposed to be the ones that have got the admission and discharge privileges'.

However, co-researchers recognised that they were making decisions individually and independently:

P3 (Session 5): 'I do the work that that I really have to get done because there's some pressure on and you'd be nuts not to understand that colleagues are going to make the decision that they're going to have to do the work that's most pressing'.

It was recognised that participating in the co-operative inquiry was itself an expression of autonomy and authority but also collaborative agency which revealed a move from the 'me to the we' and that enabled a recognition and management of tension and organisational paradox (Kreiner et al., 2006, Smith and Lewis, 2011).

P8 (Session 5): 'We are making a leadership decision to be here, and we are leaders within our multidisciplinary teams'.

P2 (session 6): They don't give you your handbook on how to deal with a global pandemic, you know what I mean? So, I think that it has been an extraordinary experience to have lived in

these times, but also an extraordinary time for us to come together and agreed to do a group inquiry like we have done’.

P8 (session 3): ‘we are asked to lead in paradox, so very often we're asked to do completely opposing things and rather than just kind of throwing hands up in the air and going oh for goodness sake that's daft. I'm not going to do anything. We navigate that that type of space all the time and we navigate uncertainty and I and I think that in in rehab so many things are uncertain’.

The inquiry outcomes were also be analysed through the Preiser CAS framework. These are summarised in Table 20.

Features	Underlying principle	Inquiry outcome	Quotes
Structure related	1. Constituted relationally	Co-researchers developed a new appreciation of being part of a CAS: The inquiry facilitated the building of relationships and trust. It also fostered collaboration and supported communication. Individuals recognised that in addition to working within the medical discipline, they also work in teams within clinical programmes within the NRH that exists within the overarching health system	P8 Session 3 : <i>‘So if you think about rehabilitation, we are individuals with our individual disciplines, but we work in teams and we have teams within programs’.</i> P3 Session 4: <i>‘maybe it is more important to understand your relationships.... and pay attention to your relationships you know within the team’</i> P7 Session 2: <i>‘Hopefully through over the course of this inquiry, that our relationship with with one another will improve, as will our leadership and skills’.</i>
	2. Radically open	Co-researchers developed a new appreciation for being boundary spanners connecting to other teams within and outside the hospital and also learned to be open with one another. Colleagues also learned to appreciate	P3 Session 6: <i>‘if you think about the teams that we work in, they're not neatly bounded. You know that we, each of us work across different organisations. We work in different teams. We work across academia, acute, community... and in rehab a</i>

		influence of actions and behaviours beyond the scope of the inquiry.	<i>lot of our roles are working across those boundaries’.</i>
	3. Context dependent	Colleagues learned and shared the trans- contextuality of personal and professional life and recognised how we change in response to new evidence, new building, feedback from staff/patients. Through the inquiry, we shared multiple sources of data to co-create and integrate knowledge.	<p>P4 Session 5: <i>‘I mean, it also depends on the situation Because if you have a particularly difficult situation, and you've struggled to deal with that, in the context of your team, you know, maybe it's made you feel very negatively at that point, but then another situation comes along, where something might be quite different. And it's a very positive experience.’.</i></p> <p>P7 Session 2: <i>‘they're running their lives and their family lives, as well as their research as well as their teaching as well as their clinical commitments, as well as we're in a pandemic and as well as all the politics and as well as all of the HSE stuff and the program stuff..... How do you change and adjust as life changes and things like that and different commitments at home and you have all young kids or teenagers or people just entering College and I have grandchildren. Things are different’.</i></p>
Process related	4. Adaptive	The inquiry fostered iterative learning and participatory collaborative engagement. The cycles of action and reflection, resulted in changes to behaviour of co-researchers as individuals and as an inquiry group which resulted in co-evolutionary adaptation	P2 Session 4: <i>‘From my point of view, I think one of the really good things about COVID and this work was that there was a lot of change to ask for and a lot of people I thought wouldn't be able to make the changes made great changes. I'm surprised at how adaptable</i>

			<p><i>people were that if we were in another time period and we'd asked them to make some of the changes they've just made It would not have happened. I think it's proven that we can do things that normally would take a million years'.</i></p> <p>P2 (session 6): <i>'We have achieved more together than each of us could possibly have done on our own'.</i></p>
	5. Dynamic	<p>The cycles of inquiry allowed feedback loops from the data generated by the inquiry which resulted in changes that went beyond the inquiry group. Many unexpected things happened over the course of the inquiry, but the group flexed and pivoted and not only endured but excelled.</p>	<p>P5 Session 3: <i>'we change in response to new evidence to we're changing now that we're moving, and we have moved into the new building, we respond to feedback from staff from patients from colleagues. And so, we, we, we, we, we change we flex all the time'.</i></p> <p>P8 session 4: <i>'Here (in the inquiry group) you have to... be true to your own self and your work and your contribution and be open to feedback. ... and there's definitely ways to step back, reflect, adapt, move on, and do other things'.</i></p>
	6. Emergence	<p>Through the interaction of the inquiry group, novel qualities and phenomena emerged. A small action like the WhatsApp group, together with the inquiry itself had a transformative effect beyond what was expected.</p>	<p>P7 Session 6: <i>'I think this is the way something is sustained and within that flexibility and changeability, that it's something that it has to adapt to the times. You know what I mean? And the co-operative inquiry research -that touched a nerve. Remember when I put it into the webinar (National Clinical Programme webinar) about the</i></p>

			<i>boots</i> (referencing David Coghlan's comment at the masterclass about action research being about pulling your boots on)?'
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Table 20: Inquiry Outcomes Analysed through the CAS Framework

The overarching themes, themes and subthemes identified in the RTA can be combined to create an integrative dynamic framework for the development of complexity leadership in a complex adaptive system. I have chosen the symbol of Yin and Yang from Taoism as a metaphor for how these elements interact (Capra, 2013). Just as with Yin and Yang these elements should be seen as interrelated with complementarity rather than opposing forces that constantly interact to form a dynamic system in which the whole is greater than the individual parts. Yin-Yang also reflects the duality of being an insider action researcher and also the many paradoxes that exist in healthcare. Through cyclical action and reflection, the framework has the potential to allow adaptation to real time feedback.

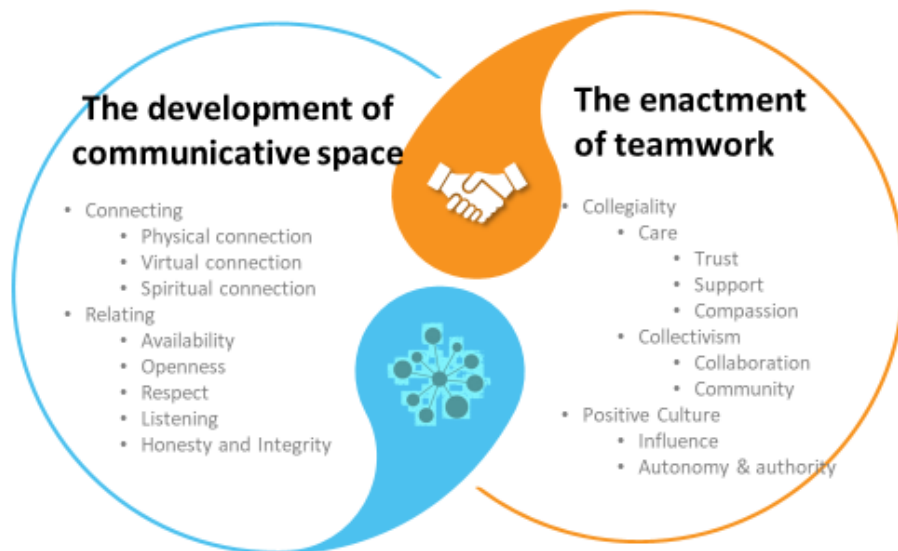


Figure 55: Framework for the Development of Complexity Leadership In a Complex Adaptive System

5.4 Chapter Five Conclusion

This chapter has presented the findings of the research; first-hand and second-hand preunderstanding activities (patient experience mapping, inductive thematic analysis of semi-structured interview transcripts, qualitative deductive content analysis and affinity diagramming), the co-operative inquiry (6 cycles of inquiry with actions and reflections) and the metainquiry (reflexive thematic analysis) and addressing the research aims and questions of the research.

The preunderstanding activities generated knowledge, insights and an understanding of patient experience and also the lived experience of working in the organisation of participants, including the author, prior to the commencement of the co-operative inquiry. These activities were theoretically sensitised through the literature review and scoping reviews. These activities provided knowledge regarding what was known about the phenomenon of study (medical leadership in the hospital) when the research expedition commenced. The patient experience mapping and analysis showed that overall, patient experience was good, but that access and communication were areas for improvement. The themes of collaboration, patient centredness, the need for improved governance and the need for better knowledge mobilisation were generated from the inductive analysis of the interviews. The qualitative deductive content analysis revealed a lack of supportive leadership that might be expected of senior leadership within the organisation at a time of significant disruptive change. These activities exposed an incongruence between theory and practice but also revealed knowledge, insights and understanding to provide a firm platform to facilitate the move from preunderstanding to understanding, which were the improved insights that emerged during the co-operative inquiry and metainquiry.

In the co-operative inquiry, data was generated over the course of 6 action research cycles, with participants engaging in an 'extended epistemology' of experiential, presentational, propositional and practical ways of knowing. Data analysis consisted of an integrative abductive triangulation approach which incorporated the first, second and third person inquiries. Over the course of the six cycles, themes were generated through abductive reasoning that changed, expanded and diverged and as we moved through the cycles of the inquiry. Other themes emerged as colleagues reflected on their leadership in the hospital and also on regional and national roles they held and also as we reflected as a leadership collective. Actions were taken individually and collectively to create adaptive space and

develop leading in complexity skills with action an intrinsic part of the participation in the inquiry. Knowledge was generated that improved the wellbeing and leadership skills of individual participants and the community of medical consultants and the inquiry provided a platform for the mobilisation of larger-scale change within the organisation and beyond.

Through reflexive thematic analysis, the different perspectives that were generated over the course of the inquiry were brought together through interpretative engagement with the data. Two overarching reflexive themes comprising five subthemes, were generated that reflected what colleagues felt was most important to support complexity leadership development and leading in complexity:

1. the development of communicative space and
2. the enactment of teamwork

These themes were verified and validated with co-researchers and combined in a dynamic framework for the development of leadership in a complex adaptive system.

Chapter six will draw upon the extant literature to offer a theoretical analysis of the main findings of this research in relation to the research questions and also argue that the findings of this research support the effectiveness of an action research approach in the creation of adaptive space and the development of complexity leadership skills. The chapter will also how insights from this DBA thesis make novel contributions to practice, theory and method.

Chapter 6: Discussion

'We can't control systems or figure them out. But we can dance with them!'

Donella Meadows (2001).

6.1 Introduction

This chapter provides a discussion based on the research findings presented in Chapter 5. In this chapter, I draw upon the extant literature to offer a theoretical analysis of the main findings of this co-operative inquiry in relation to the research questions and argue that the findings of this research support the effectiveness of an action research approach in the creation of adaptive space and the development of complexity leadership skills and how insights from this DBA thesis make novel contributions to practice, theory and method. I will also discuss the unexpected ethical challenges that arose during the course of the study.

The inquiry as a joint knowledge and action generating process transformed colleagues from passive disaffected individuals into a collective of empowered change agents and was therefore a change process itself. Co-operative inquiry was subjective/objective, pluralistic, with an extended epistemology and allowed for uncertainty and emergence which was an ideal approach for researching and engaging with the uncertainty, paradox and complexity of healthcare.

6.2 Revisiting the Aims and Research Questions

As a reminder, during a period of significant change (i.e., the move to the new hospital) the aims of this thesis were twofold:

- 1) To evaluate the value of co-operative inquiry as a vehicle for supporting leadership development and learning in a complex adaptive system during a period of change.
- 2) To establish how participants can work together to identify strategies for improving staff and patient experience.

The specific research questions to be addressed were:

- How can we as medical leaders within the NRH facilitate transition to the new hospital and effectively manage staff and patient experience?
- How do we develop the leadership skills to do this?

Four main objectives emerged for this study reflecting the outcomes in the complete theory of action research by Shani and Pasmore (Shani and Pasmore, 1982):

1. To develop knowledge and awareness with medical colleagues about the concept of Healthcare and the NRH as a complex adaptive system
2. To take actions from this knowledge that will result in organisational Improvement and improved experience of quality of work life and patient experience.
3. To develop leading in complexity skills
4. To develop organisational learning

This co-operative inquiry commenced by building a second person community of inquiry, around the research questions. As the co-researchers moved into the action cycles of the inquiry, they practiced a form of first-person research practice in that each individual returned to their different teams and paid a new attention to their work (being aware of impact on others, active listening, actively seeking feedback), experimented with new forms of practice (e.g., reflective practice within teams, new fora for meeting, clinical handover), the experience of which they brought back to the co-operative inquiry group (all actions summarised in Table 18). New enabling leadership practices that were developed included: brokerage (new ideas were generated at the sessions and bridges created for the exchange of ideas), leveraging adaptive tension (Boisot and McKelvey, 2010) (engaging the tension between the entrepreneurial and operational parts of the system), connecting (creating networks within and beyond the group to facilitate information exchange and amplification). These new leadership practices are reflected in Complexity Leadership theory as described by Uhl Bien and Arena (Arena and Uhl Bien, 2018, Uhl Bien and Arena 2018). These first- and second-person inquiries then supported the third- person inquiry in the community beyond the inquiry group through the intentional actions of engaging with senior management individuals and groupings and through dissemination and knowledge mobilization activities (presentations at conferences and scholarly papers).

6.3 Responding to the Research Questions Explored through the Research Findings

As indicated above, this research sought to answer the research questions: 1) How can we as medical leaders within the NRH facilitate transition to the new hospital and effectively manage staff and patient experience? And 2) How do we develop the leadership skills to do this? In this section I will discuss how this research has answered these questions supported by the extant literature and how this research has addressed previous criticisms of complexity research (Greenhalgh and Papoutsis, 2018) and action research literature (Greenwood and Levin, 2006, Waterman et al., 2001) and demonstrate the most rigorous test of knowledge creation, that is, actionable knowledge.

6.3.1 Literature Reviews

The literature reviews are detailed in Chapter 3. The scoping review of the literature on the application of complexity theory in healthcare showed that although publications relating to complexity theory are increasingly popular and have a potentially important perspective to offer, conceptual confusion, ambiguity and lack of clear application hinder practical utilisation. However, the review allowed a crystallization of the characteristics, attributes and features of complex adaptive systems (Preiser et al., 2018) and allowed the characteristics, attributes and features to be identified within our organisation that framed our organisation, The National Rehabilitation University Hospital as a complex adaptive system. This is detailed in Chapter 3. The literature also led me to agree to agree with Greenhalgh and Papoutsis's view that: *'We embrace the theme of complexity in name only and fail to engage with its underlying logic'* (Greenhalgh and Papoutsis, 2018 p. 1)

From a leadership perspective, only six of the sixty-four papers that were extracted dealt with leadership in complexity and the main theory referenced in the papers was complexity leadership theory (Uhl-Bien, 2021, Uhl-Bien and Arena, 2017b, Uhl-Bien and Arena, 2018, Uhl-Bien and Marion, 2007, Uhl-Bien and Marion, 2009, Uhl-Bien et al., 2007). (Uhl-Bien, 2021, Uhl-Bien and Arena, 2017b, Uhl-Bien and Arena, 2018, Uhl-Bien and Marion, 2007, Uhl-Bien and Marion, 2009, Uhl-Bien et al., 2007). In these papers, complexity theory was used as a data analytical framework, however, the framework proposed by Uhl-Bien and Arena was not utilized in any of the papers (Uhl-Bien and Arena, 2018). One paper made reference to the

three types of leadership within CLT (administrative, adaptive, and enabling leadership). (Horvat and Filipovic, 2018).

From the knowledge gained through the literature review, I identified the necessity for a research design and method that foregrounded complexity, dynamic interactions and emergence (Ronald, 2014, Rosenhead et al., 2019) and also embraced a participatory approach as recommended by Rosenhead and colleagues (2019) for studying complex systems. This led me to explore the use of participatory and action research approaches in healthcare and the scoping literature review on action research in healthcare helped confirm these approaches as appropriate for working with people, rather than on people, in a complex system and also as an appropriate mechanism for leadership development (Cardiff et al., 2018). The action research scoping review also revealed that many studies lacked the specificity and details required to adequately communicate the context, quality of relationships, quality of the action research process itself or the dual outcomes of the action research process, with adequate accuracy, precision and thoroughness to allow readers to assess the design, execution of the work and the contribution to actionable knowledge. This research attended to these issues explicitly with an overt demonstration of scientific rigor and quality.

I chose co-operative inquiry (Heron, 1996) as the articulation of action research for this inquiry because it resonated with my participatory worldview, values and beliefs about healthcare, learning, knowledge and knowledge generation. Also, as indicated in the scoping review by Cordeiro and colleagues, such a democratic process should result in more substantial changes and improve the quality of the action research (Cordeiro and Soares, 2018).

Co-operative inquiry offered an effective mechanism for us as a collective of co-researchers to make sense of our experiences as a group of medical colleagues leading in complexity during a transition to a new hospital (Reason, 1998). The evidence in Chapter 5 showed how Co-operative inquiry offered a framework for us as rehabilitation medicine consultant colleagues to inquire together to develop practice in an area of mutual concern, leadership during a period of significant organisational change i.e., the move to the new hospital. As a collective of co-researchers, we found the cyclical nature of the inquiry a useful mechanism to identify and address our theoretical, practical and learning needs in developing the leadership skills and practices to support successful transition and to express the real challenges we perceived inherent in these processes. The process facilitated the integration of practical knowing,

theory and interiority allowing the exploration of change and changing (Shani and Coghlan, 2021).

Of particular note, the co-operative inquiry allowed the creation of adaptive space (Uhl-Bien and Arena, 2017b) and complexity leadership skill development. Similar to the experience of Edwards-Groves and Rönnerman (2013) in their paper '*Generating leading practices through professional learning*', involvement in the CI process helped to develop and amplify leadership in practice by co-researchers. As Edwards-Groves and Rönnerman assert, leadership emerges when practitioners are '*involved in programmes of professional learning over time when both external and internal conditions are supportive and nourished in practice sites*' (Edwards Groves and Rönnerman, 2013 p. 123). Thus, CI created the necessary conditions (adaptive space) to facilitate that emergence in that it fostered practices and transformation at the micro and macro levels following Cordeiro and Soares (Cordeiro and Soares, 2018 p. 1016). This social change was demonstrated in the changed practices, habits and behaviours, as well as transformations in the hospital.

Using the co-operative inquiry process and the use of multiple data sources to create a rich picture of the complex phenomena that occurred during the move to the new hospital, this research has allowed what Tsoukas and Hatch (2001) refer to as 'conjunctive theorising' and the action research process (and the production of this thesis) facilitated generative learning (complexity, action research, leading in complexity etc) and enabled the creation of adaptive space in which the adaptive process could occur, where co-researchers adapted to changing contexts (hospital move and COVID-19) and engaged tensions. In this way, this research has addressed the recommendations in Greenhalgh and Papoutsis's 2018 paper for studying complexity in health services research.

6.3.1.1 Preunderstanding

Our co-operative inquiry cycled through the four steps of action research, with a pre-step of preunderstanding (Heron, 1996, Heron and Reason, 1997, Heron and Reason, 2006, Heron and Reason, 2008). As discussed in Chapter 3, pre-understanding consists of both explicit and tacit knowledge, building on insider knowledge but critically questioning what it is not known or what the researcher may be unaware of (Coghlan, 2019, Coghlan, 2007b, Coghlan and Casey, 2001, Gummesson, 2000). The preunderstanding activities generated knowledge, insights and

an understanding of patient experience and also the lived experience of participants and thus revealed an understanding of the organisation the people and the issues of leadership within it, prior to engaging with it. This was helpful for understanding the weak signals that are often neglected in the process of adapting complex systems. These activities were theoretically sensitised through the exploration of the literature and scoping reviews (Chapter 3) .

Preunderstanding enabled us to commence our research endeavours with a deeper understanding of, and connection to, the organisation and the phenomenon of study, medical leadership in the hospital. The results of the preunderstanding activities established what was important to patients (access to rehabilitation and communication) and the medical consultants (collaboration, patient centred care, good governance and knowledge mobilisation) and established how participants could work together to identify strategies for improving staff and patient experience (research question 1). Through the preunderstanding activities, an understanding developed that, prior to the commencement of this co-operative inquiry, co-researchers struggled to understand the background to many of the difficulties that they were experiencing and were unaware that many of these challenges were also being experienced by fellow collaborators. From a complexity standpoint, the Consultants as agents were so immersed in the complexity of practice, they were unable to see the bigger picture, but by creating the opportunity, time and space to stand back, observe, explore and reflect, allowed sensemaking and the appreciation and development of fundamental insights to emerge about how to change the system (Weick, 1995, Weick, 2005, Mills et al., 2010). This has similarities to the deliberative System 2 thinking described in Kahneman's book *Thinking, Fast and Slow* (Kahneman, 2012), where higher-level cognitive processes such as planning, problem solving, and reflection are employed. In addition, paradox and dialectical perspectives are reflected in this finding as the activities shed new light into previously unknown and recognised phenomena within the organisation (Hahn and Knight, 2021, Schad et al., 2016, McKenzie et al., 2009) i.e., areas of tension, contradiction and conflict. The most senior leaders in the organisation were also unaware of the issues being experienced by medical colleagues or that some colleagues were contemplating leaving the organisation revealing a lack of connectivity and absence of relating within the organisational system. As demonstrated in the schematic in Figure 26 (NRH as a Complex Adaptive System), there was a clear need to address these issues of connecting the different parts of the system and establishing relationships between different groups of agents.

Through the inquiry process of action and reflection, colleagues developed an awareness of the cultural, contextual, structural and relational barriers they encountered and developed the

leadership skills and strength to enact change. In this way, we met the second aim of the research; to evaluate the value of co-operative inquiry as a vehicle for supporting leadership and learning in a complex adaptive system. The preunderstanding step of this inquiry, as well as developing my own qualitative research skills, also allowed me to develop a much deeper understanding of the multiplicity of contexts in which the research would be undertaken and the need for and the purpose of the research. This transcontextuality was apparent in the first, second and third person inquiries and was not static, but dynamic and constantly fluctuating (Hynes, 2012). Here I agree with Stacey in that, to me, context is a fundamental part of the quality of interaction and relationship (Stacey, 2003) rather than a separate space in which things happen. The preunderstanding activities combined with rich interiority about myself, my assumptions and practices helped provide me with a much better understanding of myself, the organisation and my colleagues and also created a strong platform upon which to build the co-operative inquiry.

In my research into the history of the hospital, I developed a new appreciation for how adaptive, dynamic and responsive the Sisters of Mercy had been in response to the changing needs of the Irish population. I also developed a new awareness for the complexity of the regulatory and operating environment in which the hospital operates.

These preunderstanding activities generated evidence that consultants' basic needs were not being met in accordance with the HSE Change Guide, a national HSE HR policy document (HSE, 2018) or the WHO Global health and care worker compact (WHO, 2022). The Borysenko pyramid (Figure 9), referenced in the HSE Change guide, is based on Maslow's hierarchy of needs (Borysenko, 2017). Maslow hypothesized in his hierarchy of needs theory, that there exists a hierarchy of five needs within each human being (Maslow, 1943). These include psychological, safety, social, esteem, and self-actualization needs. According to Robbins, to enable human flourishing, any organisation needs to understand what level of the hierarchy an employee is currently on and focus on fulfilling those needs at or above that level (Robbins, 1998). If considered through Maslow's hierarchy of needs, the organisation was failing to provide for the consultants needs at every level.

Physiological needs were not being met as colleagues were not being provided with collaborative or individual workspace or a comfortable working environment or the information technology resources to do their work. Roles were unclear and colleagues did not know what was expected of them. From a safety point of view, some colleagues met the criteria for burnout in that they expressed views and feelings that indicated emotional

exhaustion, depersonalization, and a loss of personal accomplishment (De Simone et al., 2019). In addition, three colleagues were on temporary contracts which created uncertainty for them. From a social perspective, there were few opportunities for team building or social activities as colleagues were so busy. Colleagues felt lonely and isolated. Self-esteem was poor and colleagues did not feel appreciated by management. There was very little opportunity for colleagues to develop ideas or feel fulfilled or flourish.

This could be construed as relative deprivation (Smith et al., 2012) and a form of organisational injustice (Cropanzano and Ambrose, 2015, Greenberg, 1990). The consultant grouping as a social unit as compared with other groupings in the hospital and medical consultant groupings in other hospitals, perceived they had less space, less voice, less input into decision making and less control over their own destiny (distributive, procedural and interactive injustice). In addition, there was an organisational failure to provide the physical, psychological and social supports necessary to enable the consultants to flourish and for them to feel that their relationships with the organisation are fair, equal, and ethical (O'Connor and Crowley-Henry, 2019). When compared with the evolution of the NRH which is detailed in the context chapter in chapter 2, over time, the organisation has reduced the physical, social and psychological supports for the consultant body and also failed to enable adequate consultant participation in decision making to the point that consultants feel actively excluded. This is inequitable as other disciplines get backfill and/or dedicated protected time to participate. Increasingly, organizational justice research has shown adverse health and well-being consequences of organisational injustice include, cardiovascular diseases, cognitive impairment, unhealthy behaviours and increased psychiatric disorders (Virtanen and Elovainio, 2018) (Virtanen & Elovainio, 2018). Therefore, attending to organisational justice should be a priority for any organisation, particularly in CAS when the diversity of requirements make it easier to overlook the needs of elements of the population. According to this research, at a time of significant organisational change (transition to a new hospital), from a complexity leadership point of view, there was an absence of the structures, processes and events described by Arena and Uhl Bien (Arena and Uhl-Bien, 2016) necessary to enable the adaptive process.

As well as providing a rich understanding of the organisation and my colleagues, the process of data collection for this phase of the research helped me to develop relationships and trust with colleagues and thus embed me as an insider. The concluding workshop helped to create a shared understanding of what we wanted to address as a group and acted as a firm platform

upon which to base the inquiry. The analysis of patient experience also helped ground our inquiry and bring the patient to the centre of our inquiry.

6.3.1.2 Core Action Research Project

Data were generated from 6 action research cycles, with participants supporting and challenging one another, developing their understanding and practice by engaging in an 'extended epistemology' of four interdependent ways of knowing: experiential, presentational, propositional and practical (Heron and Reason, 1997, Heron and Reason, 2008, Heron and Reason, 2006). Through the CI, we drew on our experiential knowing of our clinical practice and the organisation to identify possible solutions to shared issues (propositional knowing). Each participant then chose what actions they wished to take and took these tentative ideas and plans to apply in their work (practical knowing). This then led to a deepening of experiential knowing. Their experiences were recorded by various means (reflective diaries, feedback sheets, social media) and returned to the following session via narratives, accounts and presentations (presentational knowing). Colleagues participated in shared sensemaking of their experience, and reflections and further actions were planned (propositional knowing). The CI group systematically cycled through the four ways of knowing, developing both a deeper understanding and practical skills in leading in complexity. This pattern was performed six times. This addresses the recommendation of Zuber-Skerritt et al., that at least two or three cycles are required to make a distinctive contribution to knowledge (Zuber-Skerritt and Perry, 2002). Co-researchers developed new skills in sensemaking, transformative collaborative inquiry, new individual and collective collaborative skills and new skills in recognising and managing paradox, all important attributes for navigating a CAS (Berti and Simpson, 2021, Kan and Parry, 2004, Schad et al., 2016). Co-researchers developed knowledge and skills in the three entangled forms of complexity leadership: entrepreneurial, enabling and operational (Uhl-Bien, 2021, Uhl-Bien and Arena, 2017, Uhl-Bien and Arena, 2018, Uhl-Bien and Marion, 2007, Uhl-Bien and Marion, 2009, Uhl-Bien et al., 2007). The process of CI enabled the development of entrepreneurial leadership skills by creating the space for creativity and the exchange of new ideas and innovations, learning and growth in the group. Enabling leadership skills were developed through an increased understanding of complexity and the creation of adaptive space organization and an ability to manage the tension between entrepreneurial and operational. Operational leadership skills were developed by enhancing knowledge of the system and stakeholders and how decision making

was performed. This assisted in the finding of ways to resource and implement ideas to enhance organizational performance.

Knowledge was shared, obtained and incorporated into the CI process. This knowledge included self-understanding, technical/scientific information, group communication, agreement and consensus. Colleagues learned to be present and open; to reframe; to engage in reflective practice and open dialogue and developed emotional competence and critical self-awareness. Through the action research process, similar to the process described by Luscher and Lewis (2008), colleagues learned to recognise tensions and paradox inherent in the system (Voronov and Yorks, 2015); ever increasing demand despite increased efficiencies; having to do more with less; the tension between innovation and service provision), engaged with same (recognised that they do not have to shoulder the burden for the whole system; identified who key stakeholders were to help resolve issues) and took actions to overcome them (meeting with key stakeholders, handover meetings, space identification; WhatsApp group to facilitate communication). An integrative triangulation abductive reasoning approach incorporated the first, second and third person inquiries which increased confidence in the outcomes of the research, and which was validated with co-researchers.

As there were multiple cycles of inquiry, there was a continuous process of innovation and data generation. A process folio approach was taken, to document, describe, and analyse the data using a 10-step cyclical framework (Smith, 2017). The process of data analysis was continuous, cyclical, organic, and iterative, with reflection and reflexivity, with participants engaging in the sense-making process at each session and validating the generated themes. Provisional reports were presented to the co-researchers in order to validate the findings (i.e., communicative validity) – and also to establish their relevance to clinical leadership in the hospital (i.e., pragmatic validity).

6.3.1.3 Meta-cycle of Inquiry

As described by Zuber-Skerritt and Coghlan (Coghlan, 2007a, Zuber-Skerritt and Fletcher, 2007) for the second parallel action research cycle – the thesis action research cycle, I will now reflect on the inquiry, through the lens of the eight defining features of co-operative inquiry as described by Heron and Reason (Heron and Reason, 2006) attending to content, process and

premise as described by Coghlan (Coghlan, 2019) and also the four factors by Shani and Pasmore (Shani and Pasmore, 1982) which are shown in brackets.

1. All the active subjects are fully involved as co-researchers in all research decisions – about content and method – taken in the reflection phases (Quality of relationships).

When the inquiry group commenced the opening question proposed was ‘how can we as medical leaders facilitate transition to the new hospital with an improved patient and staff experience? Whilst this was a helpful question to open a discussion, over the course of the inquiry, different questions were posed by the group (summarised in Table 18) with convergence and divergence of views as we engaged with one another and became more aware and cognisant of what was transpiring in our lives at work and beyond. Colleagues decided that that we needed to initially concentrate on ourselves as individuals and as a group before we could engage more broadly and hence a new research question was posed. This process is detailed in chapter 4. How we worked together as a group was agreed at the first meeting but renegotiated in each session. As a co-researcher, facilitator and knowledge broker, initially as we developed our skills as co-inquirers, I spoke a lot and brought most material to the groups (scientific papers/results/presentations) but as we progressed in our inquiry, although I opened and closed the communication space at each session, the latter sessions were predominantly active discussion between all participants.

2. There is intentional interplay between reflection and making sense on the one hand, and experience and action on the other (Quality of the action research process).

As our skills developed as co-researchers and as we became established and matured as an inquiry group, supported by the scaffolding of the structure and process of the sessions, at every session we actively reflected on our actions and feelings and through abductive reasoning (consideration of the data presented shared and reflected upon) , made sense of our reflections together. Over the course of the inquiry as we grew in confidence with one another and trust developed, we moved from being problem focussed to being more solution orientated. This was very challenging for some members of the inquiry group but rather than ignore or dismiss and move on, we took time to explore, understand and help colleagues

identify actions. I moved from a strong desire to fix things to listening attentively and actively, facilitating discussions, making sure everyone contributed and through those interactions, allowing solutions and actions to emerge. We also moved from individual actions to shared actions which helped build bonds between members and we also learned to immerse ourselves into the rhythmical dance of action and reflection. The inquiry enabled a recognition of paradox and enabled actions to be identified and taken that supported colleagues to break free from perceived inertia.

3. There is explicit attention through agreed procedures to the validity of the inquiry and its findings (outcomes of the research effort).

At the commencement of the inquiry, we agreed together how many sessions we would have (6) and how often (every 6-8 weeks) and for how long (2 hours). We also agreed that each co-researcher would bring reflections on their actions to each meeting, and we agreed we would hold each other to account. Overall, we engaged in 6 cycles of inquiry, moving several times between reflection and action. These consisted of 2-hour reflection sessions followed by 6–8-week periods of action (shown in Figure 52), although these intervals changed as the COVID-19 crisis deepened. At each session, there was, what I will call, a presencing, and reconnection with the inquiry with a summary of the previous session with the emergent themes and a review of what actions had been agreed and what reflections there had been. Colleagues reflected individually and then there was a collective interactive reflection, sensemaking and abductive reasoning and collective planning for the next phase. Co-researchers discussed and agreed thus validating the outputs at each session. This was followed up after each session with a session summary which co-researchers validated. The final report (PowerPoint presentation) was circulated for agreement and validation.

4. There is a radical epistemology for a wide-ranging inquiry method that integrates experiential knowing through meeting and encounter, presentational knowing through the use of aesthetic, expressive forms, propositional knowing through words and concepts, and practical knowing—how in the exercise of diverse skills—intrapsychic, interpersonal, political, transpersonal and so on. These forms of knowing are brought to bear upon each other, through the use of cycles, to enhance

their mutual congruence, both within each inquirer and in the inquiry group as a whole (Quality of the action research process and outcomes of the research effort) .

In the book, Co-operative Inquiry: Research into the Human Condition, Heron details four main kinds of inquiry outcomes, which correspond to the four types of knowing (Heron, 1996).

- i. Transformations of personal being through engagement with the focus and process of inquiry.
- ii. Presentations of insight about the focus of the inquiry through dance, drawing, drama and all other expressive modes.
- iii. Propositional reports which are informative about the inquiry domain and the inquiry method.
- iv. Practical skills that are related to transformative action, participative knowing and collaboration used in the inquiry process.

At the commencement of the inquiry, colleagues had expressed the sense that their experience did not matter or didn't have value in organisational discourse so creating a safe environment and the capacity for colleagues to feel safe to share their stories and experience was very important. At each session, colleagues presented their reflections. There was freedom to choose any presentational form (presentational knowing). Most colleagues gave a verbal presentation, some typed reports and some had PowerPoint presentations. Some punctuated their reflections with quotes and poetry (MacLean and MacIntosh, 2017). Over the course of the inquiry, colleagues moved from being recipients of theory and knowledge to sharing and generating knowledge and sharing ideas and theories. Practical knowing or '*knowing through skilful doing*' (Sage Encyclopaedia of Action Research, 2014a, p. 328) was demonstrated through colleagues teaching their team colleagues on the method and approach and undertaking action research projects of their own. Heron and Reason argue that practical knowing is primary as it '*fulfils the three prior forms of knowing, brings them to fruition in purposive deeds and consummates them with its autonomous celebration of excellent accomplishment*' (Heron and Reason 1997, p. 281). Through the activities involved in the CI (sharing and discussion of theories and literature), colleagues learned to appreciate complexity and paradox and recognise the predictably unpredictable nature of healthcare (Stacey, 1995, Kan and Parry, 2004, Schad et al., 2016). They also developed an appreciation of, and ability to mobilise, their individual and collective agency and response capability through the empowerment that was realised through the CI, and they moved from a realm of personal

solutions to ones of larger systemic change. This critical self-consciousness was fundamental to the development of praxis. The action research process enabled engagement with tension and paradox. The extant literature suggests that there is variability among individuals in how they recognize, appraise, and respond to paradoxical tensions (Papachroni and Heracleous, 2020, Tarba et al., 2020). Through the CI process, colleagues learned to recognise and embrace tension, complexity and ambiguity instead of avoiding them and through open dialogue and reflective practice, there was resolution of these paradoxes. Colleagues were also empowered to take risks. This generated new individual and organisational knowledge.

- 5. There are, as well as validity procedures, a range of special skills suited to such all-purpose experiential inquiry. They include fine-tuned discrimination in perceiving, in acting and in remembering both of these; bracketing off and reframing launching concepts; and emotional competence, including the ability to manage effectively anxiety stirred up by the inquiry process (quality of the action research process and outcomes of the research effort).**

As the inquiry developed, co-researchers developed skills in reflective practice and relating. Indeed, for some (myself included) it became a praxis (Zuber-Skerritt, 2001). This was evidenced by the reflective presentations by participants at each session, the feedback sheets that were completed at the end of each session and also the MDT reflective practice that was initiated by two participants. Colleagues became skilled in noticing and perceiving and attending to what was going on around them and within the group and also developing confidence in taking action. We were attentive to emotions within the group and learned not to be constrained by external factors, similar to Varney's argument for the importance of changing patterns of relations, attention and emotion (Varney, 2021). Not all participants were fully engaged with the process, with one remaining a participant but not taking actions and one a curious half participant. My biggest challenge was managing my own emotions. I felt the weight of expectation and of colleagues' experiences and a responsibility to 'fix' and try to make everything OK. However, in the fullness of time, I learned to empathise, and the group made collective efforts to resolve issues. I also learned that each of us lives a multiplicity of contexts, that we are all of what we are. I learned to recognise and notice that complexity and live more easily with and in it.

6. The inquiry can be both informative about and transformative of, any aspect of the human condition that is accessible to the transparent body-mind, that is, one has an open, unbounded awareness (outcomes of the research effort).

The very act of participating in a co-operative inquiry signifies a desire for change. Over the course of the inquiry, we shared knowledge in session and between sessions, about the organisation, the larger healthcare system and also complexity theory, action research and leading in complexity. As agents interacting, openly and transparently, attentively and with compassion, united in a shared desire for change, we adapted and changed and emerged stronger and better equipped to deal with the tensions between organisational challenges and the need for change. This was evidenced in how colleagues took action. Therefore, we experienced personal transformation and developed transformative skills and practical knowing, not only during but also after the inquiry. Through this inquiry, leadership manifested in routine and emergency forms of interdependent action and sensemaking in which co-researchers engaged.

7. Primacy is given to transformative inquiries that involve action, where people change their way of being and doing and relating in the world – in the direction of greater flourishing. This is on the grounds that practical knowing-how consummates the other three forms of knowing – propositional, presentational and experiential – on which it is grounded (outcomes of the research effort).

This inquiry was built on a democratic premise, research undertaken with, rather than on, people, with participants involved in every stage of the process, committing to action and reflection. On reflection, the initial stages were a form of informational inquiry with the first stage being more informative and explanatory but over time, the bringing together of individuals in a collective endeavour, in a process that allows engagement and interaction facilitated adaptation and transformation. Through agential interaction, the exchange of information of experiences and reflections and actions, transformation is almost an inevitable outcome.

Through our inquiry, we connected with one another as colleagues, co-researchers and friends, we identified individual and collective actions which gave us voice individually and collectively and the power and courage to speak and act which was not present before.

8. The full range of human capacities and sensibilities is available as an instrument of inquiry.

This is perhaps the most challenging of Herons defining features to explore in the context of our inquiry. Although listed as a defining feature, I could not find any publications which detailed what Heron meant by this. I have taken this to mean that the inquiry allows free expression of authentic self in the group and the embracing of plurality. I have also interpreted this as the social capital which existed in the group. According to Bourdieu, social capital is *'the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition - or in other words, to membership in a group - which provides each of its members with the backing of the collectivity-owned capital, a 'credential' which entitles them to credit, in the various senses of the word'* (Bourdieu, 2018 p. 21). Complexity leadership theory acknowledges the necessity for leadership frameworks to pivot from a predominantly human capital focus to an emphasis on social capital (Arena and Uhl-Bien, 2016). The co-operative inquiry group processes facilitated group cohesion and brokerage, which are principal aspects of social capital. By leveraging social capital, the latent potential in the group was unleashed. In our inquiry, the act of initiating and participating and becoming immersed in the co-operative inquiry was a voyage of discovery for each of us as individuals but also as a collective. It took time and intent to build trust and confidence in the process. It required the active participation of the mind and body as individuals but also as a collective. It was a creative, emotional process yet practical and action orientated. The inquiry allowed the development of relationships and an understanding of context that created a creative milieu for idea generation and knowledge sharing which included cognitive and communication skills. Through the processes of CI, including action, reflection and feedback, asking additional questions, learning from and with peers in an inquiry group, a multiplier effect was created so that the learning as a whole was much greater than the sum of individual learnings.

6.3.2 Inquiry Outcomes and the Creation of Adaptive Space
(reflecting Shani and Pasmore's (1982) Fourth Factor: Outcomes of the Action Research Effort)

In accordance with Reason (1998) there were four inquiry outcomes that corresponded with the four forms of knowing: experiential, presentational, propositional and practical (Reason,

1998). There were personal transformations through engagement with the focus and process of the inquiry. Co-researchers presented insight about leading in complexity through oral and verbal modes and with poetry. The co-created propositional report which was generated at the conclusion of the inquiry was informative about leading in complexity and what it meant for us, it provided commentary on the inquiry outcomes and described the method of inquiry. This was shared with and precipitated responses from, the senior management team. In addition, co-inquirers demonstrated the practical skills of transformative action within the inquiry domain, and the skills of participative knowing and collaboration, including, being present and open, reframing, emotional competence, authentic collaboration and reflection and action. These outcomes were emergent properties of the adaptive process in a complex adaptive system.

6.3.2.1 Creation of Adaptive Space for the Development of Complexity Leadership

The move to the new hospital (and the COVID-19 pandemic) could be seen as what Lichtenstein and colleagues refer to as ‘criticalization’ as the hospital as a system moved away from a state of equilibrium to a new and unstable state (Goldstein et al., 2010). The co-operative inquiry enabled the creation of adaptive space in which the adaptive process could occur (Arena, 2021). This consisted of the physical, virtual and spiritual space and the relational, collegial and cultural conditions required for us as a group of colleagues to come together to explore, exchange, debate ideas and take action. These conditions echo the conditions necessary for adaptive space as described in Uhl-Bien and Arena’s complexity leadership framework. As they state, *‘Adaptive space is contexts and conditions that enable networked interactions to foster the generation and linking up of novel ideas, innovation and learning in a system’* (Uhl-Bien and Arena, 2017 p 12). CI created the conditions necessary to facilitate an engagement with the tension between exploration and exploitation in a complex system. Similar to Lichtenstein’s generative emergence, colleagues learned to work together to push themselves and the organisation towards a new state (Lichtenstein and Plowman, 2009, Lichtenstein, 2016). The commencement of the inquiry placed the medical system into a state of disequilibrium. By colleagues deciding together what were the problems they wished to solve and by taking collective actions and holding each other to account, this was done with agency and intent (Lichtenstein, 2016). Once solutions had been identified, the co-operative inquiry process created energy around actions which amplified the actions. This energy could be viewed as productive organizational energy, described by Cole and colleagues as the *‘shared*

experience and demonstration of positive affect, cognitive arousal, and agentic behaviour among unit members' (Cole et al., 2012 p. 447) (Cole et al., 2012: p.447). The actions taken and the evaluation of the actions are summarised in Table 18. Colleagues were energised to challenge the operational side of the organisation, to engage the tension, notice, to embrace suggestions and to respond (Uhl-Bien and Arena, 2017a, Uhl-Bien and Arena, 2018). In this way, colleagues also demonstrated the four energy leadership activities described by Vogel and colleagues in the Energy Pattern Explorer tool for productive organizational energy (mobilizing, cooling, revitalizing, and maintaining) (Vogel et al., 2022).

Connections Created

In their significant research and work in this area, Arena and Uhl Bien have refined the components necessary for the creation of an adaptive space into what they refer to as the '4D' connections of adaptive space: discovery, development, diffusion, and disruption (Arena, 2018). (Uhl-Bien and Arena, 2017a, Uhl-Bien and Arena, 2018). An analysis of the co-operative inquiry through the lens of the 4Ds is now performed.

Discovery Connections

As Reason states, co-operative inquiry is '*about intuitive discovery, happenstance and synchronicity*' (Reason, 1999 p. 213). Discovery Connections were created by the establishment of the co-operative inquiry group. The cycles of action and reflection allowed bridging connections to form between the inquiry participants and also beyond into other teams outside the inquiry group. The structure of each session facilitated colleagues to share new ideas and literature and solutions and through open and honest discussion and engaging any tension. Through these interactions, new insights were generated into the issues and challenges that had been identified. Although I had initial reservations about the variability of attendance at the sessions, there was sufficient consistency to facilitate colleagues being comfortable to discuss issues openly but also sufficient variability in participants to avoid complacency as new ideas and perspectives were being introduced.

Development Connections

The process of the co-operative inquiry also created development connections where ideas could be socialised and discussed and refined, what Sarah Harvey has referred to as creative synthesis (Harvey, 2014). This is in keeping with Singh and Fleming findings that collaboration enhances creativity and that groups can build on ideas and expand them (Singh and Fleming, 2010). They also found that small, cohesive teams whose members trust each other are most successful at this.

Diffusion Connections

The co-operative inquiry participants through the process of the inquiry, developed their skills as boundary spanners and were able to bring ideas beyond the inquiry group to the extended medical team (Non-Consultant Hospital Doctors) and the interdisciplinary teams. This distributed the ideas beyond the group. In addition, the process of the inquiry created energy around ideas and colleagues worked together on actions to create change. This amplified the effects of the actions taken.

Disruption Connections

Through the process of the inquiry, colleagues were empowered to break down organisational barriers. Through the identification of effective decision-making pathways (for example identifying the real decision maker for space allocation decisions) colleagues were able to engage with colleagues beyond the inquiry group to effect change. The initial reticence of senior management was gradually challenged and eroded thus disrupting the status quo. Although initially the disequilibrium (Lichtenstein, 2014) was created by the group itself, when COVID-19 struck, the pressures became external.

This framework of the 4D connections created in an adaptive space, such as that created through a co-operative inquiry, could be seen as an *ecology of connection*, using the definition of ecology used by Nora Bateson

ecology is any organisation of multiple parts that are acting in reaction in a co-evolutionary process with each other. An interdependent set of participants. It can be a pond. It can be the relationship between your heart, lungs, skin and environment. It

can be a set of ideas that are responding to one another and compensating for one another, some are emerging, some are dying, some are composting, some are blooming. An ecology can take place in a conversation. (McKergow, 2011 p. 104).

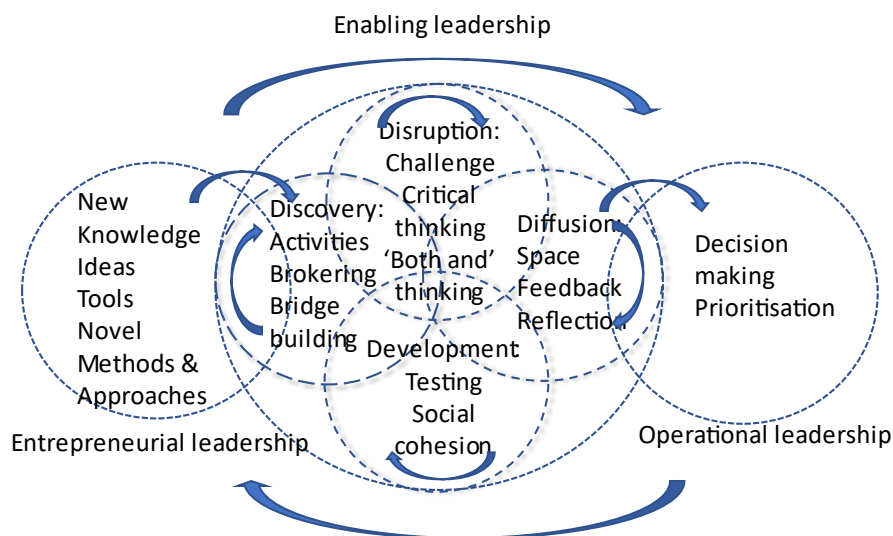
6.3.2.2 COVID-19

Adaptive responses were particularly evident in response to the COVID-19 epidemic when colleagues adapted to the emerging situation by pivoting to communication through alternative communication platforms for the rapid exchange of information and also rapid communication of emerging evidence and new responses. In many ways the commencement of the inquiry had primed the consultants for change so when COVID 19 hit the response was much faster because the communication mechanisms had been created already. This was evident in the use of WhatsApp as a communication tool with an exponential rise in messages. These new patterns of communication and thought resonate with Stacey's complex responsive processes as well as CLT (Stacey, 2003).

6.3.2.3 Leadership

Through the co-operative inquiry process, co-researchers developed and demonstrated the entangled trio of entrepreneurial leadership, enabling leadership and also operational leadership as described by Uhl-Bien and colleagues (Uhl-Bien et al., 2007). Colleagues developed the skills to act as brokers, connectors, energisers and challengers over the course of the inquiry. Together, the 4D connections of adaptive space (Arena, 2018) facilitated the emergence of innovative ideas and concepts that are necessary for positive disruption. The skills developed by the co-researchers throughout the course of the inquiry are summarised using this framework in Figure 56.

Adaptive space



Uhl-Bien and Arena, 2018

Figure 56: Leadership Skills Developed Assessed Through The “Meta-Framework” of Leadership for Organisational Adaptability

Through this inquiry, we have successfully evaluated the value of co-operative inquiry as a vehicle for supporting leadership development and learning in a complex adaptive system during a period of change, which is the first aim of the thesis. We also established that a co-operative inquiry was an effective mechanism to enable participants can work together to identify strategies for improving staff experience which fulfilled the second aim. The specific priority focus of the group after the commencement of the inquiry was medical staff experience as it was felt that improved staff experience might flow from improved staff experience.

The inquiry also addressed the specific research questions which were: how can we as medical leaders within the NRH facilitate transition to the new hospital and effectively manage staff and patient experience? And how do we develop the leadership skills to do this? The research established that co-operative inquiry was an effective mechanism to enable medical leaders to develop the necessary skills to lead and take action to facilitate successful transition to the new hospital with an improved sense of wellbeing. Co-operative inquiry was also an effective mechanism for developing the necessary complexity leadership skills thus answering the second research question. Thus, the inquiry also addressed Grundy’s Three Modes of Action

Research and served as a developmental model for professional growth with progression from technical to practical and ultimately emancipation as shown in Figure 57 (Grundy, 1982).

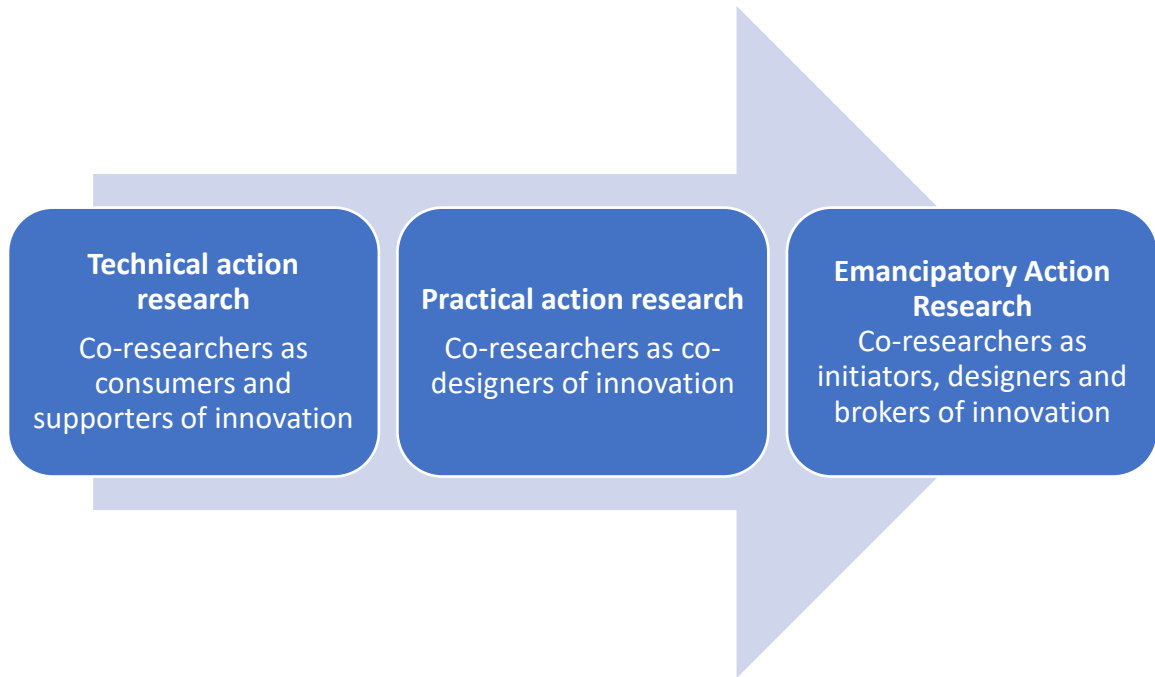


Figure 57: From Participation to Emancipation; Grundy's Three Modes of Action Research

6.3.3 Complexity Leadership Development

The overarching themes generated through the reflexive thematic analysis revealed what was important to support leading in complexity were: the development of communicative space and the enactment of teamwork. These overarching themes, themes and subthemes were combined to create a dynamic framework for the development of leadership in a complex adaptive system.

6.3.3.1 The Development of Communicative Space

It is recognised in the literature that safe and nurturing spaces are needed to enable processes of inquiry, learning and knowledge (Edmondson, 1999, Edmondson and Lei, 2014). This research identified the following elements that provide a scaffolding of structures and processes to enable the communicative space.

Connecting

The themes that emerged from the inquiry that constituted the theme connecting, resonate with the four types of connections that Arena proposes are critical for the creation of adaptive space (Arena, 2018). These include discovery, development diffusion and disruption. Together, these connections allow new and innovative ideas to be generated and positively disrupt. This research revealed the importance of physical space but also the power of virtuality on the development of adaptive space and leadership. This view is supported by literature that shows that face-to-face interactions are critical for innovation (McCann, 2007). Our research has shown that innovation can also thrive in a virtual environment however, a combination of the two is probably ideal. Social connections have also been identified in the neuroscience literature as essential for survival (Eisenberger, 2013). Nevertheless, this research has shown that these connections alone are not sufficient to facilitate generative emergence. For that to happen, cultivating relating and relationships is necessary.

Relating

Leadership research has long recognized that leadership involves a relational process (Graen and Uhl-Bien, 1995, Avolio et al., 2009, Drath et al., 2008, Uhl-Bien, 2006, Fairhurst and Uhl-Bien, 2012). Gardner et al in their 2020 paper *'The leadership trilogy: A review of the third decade of The Leadership Quarterly'*, suggest that *'qualitative approaches can enhance understanding of the context of leadership relationships as well as the nature of the relationships themselves'* (Gardner et al., 2020). This co-operative inquiry revealed the context and the nature of relationships between consultants and between consultants and management. The findings correlate with relational transparency and the revelation of the authentic self which is a core construct of authentic leadership (Gardner et al., 2005, Walumbwa et al., 2008). Kernis, who's work influenced authentic leadership theory, asserts that authenticity has four discriminable components: awareness, unbiased processing, action, and relational orientation (Kernis, 2003). The relational component involves valuing and achieving openness and truthfulness in one's close relationships. Each of the four Kernis components are reflected in the subthemes of relating in this inquiry; availability, openness,

respect, listening and honesty and integrity and action research was an effective method for the development of a culture of relating.

Connecting and Relating

Heron has expressed the view that:

human spirituality is tripartite—the intrapersonal within, the interpersonal between, and the transpersonal beyond—and that the spirit between persons is the central and primary dimension. It is the mediating middle ground at the threshold of, defining the status of, both the spirit within and the spirit beyond, providing a forum for their complementary kinds of opening and cocreation (Heron and Sohmer, 2019 p. 10).

My reflections on the CI are that CI was an expression and exploration of a tripartite *relational* spirituality through intentional and conscious participatory cocreation.

6.3.3.2 The Enactment of Teamwork

It is recognised that leadership, as well as being an input, is also an outcome of team processes such as teamworking and team learning (Day et al., 2004). Zaccaro and colleagues describe how leadership and team processes can be so entangled that the boundaries of each set of processes can be blurred and suggest that existing leadership and team dynamics theories have a tendency to minimize the contributing influences of each of these processes on the other. They suggest the need to understand this relationship (Zaccaro et al., 2001). This research has clearly articulated the relationship between the two as shown in the Framework for the Development of Leadership In a Complex Adaptive System (Figure 55) and articulated the elements required for the enactment of teamwork. Lichtenstein's work on generative emergence embraces the individual as well as the team and organisation (Lichtenstein, 2016). As a group of consultant colleagues, medical leaders within the organisation, the inquiry helped create a shared identity as a medical team which acted as a 'social glue' (Huettermann et al., 2014, Van Vugt and Hart, 2004). In this inquiry, collegiality reflected the complex processes in which different colleagues work together to share expertise, knowledge, and skills to improve patient care. This aligns well with Complex responsive process theory which

focuses on the real time relational interactions between individuals as the building block of transformative organisations (Stacey, 1995, Stacey, 2012).

Collegiality

Collegiality was identified as an important requirement for the enactment of teamwork constituted of two subthemes, care and collectivism. These areas have been gaining increased attention in the literature from an organisational response perspective but also how and why employees treat each other with care and compassion (Lawrence and Maitlis, 2012, Rynes et al., 2012). An ethic of care has been proposed as a guiding moral perspective in the actions of authentic leaders (Atwijuka and Caldwell, 2017) and that authentic leaders are committed to the welfare of others. Care also reflects an important positive attribute of organizations yet is seldom reflected in management literature. A 2006 Academy of Management article archive search yielded only two articles that discussed organisational care, so Kroth and Keeler offered the Recursive Model of Manager–Employee Caring in their 2009 paper but this has not been widely utilised (Kroth and Keeler, 2009).

The co-researchers in this inquiry had dual roles, as part of a medical team and as individuals who lead, therefore the inquiry was also a form of collective leadership. Also referred to as shared or distributed leadership, there is increasing evidence for the effectiveness of team-based and collective approaches to leadership in healthcare settings (Wu et al., 2020, De Brún et al., 2019). According to Hiller et al, collective leadership involves the relational process of an entire team, group, or organisation (Hiller et al., 2006) and conceptually, collectivism is characterized by interdependence, personal relationships, security, duty, and ingroup harmony (Hiller et al., 2006). These are reflected well in the subthemes that emerged from the inquiry, collaboration and community.

Positive Culture

Culture is a much-discussed concept in organisational literature and change initiatives. Defined in many different ways, generally it signifies the dynamic of institutional life, that emerges and fluctuates over time in response to the complex interactions between people and their behaviour (Braithwaite et al., 2017b). According to Schein, organizational culture can refer to the organization as a whole, but also to subgroups within the organisation (Schein and Schein, 2016) and he offers the following dynamic definition:

...the culture of a group can be defined as the accumulated shared learning of that group as it solves its problems of external adaptation and internal integration; which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, feel, and behave in relation to those problems. This accumulated learning is a pattern or system of beliefs, values, and behavioral norms that come to be taken for granted as basic assumptions and eventually drop out of awareness (Schein and Schein, 2016 p. 6).

Acknowledging and addressing social and cultural context has been identified as essential for any improvement intervention to succeed (Dixon-Woods and Martin, 2016). An effective workplace culture is one which develops staff engagement, job satisfaction and empowerment (Manley, 2004, Warrick, 2017). Braithwaite and colleagues in their systematic review, found a positive association between workplace culture and patient outcomes across multiple studies, settings and countries (Braithwaite et al., 2017b). This thesis has reflected, both in the context chapter and also the inquiry itself, that the culture of the NRH (and the subgroups within it), is nested within the national health service culture and that influence its character. In this inquiry, the meaning of culture that was generated in the inquiry was more in keeping with workplace culture (i.e. specific group characteristics and behaviours) rather than organisational culture (Braithwaite et al., 2009) as the codes were more aligned with senior management practices. Through the inquiry, co-researchers, were able to engage in the processes of inclusion, control and influence, described as group process by Reason (Reason, 2002). The inquiry also revealed the patterns in social behaviour between consultants and also between consultants and management, unmasking the culture within ourselves, the group and beyond.

6.3.4 Contributions

As indicated in Chapter 2 in the personal context section, the purpose of this research was twofold: I wanted to perform meaningful research, but I also wanted to make a difference to the colleagues I cared about. In this CI, co-researchers collaborated to cogenerate knowledge that was both practically useful and theoretically robust.

Einstein is reported to have said that *'Theory without practice is sterile; practice without theory is blind'*. The word 'theory', derived from the Greek word for look or gaze, has been defined in the literature in many different ways. These differences may reflect differing philosophical orientations. For the purposes of this thesis, I adopt the definitions of theory and practice offered by Mark Spiegel in his 1986 essay, *Theory and Practice in Legal Education: An Essay on Clinical Education*:

By 'theory' we commonly mean a set of general propositions used as an explanation. Theory has to be sufficiently abstract to be relevant to more than just particularized situations. By 'practice' we commonly mean the doing of something. Practice is also associated with the idea of repetition; therefore, practice sometimes is equated with the gaining of skills because one gains skills by repetition (Spiegel, 1986 p. 580).

Although theories can be abstractions, they are intimately and directly connected with practical experiences (Varpio and Ellaway, 2021). This thesis makes contributions to both practice and theory: to clinical leadership practice, to organisational development practice, to organisational theory, to complexity theory and complexity leadership theory, and also action research. The outcomes of this CI came not only in the form of new knowledge, but also in the empowerment and transformation in co-researchers and contributed to organisational development in the broader sense. Following Coghlan's structure for understanding the process of creating a theory (Coghlan, 2020), the process of the inquiry began with attending to the experience of patients and medical consultants and posing questions about those experiences. The new understandings that emerged through the cycles of inquiry were then collectively examined in light of how they fitted with the evidence and whether there might be alternative explanations. The outcome was a judgment that affirmed the theory, that the NRH is a CAS and that complexity leadership skills can be developed through the creation of adaptive space through a CI process.

These contributions are summarised in Figure 58.

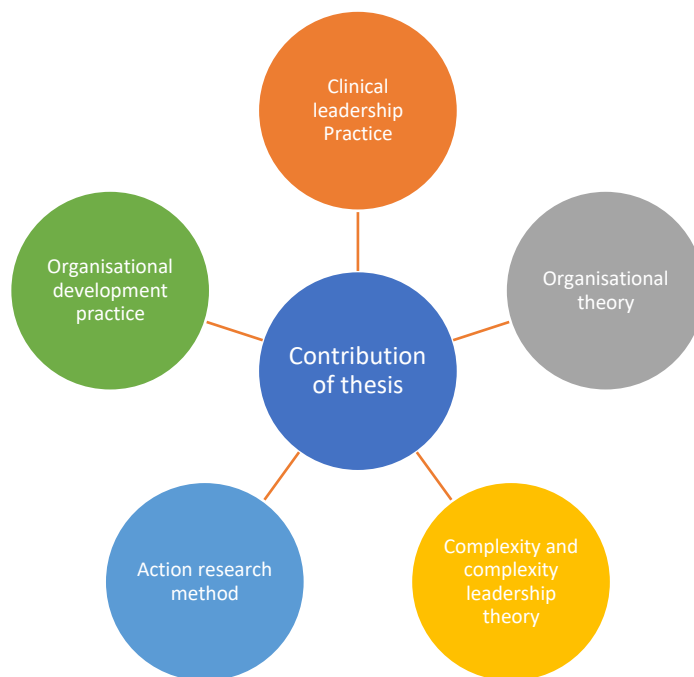


Figure 58: Contribution to Practice and Theory

6.3.4.1 Contribution to Clinical Leadership Practice

As was revealed in the scoping literature review, medical consultants have not traditionally been involved in action research and seldom in complexity leadership studies. As discussed in chapter 3 medical leadership development has traditionally adopted the hierarchical lone wolf, heroic model aligned with the trait and behavioural theory approach to leadership development (Northouse, 2021). This research confirmed our organisation as a pluralistic domain (Denis et al., 2001) with multiple actors (patients and carers, doctors, nurses, health and social care professionals, managers and administrators) with many divergent, often competing objectives (person-centred care, population health management, cost containment and increased efficiencies) connected together in shifting and ambiguous power relationships. Over the course of the research, the organisation had to respond to predicted (hospital move) but also unprecedented (COVID19 pandemic) events.

This required a reconceptualization of leadership within our group and organisation to a processual, collectivistic phenomenon involving multiple actors accepting, relinquishing and sharing leadership roles over time in both official and informal relationships following the description of collectivistic leadership described by Yammarino (Yammarino et al., 2012). Up

to this point there has been a paucity of theory-informed research on how collective leadership in complexity might be developed and the generative mechanisms underlying interventions to develop collective leadership in complexity. This research addresses that gap.

Through this inquiry, we have shown that it is possible for doctors to embrace qualitative approaches despite being trained in predominantly positivist science, and that it can be practical and transformative and can be an effective approach to leadership skill development. Colleagues developed skills in the three entangled modes of leadership that constitute Complexity Leadership (entrepreneurial, enabling and operational). In response to the pressures of moving to the new hospital and COVID-19, the process of co-operative inquiry facilitated the activation of entrepreneurial leadership, as the inquiry opened up colleagues to innovation in a way they weren't before, e.g., virtual meetings and clinics and the confidence to test solutions. The co-operative inquiry generated adaptive space and collective creativity that allowed adaptive responses that enabled co-researchers to take solutions beyond the immediate inquiry group, where programme managers (operational leaders) then incorporated them into the operational system thus generating a new adaptive order (clinical handover meeting and checklist, and reflective practice). Reflective practice training is now being considered as part of mandatory training for the hospital and a specific training module has been developed for all HSE staff on HSELand.ie as a consequence of conversations emerging from the inquiry. Generative emergence was thus evidenced by colleagues recognising and acknowledging that things had changed, embracing the challenges and seeking new solutions. This research thus confirmed what Heron asserts, that co-operative inquiry is an effective means of developing leadership skills (Heron, 1996). The co-operative inquiry process had a significant impact on the leadership in complexity skills and behaviours of the co-researchers as shown in Figure 56. The inquiry initiated a '*profound intentional practice of co-attunement and co-presencing*' (Heron and Sohmer, 2019 p. 10) through the conduct of the sessions and created an adaptive space which allowed the creation of bonds and trust which facilitated the development of skills and practice in the '4D' connections of discovery, development, diffusion, and disruption as summarised in Figure 56. This supports the claims by Fletcher et al (Fletcher et al., 2010) that meta-action research can transform understandings of ways to improve professional practice. The inquiry created a safe space for authentic collaboration where concerns could be shared, and actions taken and also generated space for innovation, creativity and curiosity. It allowed for open and full sharing within the group with full presence for most participants in the moment. The inquiry provided colleagues with an approach to develop the skills to negotiate tension and paradox and

navigate and lead in an increasingly turbulent and complex world. An unexpected emergent outcome was resilience as evidenced by colleagues successfully navigating the pandemic through the solutions that had been identified in the CI process (in particular WhatsApp as a communication tool). The transformative learning achieved through the inquiry was enriching for participants. Co-operative inquiry provided space for colleagues to be innovative, to have impact and to generate new knowledge. As an embedded researcher, I also developed my skills in developing organisational infrastructures and networks for enabling members of the inquiry group to plan, organise, learn and self-help.

This co-operative inquiry created a parallel learning structure (Bushe and Shani, 1991) allowing the co-researchers to begin to gain the confidence to start experimenting with influencing the ways the NRH operates. This has commenced the process of challenging rigid mindsets and processes and started to expose the organisation to reflection and critique thus laying the initial foundations of becoming a learning organisation. As Cozolino states *'humans exist within a paradox: we conceive of ourselves as individuals yet spend our lives embedded in relationships that build, shape, and influence our brains'* (Cozolino, 2014 p. xiii). Co-operative inquiry allowed an engagement with this paradox and challenged the individualistic culture of medical consultants (Smith and Lewis, 2011).

The CI approach proved to be a valuable practice contribution to overcoming seemingly intractable issues as the practical outcomes from the research produced empowered consultants with an improved experience. This was emphasised by colleagues stating that it had changed them professionally and personally. The CI increased the participants self-confidence in tackling issues.

6.3.4.2 Contribution to Organisational Development Practice

Research has shown that it is the experience of healthcare staff that shapes patient experience of care positively or negatively, not vice versa (Maben et al., 2012). Therefore, it is in a manager's best interests to ensure a positive staff experience.

Through this inquiry, we have developed a reasoning, justification and a framework to help managers appreciate their organisation and teams as complex adaptive systems and also identified the structures, processes and events necessary to create adaptive space within an organisation to improve staff experience. In the research, we have utilised a number of tools,

techniques and methods which provide a practical toolkit for organisational development (OD) practitioners to approach problem solving and leading in complexity. Some of the tools used in the research (CAL™, SenseMaker®, WDAQ) did not have a high enough response rate to allow a pre-post comparison. However, the results did allow useful, knowledge generating conversations about why the response rate was low and also what the preliminary and also overall organisational results meant.

We confirm Zuber-Skerritt's assertion that action research is more appropriate than traditional research methods for developing professional and organisational learning and practice (Zuber-Skerritt and Perry, 2002). The co-operative inquiry supported the development of the capacity of the hospital to build appropriate structures, to build the necessary system and competencies and helped modify the relationship of the inquiry group to its environment. The inquiry developed the action competencies of participant members and can provide a theoretically grounded resource for managers, decision-makers, and researchers on how to engage with complexity in healthcare. This is in keeping with what Mirvis, Mohrman and Worley describe as relevant research '*studying the real issues, problems, and demands facing organizations and the people that work in and manage them. It means generating knowledge that is (1) applicable to practice, (2) useful to practitioners, and (3) actionable*'. (Mirvis et al., 2021 p. 3)

6.3.4.3 Contribution to Organisational Theory

According to Greenwood,

'without action, there is no research. Without pragmatic action, in a system of collaboration among all the stakeholders, there is not only no change but also no meaningful and sustainable theoretical learning. This is where Kurt Lewin's dicta "There is nothing so practical as a good theory" (Lewin, 1943–1944/1951: 169) and "If you want truly to understand something, try to change it" (attributed to Lewin in Stam, 2006: 31) come into play (Greenwood, 2015 p. 200).

According to Bacharach, theory can be defined as '*a statement of relationships between units observed or approximated in the empirical world*' (Bacharach, 1989 p. 498) with all theories being constrained by their particular critical bounding assumptions. Authors such as Elden

have stressed the importance of the development of local theory i.e. theory which applies to the local context in which the action research is occurring (Elden, 1979).

The espoused theory of our organisation, an observable cultural element (Schein and Schein, 2016), is clearly laid out in the NRH statement of purpose with the following mission statement:

*'The NRH espouses the value established by the Sisters of Mercy by providing high quality care and treatment to patients on the basis of need and irrespective of background, creed or status. The NRH, in partnership with the patients and their families, endeavours to achieve health and social gain through the effective treatment and education of patients who, following illness or injury, require dedicated interdisciplinary rehabilitation services. The NRH aims to achieve this in a manner that is equitable and transparent in its service delivery, sensitive and responsive to those availing of its service, and **supportive of the staff entrusted with its delivery.**'*

Through this inquiry, we have discovered an incongruence between the espoused theory of the NRH and theory in practice i.e. what people actually do (Argyris and Schon, 1974). The organisation is not implementing what has been stated in the mission statement around staff support (at least from a Medical Consultant point of view). Through this inquiry, it would appear that culture and behaviours in the NRH are enacted on the basis of assumptions which up to this point have remained unexamined, unchallenged and untested. Through this co-operative inquiry, we have commenced a process of double loop learning (Argyris and Schon, 1974) or learning II (Bateson, 2000) through dialogue with one another and the organisation, to challenge and test these assumptions with a hope of bringing about change in our organisational culture. This has not been altogether embraced by the organisation and has been seen as a subversive activity. The approach has been counter-cultural to the dominant culture in the NRH of getting on with the job and not asking difficult questions and was therefore in what Stacey calls the organisations 'shadow systems' (Stacey, 1996). As the CEO put it 'why can't we be more like McDonald's?'. However, more recently, he has begun to embrace the language of complexity if not the logic.

Organisations are contexts with huge potential for social renewal. Achieving this potential requires a new type of organisational theory that views organisations as sites of learning in which the quality of relationships fosters a flourishing of mind and action. According to Peter Senge, learning organizations (LO) are

...organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together (Senge, 1990: p. 3).

He outlined five pillars of learning organisations: personal mastery, mental models, building a shared vision, team learning and what he refers to as ‘the fifth discipline’ - systems thinking. Systems thinking involves an appreciation of the complexity of interacting components of an organisation, thus, the fifth discipline integrates the other four (Iles and Sutherland, 2001) and also takes a complexity view.

Within the healthcare literature, a similar concept to the LO has developed, referred to as a learning healthcare system (LHS). Similar to the LO concept, the central concept is that health systems and organisations should continuously learn and adapt. First described by the Institute of Medicine in America, a LHS was described as a vision for an integrated health system where science, informatics, and care culture are aligned for continuous improvement and innovation (Olsen et al., 2007). Core characteristics of a LHS include; timely access to knowledge, patient-clinician partnerships, full transparency on all aspects of care, a leadership instilled culture of learning and policies, governance, and regulations aligned to facilitate research, collaboration, and learning (Zurynski et al., 2020). Despite the potential of the concept, there is a recognised lack of empirical evidence on how to support organisational learning in practice (Tosey et al., 2012, Visser, 2007). This thesis contributes to organisational learning theory by providing empirical evidence for the use of co-operative inquiry as an effective approach for organisational learning. By the creation of the 4D elements of adaptive space, participants could safely surface the neglect of espoused theory in practice and follow through with actions to address the gap. This research also provides empirical evidence for the use of CI to create what Mirvis refers to as the ‘sixth discipline’ of organisational learning (Mirvis, 1996). The co-operative inquiry created the adaptive space where the implicate order of the organisation was learned (NRH as a CAS, decision making and governance) and disrupted through collective consciousness, actions and the cocreation of solutions. This research also provides empirical evidence for CI as a mechanism for the development of ‘triple loop’ learning where the CI created self-awareness, meaning and deeper purpose for colleagues which enabled colleagues to participate in making informed choices and influencing strategic thinking and operational realities (becoming a learning organisation is now a strategic priority for the hospital) (Tosey et al., 2012), or Bateson’s Learning III (Bateson, 2000). As

Schein and Schein have stated, '*In the learning organization, everyone will have to learn how to learn*' (Schein and Schein, 2016 p. 347)

This research, through the different data gathering and analytical techniques (in particular the use of SenseMaker© and the CI itself), made visible the invisible. It revealed the stories of our organisation, an area that has drawn increasing attention in healthcare and organisational literature (Donaldson et al., 2011, Shaw, 2003, Gargiulo, 2006). The sharing of stories (personal, patient, from literature) enabled the development of connections and relationships between participants within the CI group but also beyond (senior management and hospital board) and helped identify patterns that were opportunities for improvement as well as providing insights into ourselves and the organisation. The process of the inquiry facilitated the mobilisation of this individual and collective knowledge and could be viewed as a collective knowledge exchange intervention (Contandriopoulos et al., 2010).

Organisation theory has acknowledged the significant role of talk as a mechanism for information exchange, collective sensemaking, collective learning and, collective reflection (Garud et al., 2011). While talk was an important part of the inquiry, it is only one mechanism of reflection and CI encourages participants to engage in an extended epistemology (discussed in detail in Chapter 4) where knowledge is grounded in the shared experience; expressed through images and stories (not just talk); understood through theories which make sense to participants; and expressed in meaningful action in participants lives.

In addition, the research activities essentially created an organisational network, which has also received a lot of attention in the literature (Greenhalgh, 2010, Powell, 1990). However, few empirical studies have examined the 'how' of how these network's form. The network formed by the CI was created with intent and persisted through the development of collaborative social connections where conversations occurred and stories shared, with knowledge generated through reciprocal, mutually supportive relationships. Similar to other network approaches to change and improvement such as QI¹² collaboratives (Bate and Robert, 2002), communities of practice (Lave and Wenger, 1991), and social movements (Crossley, 2022), the CI group could be viewed as a 'community of practice' (CoP) (Lave and Wenger, 1991). According to Lave and Wegner, a CoP is characterised as a learning mechanism that is embedded in routine activity, context, and culture; essentially social; often accidental rather than deliberate; and progressive with regard to learners' involvement. However, a CI is undertaken deliberately and is theoretically driven, therefore it may be more correct to

¹² QI: Quality Improvement

describe a CI as a 'community of theory and practice'. The CI approach addresses many of the criticisms levelled at communities of practice (O'Brien and Battista, 2020) in that it was clear over time how the CI group clarified and then interacted with the formal structure of the organisation and that participants developed an appreciation of the interaction between practice within the NRH and beyond.

Co-operative inquiry is a useful approach for continuous learning, reflection and action in organisational settings. This can provide the basis for organisational learning mechanisms that managers can utilise to support and enhance performance.

6.3.4.4 Contribution to Complexity and Complexity Leadership Theory

Coughlan and Coughlan have made the point that action research projects are context specific and do not seek to create generalisable knowledge. However, they acknowledge that such projects should have implications beyond the project (Coughlan and Coughlan, 2002). This is also a point made by other authors (Coughlan, 2019, Herr and Anderson, 2014, Zuber-Skerritt and Fletcher, 2007).

This thesis makes a number of contributions to complexity and complexity leadership theory.

The literature reviews acted as an important foundation for the research approach taken and served as a basis for knowledge development, engendering new ideas and directions for the fields of complexity leadership theory and action research. The literature review revealed a persisting lack of a universally agreed definition or approach of how to use complexity theory in healthcare and guided the definition and approach (predominantly qualitative) used in the study. This scoping review contributed to the design of the research study thus building on the developing field of translational systems research as this thesis translated the theoretical concepts of complex adaptive systems science into practical applications in our organisation (Edson et al., 2017). The guidance developed as an outcome of the scoping review, which was adopted in this research, has the potential to support the rigorous application of complexity theory in empirical research and contribute to knowledge mobilisation in this area. Although based on the synthesis of studies in health and social care, the guidance could be applied to many other fields.

The action research scoping review also uncovered a deficiency in how the four quality factors outlined in Shani and Pasmore's complete theory of the action research process were

articulated in the literature and this thesis responds to those gaps in the literature by clearly defining complexity and complex adaptive systems and evidently attending to and articulating each of the four factors but also the dynamic interplay between them.

The primary contribution of this thesis to theory is grounded in action and is resultant from the empirical co-operative inquiry which has been detailed in this chapter. Through the co-operative inquiry, a contribution to the development of theory was made by taking actions, guided by theory and reflecting on and evaluating their consequences for the problems co-researchers faced. This is a form of dialectical theory-building (Lather, 1986). This dialectical theory building, where data was constructed in context and was used to clarify and challenge and reconstruct existing theory between theory and practice as described by Cassell and Johnson (2006) and Lather (1991) There was continual modification of existing theoretical constructs using the CI process (and the use of logic models in the ten step framework) to reveal what Lather refers to as '*counter interpretations*' (Lather, 1986, p. 267) through a more intimate understanding of co-researchers views. The process also contributed to experience, awareness and knowledge. Colleagues as co-researchers chose the actions they felt would produce the outcomes they wanted, i.e., they had an informal theory connecting actions and outcomes. The theory of the inquiry itself was based on the activities of knowing, understanding and sense making with theory as an emergent property based on and grounded in action, reflection and experience.

The guiding theory (complexity leadership theory) was thus supported and built upon on the basis of this evaluation. Although publications on complexity leadership theory make reference to relational aspects of leadership, this mainly relates to relational dynamics and data analysis rather than what constitutes, or what can be used to develop relationships. Relational leadership theory (RLT) (Uhl-Bien, 2006), moving beyond leader–member exchange (LMX) theory (Graen and Uhl-Bien, 1995), whilst acknowledging the importance of relationships in new approaches to leadership, provides a framework for the study of relational dynamics but no empirical evidence. In RLT, relational does not refer to '*interpersonal or intrapersonal processes between already known actors but instead of the relating of written and spoken language, as well as the relating of non-verbal actions, things, and events*' (Uhl-Bien, 2006, p. 662). This research identified relational as both inter/intrapersonal processes between colleagues AND the relating of written and spoken language, as well as the relating of non-verbal actions, things, and events through the process of CI. Through the process of the CI, the following were identified as necessary components of relating: availability, openness, listening, respect, honesty and integrity. Through attending to

these elements through the co-operative inquiry, complexity leadership was an emergent relational phenomenon.

In conclusion, Scott's (2004) reflections on the nature of emerging organisational trends argues for increased attention to the relationships through which organisational activity is conducted. Up until recently, most leadership research, with the notable exception of Griffin and Stacey (Griffin, 2003, Griffin and Stacey, 2005), has focused on durable, particular features of organisations rather than exploring the complex, relational processes within entities. CLT provides *'an alternative conceptual framework, based in relationships, complex interactions, and influences that occur in the 'space between' individuals'* (Lichtenstein et al., 2006 p. 9). As such, CLT is more reflective of the complexity of the real world, especially health and care systems and through this research new insights were provided for participants, the clinical programmes, the organisation and the health system as a whole.

This research aimed to explore the value of co-operative inquiry as a process for developing leadership in complexity. Co-operative inquiry created the adaptive space that allowed adaptive processes to occur which enabled co-researchers to develop the three entangled forms of leadership skills (entrepreneurial, enabling and operational) and lead in complexity. The use of co-operative inquiry with medical rehabilitation consultants is novel and the empirical application of action research as a mechanism to develop complexity leadership skills is also a new approach thus building on complex adaptive system theory and complexity leadership theory.

The methods described and the framework for leadership development can inform scholars and practitioners in healthcare systems. The framework furthers the understanding of complexity leadership in a complex adaptive system by integrating complexity leadership theory (Uhl-Bien, 2021, Uhl-Bien and Arena, 2017a, Uhl-Bien and Arena, 2017b, Uhl-Bien and Arena, 2018, Uhl-Bien and Marion, 2007, Uhl-Bien and Marion, 2009, Uhl-Bien et al., 2007), complex responsive process theory (Stacey, 2003, Stacey, 2012, Stacey, 1995), relational leadership theory (Uhl-Bien, 2006), adaptive leadership (Arena and Uhl-Bien, 2016) and authentic leadership (Kernis, 2003, Gardner et al., 2005, Walumbwa et al., 2008). This work adds to this literature as Arena and Uhl-Bien do not explore the relational component of adaptive space beyond commenting on the need to build relational structures that encourage the 4D connections of adaptive space (Arena, 2021). The framework described in this thesis builds on these approaches by combining them to develop a more complete and dynamic

picture of complexity leadership which can be applied across individual, programmatic and organisational levels.

Another contribution to theory is the adaptation and revision of the Preiser framework for a healthcare setting and the practical application of it as a mechanism to understand and engage with complex adaptive systems.

6.3.4.5 Contribution to Action Research Method

Through the scoping review of the literature, a significant deficit in the reporting of quality criteria in action research in health care was identified, and areas for improvement in how action research studies are performed were revealed. These findings informed this research but will also be valuable for improving the quality of subsequent action research studies. Clearly articulating each of the different four quality factors individually but also how they integrate with each other in action research studies is essential if action research is seen as scientific, reliable, and valid.

Kurt Lewin originally intended action research to contribute to more precise theories of social change (Lewin, 1946) and this research contributes to that social change theory in that CI is an effective tool for developing the complexity leadership skills necessary to engage with and influence complex systems. Co-operative inquiry was an effective approach to developing adaptive space in which complexity leadership skills (entrepreneurial, enabling and operational) emerged. Through the detailed description of the co-operative inquiry, the data generation and in particular the ten-step process, other scholars may find the steps and approach I undertook useful for their own work.

The outcomes thus reflect the outcomes of the research effort as described in Shani and Pasmore's complete theory of the action research process; Organisational improvement, improvement in quality of work life, development of organisational self-help and learning and the creation of new knowledge.

6.4 Unexpected Ethical Challenges

The action research process created particular ethical challenges for me as a researcher. Although I had prepared the research proposal to meet the requirements outlined by Yoak

and Brydon-Miller (2014) and although I had read in detail about the issues that I might face and how to prepare for them (Coghlan and Shani, 2005, Brydon-Miller, 2009, Coghlan, 2019) there were unanticipated issues that emerged.

In the preunderstanding activities and also over the course of the inquiry, it became apparent to me that a few colleagues met the criteria for burn out. I wrestled with the conflict between my obligation for confidentiality to my co-researcher colleagues but also my obligation to patient safety. I overcame the issue by openly discussing the anonymised results in the inquiry sessions which prompted exploration of internal and external mechanisms of supports for wellbeing. I also experienced unanticipated emotions in response to what emerged in the inquiry; hurt for colleagues in distress; anger towards senior management for their lack of response and support. I also found myself developing emotional responses to particular approaches and authors. I found Stacey's language around complex adaptive systems theory and action research particularly provocative. However, through reflective practice I was able to explore these emotions, question the reasons for them, challenge them and direct that energy more positively into the inquiry and thesis.

I also found the multiplicity of roles; as co-researcher, clinician, manager and researcher challenging. Over the course of the DBA, I was also a carer to a dying father, a mother and wife, navigating the uncertainties of the pandemic during important stages in my children's lives. There is a tension between the different roles. How can I truly be a co-researcher and be true to the spirit of co-operative inquiry whilst at the same time researching the process for a thesis? I felt that by carrying out the reflexive meta-analysis, I was betraying the spirit of the inquiry. This created a discordance within me which was hard to overcome and at times seemed insurmountable. In my experience, this meets the criteria of a paradox described in detail in the Schad et al., (2016) paper. I managed this by firstly identifying it and acknowledging it as a paradoxical issue. Then I managed the situation by separating the core project and the meta-analysis and thesis writing. Although some elements happened in parallel (literature reviews and theory sharing), my meta-interpretation of the core project only occurred after the core project had been completed. In addition, I have shared my interpretations with my co-researchers and also any presentations or publications have been and will continue to be shared.

Another challenge was researcher positionality. Although I had identified that I would be on point 2 on the Herr and Anderson continuum (Chapter 4, section 4.7.6) and even though I had acknowledged that during action research, positionality may change, in reality I moved

between positions across the different stages of the research. This is in keeping with Deutsch's view that positionality is not simply ascribed, but rather is a process of ongoing evaluation as we are all multiple insiders and outsiders. Thus, as I reflect and evaluate on my positionality, for the pre-understanding I was an outsider in collaboration with insiders (point 5 on the Herr and Anderson scale). For the co-operative inquiry, I was an insider in collaboration with other insiders (point 2 on the Herr and Anderson scale) and for the meta-cycle/inquiry I was more akin to a full outsider (point 6 on the Herr and Anderson scale). I conclude from this that positionality is not fixed in a co-operative inquiry but is also dynamic and adapting. This necessitates researchers to maintain an informed reflexive awareness of positionality and how it may influence data generation and interpretation.

6.5 Summary

This chapter has provided a discussion based on the research findings presented in chapter five. In this chapter, I drew upon the extant literature to offer a theoretical analysis of the main findings of this co-operative inquiry in relation to the research questions and also how insights from this DBA thesis make novel contributions to practice, theory and method. I have also discussed the ethical challenges encountered during the study. Through the process of co-operative inquiry, adaptive space was created that facilitated the adaptive process to occur through the creation of the following connections: discovery, development, diffusion, and disruption. Colleagues actively engaged the tension between operational demands and the need for change (Uhl-Bien and Arena, 2018, Berti and Simpson, 2021). The process of the co-operative inquiry enabled colleagues to come together to connect and conflict to discover new solutions to both old and emerging problems. Through technical, practical and emancipatory action research, the skills required for leading in complexity emerged.

There are many ways in which leadership in organisations can be practiced. In this research, we have led change in the mode of conducting a co-operative inquiry action research project. Action research is research with people rather than on them so therefore the practice of leadership in this research involved building and enacting a collaborative community of inquiry between and among the consultant body in the hospital during a turbulent period of transition or criticalisation. Enacting insider action research in the form of a co-operative inquiry was a collaborative exercise of leadership learning and practice in addressing the strategic and

operational concerns identified by the co-researchers. This was enacted through cycles of action and reflection.

Using Shani and Pasmore's Complete Theory of Action Research quality framework (Coghlan and Shani, 2014) the context was theory informed and set in a hospital during a period of transition; the quality of relationships was ensured by building a genuine partnership and collaborative community of action inquiry; the quality of the action research process was enacted through the intertwined dual focus on both action and reflections; and the knowledge generation outcomes of the research included improved individual skills and competencies, improved consultant experience and organisational processes and practical knowledge development as well as academic publications that contribute to change theory in healthcare.

In this chapter, I believe I have demonstrated that the research performed was high quality through a combination of high-quality methodologies and high-quality theorising and reflection. Rather than autonomous theorising, this research connects theory to empirical practice providing what Biesta and colleagues, following Eisner (Eisner, 2017), describe as '*... theoretical connoisseurship*' - *the ability to make wise and informed judgements about the theoretical dimensions of ...research*' (Biesta et al., 2011 p. 11). Through this thesis, I hope to ignite scholarly and practitioner discourse but also lay the foundation for ensuing studies that can advance theory and practice in healthcare which will be discussed in Chapter 7.

Chapter 7: Conclusion

‘Now this is not the end. It is not even the beginning of the end. But it is, perhaps, the end of the beginning.’

— Winston Churchill

7.1 Introduction

This chapter brings closure to this thesis and will summarize the thesis, articulate some of my reflections and make recommendations for future research.

The aims of this thesis were twofold:

- 1) To establish how participants can work together to identify strategies for increasing staff and patient experience
- 2) To evaluate the value of co-operative inquiry as a vehicle for supporting leadership and learning in a complex adaptive system.

The specific research questions to be addressed were:

- How can we, as medical leaders within the NRH facilitate transition to the new hospital and effectively manage staff and patient experience?
- How do we develop the leadership skills to do this?

Four main objectives emerged for this study reflecting the outcomes in the complete theory of action research by Shani and Pasmore (1982):

- i. To develop knowledge and awareness with medical colleagues about the concept of Healthcare and the NRH as a complex adaptive system
- ii. To take actions from this knowledge that will result in organisational Improvement and improved experience of quality of work life and patient experience.
- iii. To develop leading in complexity skills
- iv. To develop organisational learning

Using Shani and Pasmore's 4 interconnected factors, I described a complete theory of the action research process to fulfil my objectives: context, quality of relationships, quality of the action research process and outcomes of the research.

The literature reviews that were undertaken guided the choice and implementation of the methodology that was used, and the subsequent co-operative inquiry proved to be a very effective method for collaboration to identify strategies for improving staff experience. The co-operative inquiry created an adaptive space in which the adaptive process could occur by engaging, conflicting and connecting to create a new adaptive order. The preunderstanding activities and sharing of the results as well as the transcontextual analysis, increased colleagues' awareness of their own frames of reference, culture and introduced a complexity paradigm. Colleagues assimilated and developed, through the CI process, new knowledge and developed new world views. CI was an effective method to develop complexity leadership skills and behaviours as evidenced by the skills and behaviours developed in the three entangled forms of leadership described in Uhl Bien and Arena's 2018 '*Meta-Framework of Leadership for Organisational Adaptability*' and summarised in Figure 56. Medical colleagues worked together as co-researchers and cycled through six cycles of action research during which they took actions, reflected on actions and in the process developed the knowledge and skills in practice to facilitate a smooth transition to the new hospital. Co-researchers became knowledge brokers, connectors, facilitators and energisers which facilitated the emergence of creativity, innovation, learning, and change. The approach also enabled co-researchers to embrace and 'live' complexity as a new paradigm for decision making in the hospital.

Through the CI process, colleagues had an improved experience of work and as the inquiry extended beyond the boundaries of the group, organisational learning and improvement was evident. This improvement was not directly observable on performance and patient experience outcomes (perhaps impact on these will take longer) but was evident through leader and organisational adaptability.

The quality of relationships was ensured by building a genuine partnership and collaborative community of action inquiry; the quality of the action research process was enacted through the intertwined dual focus on both action and reflections detailed in chapter five; and the knowledge generation outcomes of the research included improved individual skills and competencies, improved co-researcher experience and organisational processes and practical knowledge development as well as academic publications and presentation that contribute to change theory in healthcare.

In this thesis therefore, I have achieved what I set out to do to the extent that the research aims, objectives and questions have been answered.

7.2 Findings

These findings confirm that participatory approaches such as action research and co-operative inquiry are effective methods for engaging with a complex adaptive system and the development of complexity leadership, in harmony with the views of researchers such as Rosenhead, Reason, Heron, Biggs and Boulton and Rogers (Rosenhead et al., 2019, Reason and Torbert, 2005, Heron, 1996, Biggs et al., 2021, Rogers et al., 2013). In our co-operative inquiry, there was authentic collaboration and relating with full participation of co-researchers who brought different perspectives and ways of understanding to the challenge of leading in complexity fulfilling the second aim of the research. The structured process of the inquiry together with the iterative cycles of action and reflection provided a robust model to increase our understanding of complex systems, of complex interventions in complex systems and leading in a complex system during a period of organisational transformation. The feedback loops of the reflective processes on an individual and group basis allowed for constant monitoring of our complex adaptive system and the testing of new actions and interventions and also through the reflective group sessions to evaluate the impact. This led to the development of local theories of change and the inquiry itself was an emergent self-organizing process (Table 18) in which the inquiry group interacted and adapted in a dynamic manner and from which new complexity leadership processes and behavioural patterns emerged. This not only affected the behaviour in the group but also beyond the boundaries of the group as colleagues interacted with individuals, groups and entities outside the boundaries of the inquiry group.

These findings are empirical support for the assertions of Uhl-Bien and Arena about what is required for the creation of adaptive space (Uhl-Bien and Arena, 2017) and Lichtenstein's generative emergence (Lichtenstein, 2014). The findings are also consistent with Stacey's views on complex responsive processes in that organisations are viewed as patterns of interactions between people where the perspective stays with the experience of the interaction so that organisations are understood as processes of human relating. Stacey has made the point strongly, that action research differs from what he refers to as emerging participative exploration (Stacey et al., 2005) however in my exploration of the literature and

my experience of co-operative inquiry, I respectfully disagree. The co-operative inquiry articulation of action research in my experience, although it refers to the 3 voices, these cannot really be seen as separate entities as they are dynamically entangled. In addition, the co-operative inquiry process is deeply reflexive and relational. Co-operative inquiry embraced the unpredictable, emergent self-organising nature of our complex system (MacLean and MacIntosh, 2011). This research also confirmed Schad's proposal that complexity and adaptive systems are a useful meta-theoretical principle to explore the dynamics of paradox from a process perspective (Schad et al., 2016).

7.3 Limitations

The co-operative inquiry group was small, was carried out with a single discipline and was executed in one institution and therefore has the potential for bias and may not provide a representative view. However, this inquiry was context specific as it took place specifically to address medical leadership during a hospital transition. Although context specific, I believe the findings have an important contribution to make on the debate of leading in complexity. Another limitation was my inexperience as a qualitative researcher. However, I undertook formal training in qualitative research methods, approached experts in the field and sought guidance on a continuous basis. Through attending to a rigorous process of actions and reflections and an integrative triangulation approach to data analysis, and attention to quality in the process, I believe we have conducted meaningful quality research and minimised bias as much as possible. However, replication (or adaptation) of this approach with other groups and also in different localities would address this limitation.

Zuber-Skerrit recommend an action research work group to support the thesis action research project (Zuber-Skerritt and Perry, 2002). Although I joined the Action Research Group Ireland (ARGI) with the COVID 19 restrictions all symposia and meetings were postponed. However, I joined the group on LinkedIn and organised a local masterclass in the hospital. In May 2022, I presented my research at the annual colloquium with an enthusiastic reception.

Co-operative inquiry is typically closed to new members (Reason, 1999), however, I made a conscious decision to keep the boundaries of the inquiry open with the option to join kept open, as I felt to have an 'exclusive club' could be alienating to other colleagues. No new members did join but by sharing all the outputs (at the request of colleagues as an action), all

colleagues, while they were not full co-researchers, they were affected by the activities of the group and were therefore involved in the spirit of co-operation and dialogue (Reason, 1999).

Co-operative inquiry was time and resource intensive requiring a high degree of personal investment on behalf of the researcher. Many informal meetings were required to maintain the momentum of the inquiry especially in the early days of the inquiry. Considerable time had to be allocated to develop and disseminate the communication outputs to participants and other stakeholders. Managing the logistics of the inquiry, even with a small number of participants, was challenging but having the ten-step process really helped with those challenges. Participation in the face-to-face sessions was not consistent with only four co-researchers participating in all 6 sessions. However, through multimedia, all colleagues-maintained connection with the inquiry and benefitted from it.

It took much longer than anticipated to build the necessary knowledge and relationships to enable the inquiry. Initially colleagues, trained in a positivist paradigm, found it hard to grasp the concepts of complexity and action research and the first two sessions were essentially a repetition of the same information. However, these issues are complex, and I had the benefit over my colleagues in having had many months of immersion in the literature and these complex concepts can be hard to grasp initially. Also, I feel that having time to reflect and ask questions ensured full participation in subsequent sessions. Deep reflection was required to foster the changes in mindset and behaviours necessary to adopt a complexity outlook. It is often said that change moves at the speed of trust (Covey, 2006) and that was certainly consistent with my experience of this inquiry. I would also observe that trust is fragile and although we built bridges between us as co-researchers, there is a lot more work to be done to develop that trust with senior management.

As I was undertaking this research with a view to the completion of a DBA, I posed the initial research question which could be construed as the question being externally formulated and not reflecting the real sentiments and issues of my colleagues. However, the inquiry group were not bound to the research question and indeed changed the question initially, so the questions were ultimately co-formulated.

There were many unexpected, unprecedented events that occurred over the course of the inquiry which had the potential to undermine the inquiry including three waves of COVID-19. However, these had the unexpected consequence of actually strengthening the bonds between us and accelerated some of the communication actions. The inquiry revealed a number of unexpected issues including the instability of the medical workforce (lack of

support for the junior doctors and a transient workforce including locum appointments, retirements and maternity and special leave). Although the inquiry resulted in an improved experience for the participants, we did not demonstrate an improved experience for patients. An informal survey of patients post COVID undertaken by the psychology department has shown an improved experience following the move to the new hospital, however this improvement cannot be directly correlated with this current inquiry.

As with other action research projects, this research could be seen as only being relevant to the local context. However, very similar issues and challenges are being experienced in many other healthcare facilities and I believe that the approaches taken within our institution are applicable to others. Also, as the medical consultants are knowledge brokers and boundary spanners working across organisations, teams and settings, the inquiry is already impacting on areas outside our team and organisation.

This research has shown that co-operative inquiry is an appropriate and effective research method for engaging with and exploring a complex healthcare system and for creating adaptive space for the development of complexity leadership skills. This research adds to the growing body of knowledge in this important area and offers contributions to practice and theory. It has generated interest and appetite and curiosity for further exploration of this and other participatory methods in my organisation and beyond.

7.4 Recommendations:

This section will make recommendations for management and leadership practice, and further research

7.4.1 Recommendations for Management and Leadership Practice

Senior managers within organisations must recognize the need for, and develop the skills of organisational ambidexterity, a metaphor to describe competent organisation's ability to both explore and exploit (O'Reilly III and Tushman, 2008, O'Reilly III and Tushman, 2013, Tushman and O'Reilly III, 1996) as well as organisational adaptability. Ultimately, they are responsible for the creation of the conditions necessary for change and adaptation. This necessitates the intentional provision of not just the basic equipment for staff to be able to do their jobs but

also the structures, processes and events necessary for staff to be creative and flourish. The creation of adaptive space requires intent and also structures, events and processes to allow the adaptive process and permit adaptive outcomes to emerge. These include collaborative gatherings, innovation exchanges, brokering events, team cohesion interventions and this research has given practical examples of what is required to create this and also an effective mechanism to effect it. Developing physicians to lead in today's complex health-care organisations means that they require an understanding of the nature of complex systems and acquire the skills to be effective leaders in complexity. Senior managers in health-care organisations need to recognise the crucial role they play in establishing the necessary infrastructure that supports this development. Having this development as part of a co-developed organisational strategy with appropriate resources would go some way to addressing these challenges.

7.4.2 Recommendations for Further Research

Engaging with complex adaptive systems creates challenges for traditional Mode 1 research approaches as researchers are required to study patterns and phenomena that are difficult to define, that are dynamic and shifting and where cause and effect is uncertain. Mode 2 approaches with broader and more integrative approaches are required (Gibbons, 1994). Although this research was a small study, it has shown that that co-operative inquiry is one of a rich tapestry of methods that can be employed in the exploration of complex adaptive systems such as health systems (Biggs et al., 2021). Whilst it is tempting to say in this concluding chapter that 'more research is required' and that this study should be replicated to be validated – I will resist that natural tendency. Instead, I will say that our approach was right for us as a group of co-researchers in our context and whilst it was very effective for us, that may not be the case for other groups, even other groups of consultants. One size does not fit all in researching complex systems. Heron himself stated '*There cannot be in this field such a thing as the one and only right, proper or correct method. There can only be my, or your, or our view as to what is a good method*' (Heron, 1996 p. 49). However, this research has reliably demonstrated the worth of this approach and the steps and framework developed in this thesis may be of utility to others embarking on a similar journey. Supported by the NRH Foundation (the registered charity dedicated to raising funds for the NRH), we have received research funding to test the approach with other groups in the hospital and also other approaches as well.

Being aware of the possibilities, the different methods and approaches from which colleagues can choose the right approach, is essential in my opinion. Effective methods of evaluation are also key. It may be the case that taking a cross case study approach may work when comparing and contrasting approaches and that would certainly be a recommendation. Shaw and colleagues in Oxford (Paparini et al., 2021) have embarked on a body of work to study the case study approach.

Many of the challenges we face in healthcare research are similar to the challenges of other research in socio-ecological systems and therefore we need to draw on the broad range of theories, frameworks and methodologies that are available to us in a joined-up process of inquiry, learning and understanding (Klein et al., 2021). A transdisciplinary approach is required if we are to solve the complex issues in healthcare.

I agree with Revan's assertion that the distinction between theory and practice is artificial (Revans, 1980), and a system and structure of appropriate research approaches such as action research is required where practitioner researchers inquire into their own systems.

I also believe that this can be complimented by embedded research where the researcher is an integral part of an organisational team that generates and uses research results (Churrua et al., 2019a, Greene et al., 2017, Vindrola-Padros et al., 2017, Walley et al., 2018). As a third strand, the creation of partnerships between academic and healthcare organisations is important, including academic disciplines not traditionally associated with healthcare; business, social science and engineering (Bartunek and McKenzie, 2017). However, this will require additional resources. Resources to enable scholar practitioners to undertake research in their own organisations but also resources to support embedded researchers and academic partnerships. This should be seen as a good investment as it could potentially address some of the complex challenges outlined in Chapter 2.

7.5 And Finally

This study provides new insights into the development of adaptive space and adaptive processes that enabled the advancement of complexity leadership skills in a complex adaptive system. Co-operative inquiry was an effective vehicle for supporting mutual learning which resulted in the stated goals of improved communication and teamwork. Co-operative inquiries are inherently political, and the organisation may not be ready for the laying bare of

intractable, painful issues. However, I believe it is part of our role as action researchers to be the voice of dissent and disruption. Sometimes it is necessary to have a process of truth and reconciliation before the path forward can be sought.

The process of co-operative inquiry can be viewed as a complex system in itself, where the outcome cannot be controlled but only facilitated, enabled, and co-created with participants through a reflexive iterative process that enabled the emergence of trust-building, relationship building, learning experiences and new leadership behaviours. The co-operative inquiry was a mechanism for creating adaptive space and adaptive leadership. The inquiry created the conditions for colleagues to come together and interact in a dynamic way, engaging tension constructively and adapting through shared learning and creative and innovative actions with reflection. Through this process, new leadership in complexity behaviours emerged.

In summary, this research has identified the NRH as a complex adaptive system. Using co-operative inquiry as method, we created a participatory collective change process (adaptive space and process) that uncovered some deeply held concerns for co-researchers and through cycles of action and reflection, and connecting and conflicting, complexity leadership skills and behaviours emerged that improved their experience during a period of transition.

As this chapter suggests at its opening, this is the beginning of a journey for our organisation, and for me.

7.5.1 Becoming

7.5.1.1 Becoming a Qualitative Researcher

As a medical doctor and improvement advisor, much of my training has been firmly embedded within the positivist Mode 1 research paradigm. Whilst this approach has some merit, it is not the paradigm through which we can explore, understand, intervene and evaluate complex healthcare systems. As I began to explore the rich tapestry of qualitative research paradigms, I was enthralled and horrified in equal measure. The diversity in approaches and theories is full of opportunity but also confusion, especially for a novice. I found it interesting to watch conflicts play out as I read through the literature. The steps, checklists and frameworks that have been developed for qualitative research, developed in the name of rigor and quality and validity strike me as the very antithesis of the spirit of qualitative research and it felt like the imposition of a positivist mindset on interpretivism. It felt to me like trying to constrain a free

spirit. And I wondered why qualitative researchers were embracing these constraints. Is there an unconscious bias against their own paradigm? However, my reading showed me that quality is an issue so there is perhaps a balance to be struck with some guiding principles rather than edicts that could be seen as enabling constraints. Another surprise was the conflict between different complexity theorists. Some of the worst behaviour I have witnessed in literature and on social media has been played out between these actors. However, perhaps that is part of the necessary conflicting that generates creativity? Personally, I believe it is possible to conflict respectfully. A number of these theorists are zealots for their particular theory and method and whilst enthusiasm is understandable, reluctance to accept reasonable criticism is not. There is a need for epistemic humility in my opinion. If we have learned anything through our collective explorations, it is the fragility of what we call truth and knowledge. New information and experience have been shown to undermine the most solid of evidence and therefore we must accept that what we offer in research are possibilities and explanations based on what we know at one point in time. We must accept that our truth is a transient expression of knowledge that exists in a certain time and place. We therefore require multiple theories to help us view phenomena from different perspectives to enable us to appreciate the complexity that lies at the heart of health system scholarship and practice.

7.5.1.2 [Becoming a Complexity Researcher](#)

Through my explorations of the literature and through the discoveries that emerged through the co-operative inquiry, I came to recognize and understand that I am myself a complex adaptive system within a complex adaptive system (co-operative inquiry group) within a complex adaptive system (NRH) within a CAS (HSE). In order to research and intervene in a complex system, we need to 'be' in the uncertainty of complexity. 'Being' in complexity requires an awareness of and shared understanding of the basic principles of what that means (again as enabling constraints). Although I had been 'trained' (as in the recipient of didactic lectures on the subject and required to keep a logbook) in reflective practice as a trainee it was only when I read *'The Reflective Practitioner: How professionals think in action'* by Donald Schön (2017) and also started to practice reflective practice, that I realised reflective practice was the key to phronesis or practical wisdom. It did not come easily at first but with practice and intent, it has become part of my life and I believe that it is key to engaging with complexity. I found the act of writing very reflective in that it facilitates a conversation with self. In many ways, the art of reflective practice in an action research project, whether the

core or the thesis action research cycles, the process has many similarities with contemplation. Contemplation is described in a paper by Jean Bartunek as '*...taking a long loving look at the real*' (Bartunek, 2019 p. 1466). My experience of reflective practice has shown it to be a foundation for reflection, and compassion and relating. Action research methods specify but do not clearly articulate how to reflect but in co-operative inquiry, participants have the freedom to choose how they wish to reflect. Individual and group reflection is a fundamental part of the process and is an effective way to engage with paradoxes and conflicts. Raelin has stated that reflective practice '*...illuminates what the self and others have experienced, providing a basis for future action*' (Raelin, 2002 p. 66). Therefore, I believe the combination of reflection AND action is the key to successful transformation.

During the course of writing this thesis, I have reflected and recognized that I was expressing my own complexity leadership skills by creating the conditions necessary for adaptive space.

In this thesis, I have provided evidence that co-operative inquiry is an appropriate and effective research method for exploring a complex healthcare system and for creating adaptive space for the development of complexity leadership skills. Reflecting back on Maslow's hierarchy of needs, although basic equipment and space is required, I also believe there are fundamental areas of knowledge that need to be shared in any organisation. In my view, education on the fundamentals of complexity and reflective practice should be considered as essential and perhaps mandatory training for all employees. In this way, a solid grounding can be built which can 'prime' all staff to approach their work differently and when interventions are introduced through adaptive processes, that may trigger non-linear responses. This will be the focus for my next phase of research.

To conclude, I wish to provide a presentation of insight about the focus and outcome of the inquiry through artistic means. I have tried to express the entangled trio of leadership articulated in complexity leadership theory. I thank my daughter for her artistic gifts in the production of this image.

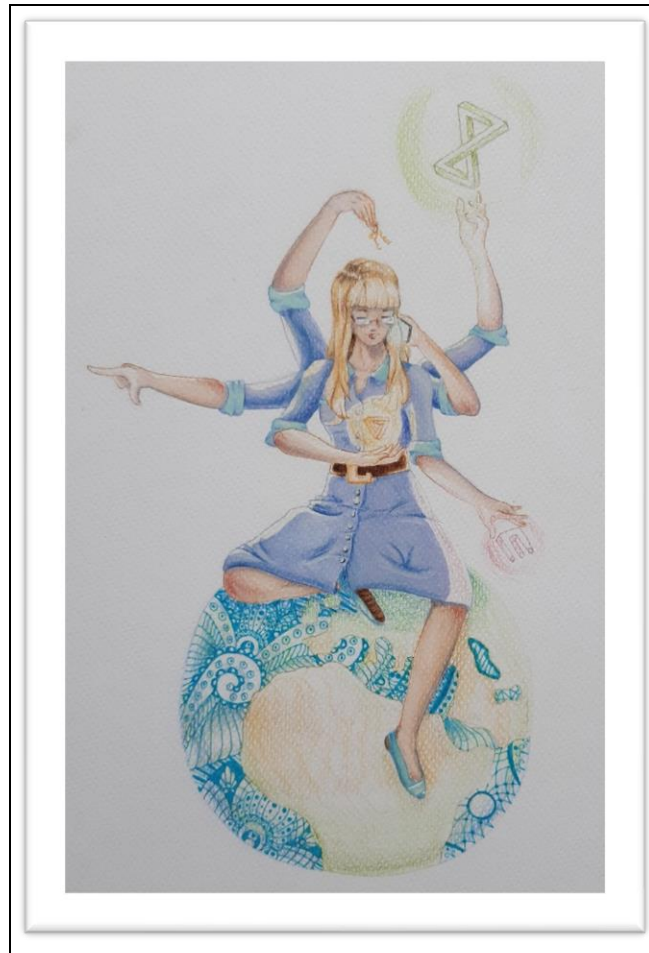


Figure 59: Adaptive Leadership

This image portrays me (or any adaptive leader) astride the earth as a representation of our socio-ecological system, moving through the heavens in time and space, comfortable in the transcontextuality of my world, organisation, profession, researcher, mother and family member. I am creating the structures, processes and events to allow the adaptive process to occur, and I am also embracing complexity and engaging paradox and tension.

Communication is fundamental to any of these processes. In recent times we have gradually and insidiously stripped away the time and space and richness of communication to cold characters and missives and edicts. It is time to reconnect with the art of communication and our collective vitality.

A final reflection is that although I initiated the process, and lit the touch paper, after an initial smolder and slow burn, there emerged a spark and then fireworks as my co-researchers embraced the process.

Co-operative inquiry created the necessary scaffolding to facilitate the creation of adaptive space and the development of complexity leadership skills. Whether that scaffolding is a transient thing that can be removed because the bricks and mortar of relationships are solid requires further exploration, and these thoughts bring to mind the poem by Seamus Heaney with which I conclude this thesis.

It is my sincere hope that we have built a solid wall.

Scaffolding by Seamus Heaney - 1939-2013

*Masons, when they start upon a building,
Are careful to test out the scaffolding;
Make sure that planks won't slip at busy points,
Secure all ladders, tighten bolted joints.
And yet all this comes down when the job's done
Showing off walls of sure and solid stone.
So if, my dear, there sometimes seem to be
Old bridges breaking between you and me
Never fear. We may let the scaffolds fall
Confident that we have built our wall.*

'Scaffolding' from *Opened Ground: Selected Poems 1966–1996* by Seamus Heaney. Copyright © 1998 by Seamus Heaney. Reprinted with permission from the Heaney Estate.

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Presentations and Publications

DBA Presentations:

1. The Application of Complexity Theory in Health and Social Care Research: A Scoping Review. Poster presentation. International Conference on Integrated Care 2023. Antwerp, Belgium May 2023
2. The Application of Complexity Theory in Health and Social Care Research: A Scoping Review. Platform presentation. All Ireland Conference on Integrated Care 2023. Dublin, Ireland March 2023
3. How do Researchers Address the Criteria for Quality of Action Research Studies in Healthcare: A Scoping Review Poster presentation. All Ireland Conference on Integrated Care 2023. March 2023 Unpacking the Black Box of Medical Leadership; A Co-operative Inquiry. Presented to NRH CEO and COO 25th August 2022
4. Unpacking the Black Box of Medical Leadership; A Co-operative Inquiry. Platform Presentation. The 10th annual International Action Research Colloquium, Technological University, Dublin, June 24th, 2022
5. Unpacking the Black Box of Medical Leadership; A Co-operative Inquiry. Platform Presentation. International Conference on Integrated Care Odense, Denmark 24th May 2022
6. The creation of an adaptive space in a healthcare system: a retrospective organisational analytic autoethnography. Platform Presentation. North American Conference on Integrated Care, Ontario, Canada 04th -07th October 2021
7. Unpacking the Black Box of Medical Leadership in a Complex Specialist Rehabilitation Hospital: An Action Research Study. Phase 1: Preunderstanding. Platform presentation International Conference on Integrated Care. May 20th, 2021
8. Participatory workshop with Multidisciplinary Integrated Care stakeholders to Develop priority areas for the development of leadership for successful integrated care. Platform presentation. International Conference on Integrated Care Šibenik, Croatia, September 2020

DBA Publications:

1. Carroll, Á., Collins, C., McKenzie, J., Stokes, D. and Darley, A., 2023. Application of complexity theory in health and social care research: a scoping review. *BMJ open*, 13(3), p.e069180.
2. Casey, M., Coghlan, D., Carroll, Á., Stokes, D., Roberts, K. and Hynes, G., 2021. Application of action research in the field of healthcare: a scoping review protocol. *HRB Open Research*, 4(46), P.46.
3. Carroll, A., Stokes, D. and Darley, A., 2021. Use of complexity theory in health and social care: a scoping review protocol. *BMJ open*, 11(7), p.e047633.
4. Carroll Á., 2021 The Irish Healthcare System as a Complex Adaptive System: *Irish Medical Journal*, 114 9 4); P332
5. Carroll, A., 2021. Integrated Care Through the Lens of a Complex Adaptive System. In *Handbook Integrated Care* (pp. 595-609). Springer, Cham.

APPENDICES

Appendix A: Clinical PPG's at the NRH

- C - 01 Policy - Risk Management
- C - 02 Policy - Incident Management
- C - 03 Policy - Interpreter Service
- C - 04 Policy - Medication - Allergies, Adverse Reactions
- C - 05 SOP for use of Heat Packs on the Spinal Units
- C - 06 Policy - Antimicrobial Stewardship
- C - 07 Policy - Linen
- C - 08 SOP for Oncall Physio
- C - 09 Nutrition & Hydration Policy
- C - 10 Policy for Nurse Prescribing
- C - 10(a) SOP for Nurse Prescribing
- C - 11 NRH Implementation of the National Early Warning Score Policy
- C - 12 (a) SOP for filing in the Healthcare Record
- C - 12 (b) SOP for a Missing Chart and creation of a Temporary HCR
- C - 13-Decontamination of Reusable Invasive Medical Devices
- C - 14 Suite of SOPs for RIMD
- C - 15 Prevention & Control of Legionellosis in NRH
- C - 16 SOP for Flushing of Water Outlets
- C - 17 SOP - Investigation into a Case of Legionnaires Disease at the NRH
- C - 18 Pressure Ulcer Prevention and Management Policy
- C - 19 Policy - Behaviour that Challenges
- C - 20 SOP for Therapeutic Leave
- C - 21 SOP for Day Leave for Adult Inpatients
- C - 22 Policy - Patient Identification
- C - 23 Policy - Autonomic Dysreflexia
- C - 24 Policy - Intimate Care
- C - 26 Policy - Urology
- C - 27 Anti-social Behaviour Policy
- C - 28 Policy - Sexual Health
- C - 29 SOP for Independent Self Management Exercise Project (ISMEP)
- C - 30 SOP for managing radiology procedures during radiology equipment replacement
- C - 31 Spasticity Management Pathway and Referral for Intrathecal Baclofen
- C - 32 Policy - FEES
- C - 33 Radiation Safety Procedures
- C - 34 Guidelines on the Administration of Contrast Medium for IVU
- C - 35 Policy - CT Scan Procedures
- C - 36 Guidance Notes for Nurses Attending Nuclear Medicine SVUH

- C - 37 Referral for DXA at NRH
- C - 38 SOP Referral for Radiology Procedure in a Private Hospital
- C - 39 SOP Referral for Radiology Procedure in NRH
- C - 40 Policies - Mattresses and Pillows Policy
- C - 40(a) Cushions Policy
- C - 40(b) Positioning Devices Policy
- C - 41 Mattress Audit Tool
- C - 42 Policy Tracheostomy
- C - 43 Policy - Access to Healthcare Records
- C - 44 Policy - Child Protection
- C - 45 SOP Admitting Adolescents to Adult Wards
- C - 46 Policy - Offender Risk
- C - 47 Policy - Complaints Policy
- C - 48 SOP for the management of a general x-ray service during x-ray room downtime and or room replacement
- C - 49 Policy - Resuscitation Orders
- C - 50 Radiological Incident Management
- C - 51 Policy for the Protection of the Unborn Child
- C - 52 SOP for Vestibular Rehabilitation Service in the NRH
- C - 53 SOP for Occupational Therapy Community Outings
- C - 54 NRH Operational Safety Huddle Policy
- C - 55 SOP for the Management of Comments and Suggestions
- C - 56 NRH Policy for Audiology Screening
- C - 57 Policy - Physical Restraint
- C - 58 Policy - Safeguarding Vulnerable Adults
- C - 59 Policy - Visitor
- C - 59(a) SOP for Re-introduction of Visiting during Covid-19
- C - 60 Enhanced Care and Support Policy
- C - 61 Policy - Intravenous Medications
- C - 62 Evacuation Plan
- C - 63 SOP for Podiatry Service
- C - 64 Policy - Analysis of Microbiology Specimen in SVUH 16,06,2008
- C - 65 SOP for the Management of Prescription Pads
- C - 66 SOP for Administration of Medications
- C - 67 Crushing of Tablets SOP
- C - 68 Transdermal Patches SOP
- C - 69 Patient Key Support Person Policy
- C - 70 MDA Medicines
- C - 71 Access to Pharmacy Out of Hours

- C - 72 Nebulization Therapy
- C - 73 SOP - Therapeutic Leave & Discharge Medications
- C - 74 SOP Medicinal Fridges SOP
- C - 75 NRH Radiology Policy - Prospective Peer Review
- C - 76 NRH Radiology Policy - Retrospective Peer Review
- C - 77 NRH Radiology Policy - Assigned Peer Review Studies
- C - 78 NRH Radiology Policy - Radiologist Management of Clinically Significant and Unexpected Findings Alerts Issued
- C - 79 NRH Radiology Policy - Radiologist Management of Critical and Urgent Alerts Issued
- C - 80 NRH Radiology Policy - Procedure for the Management of Radiology Alerts Issued
- C - 81 NRH Radiology Policy - Procedure for the Management of unacknowledged alerts
- C - 82 NRH Radiology Policy - Procedure for Radiologist Quality Improvement Meeting
- C - 83 Policy for the Protection of Children in Adult Areas
- C - 84 Policy for the use of Clinical CCTV
- C - 85 Policy Unplanned Transfers
- C - 86 Policy - Medical Devices Equipment Management
- C - 87 SOP for Service Engineers Commissioning, Decom, Servicing
- C - 88 SOP - Management of Medical Device Alerts
- C - 89 SOP for Intravesical Botox during Flexible Cystoscopy
- C - 90 Policy - Laboratory
- C - 91 Policy - Retention of Healthcare Records
- C - 92 SOP for Prescribing of Ultrasound -Bladder and KUB X-rays in the Urology OPD - NRH
- C - 93 Pager Users Procedure
- C - 94 Policy - Intimate & Personal Care for Children & Young People
- C - 95 Falls & Fracture Prevention
- C - 96 Paediatric Positive Behaviour Support Policy
- C - 97 Urinary Catheterisation Policy
- C -100 SOP for Management of Hypoglycaemia in Adult Patients
- C -101 Use of Clinical Photography in the Management of Skin & Wound Care
- C -103 Use and Monitoring of Positive Pressure Ventilated Lobby (PPVL) Rooms
- C -106 SOP for Nursing Assessment & Management of Inpatients with Diabetes
- C -108 Safe Insertion and Ongoing Care of Nasogastric Feeding Tubes
- C -109 Enteral Feeding Policy
- C -110 SOP for Neuro-Ophthalmology and Orthoptics (Under Development)
- C -111 Open Disclosure Policy
- C -112 SOP for Urology Nurse sign off for Test Results during Nurse Led Clinic (Under Development)
- C -113 SOP for Management of Unexpected Death and After Death Care (Under Development)
- C -115 SOP for Prosthetic Care of Established NRH Patients attending Nenagh Satellite clinic and primary patients based in Nenagh Hospital
- C -116 SOP for Blood Glucose & Ketone Monitoring using the Freestyle Optium Neo H Monitoring System

- C - 72 Nebulization Therapy
- C - 73 SOP - Therapeutic Leave & Discharge Medications
- C - 74 SOP Medicinal Fridges SOP
- C - 75 NRH Radiology Policy - Prospective Peer Review
- C - 76 NRH Radiology Policy - Retrospective Peer Review
- C - 77 NRH Radiology Policy - Assigned Peer Review Studies
- C - 78 NRH Radiology Policy - Radiologist Management of Clinically Significant and Unexpected Findings Alerts Issued
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- C - 80 NRH Radiology Policy - Procedure for the Management of Radiology Alerts Issued
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- C -116 SOP for Blood Glucose & Ketone Monitoring using the Freestyle Optium Neo H Monitoring System

Appendix B: Complexity and Health and Care Scoping Review; Medline Database Search Strategy.

Population - Health and social care professionals involved in empirical research	<p>'Administrative Personnel' OR 'allied health professional*' OR 'Cardiopulmonary Technician*' OR 'care coordinator*' OR 'Care giver*' OR 'Case Manager*' OR 'Community Health Worker*' OR 'Community navigator*' OR 'community worker*' OR 'Dental Auxiliar*' OR 'Emergency Medical Technician*' OR 'Family practitioner' OR 'general practitioner*' OR 'health and care professional*' OR 'Health and Social Care Professional*' OR 'health and social researcher*' OR 'health care manage*' OR 'health care provider*' OR 'health care worker*' OR 'health professional*' OR 'health researcher*' OR 'healthcare assistant*' OR 'healthcare manage*' OR 'healthcare provider*' OR 'healthcare worker*' OR 'Home Health Aide*' OR 'Interdisciplinary team*' OR 'interprofessional team*' OR 'Key worker*' OR 'Laboratory Personnel' OR 'Link worker*' OR 'medic*' OR 'Medical Examiner*' OR 'medical practitioner*' OR 'Multidisciplinary Care Team' OR 'multidisciplinary team*' OR 'Patient Care Team' OR nurse* OR 'Nursing Assistant*' OR 'Occupational Health Physician*' OR 'occupational therapist*' OR 'physical therapist*' OR 'physiotherapist*' OR 'primary care provider*' OR 'Rapid Response Team*' OR 'secondary care provider*' OR 'social care worker*' OR 'social worker*' OR 'Speech and Language Therapist*' OR 'Speech-Language Pathologist*' OR 'tertiary care provider*' OR 'trans-disciplinary team*' OR 'transdisciplinary team*' OR 'transitional care team*' OR 'collaborative care team' OR 'Ultrasound technologist*' OR 'emergency medical service personnel' OR 'EMS personnel' OR 'Emergency Personnel' 'health worker*' OR 'radiation therapist*' OR AHP* OR 'Health Personnel' OR Allergist* OR anaesthesiologist* OR anesthesiologist* OR Anesthetist* OR Anaesthetist* OR Audiologist* OR Cardiologist* OR caregiver* OR Chiropodist* OR clinician* OR consultant* OR Coroner* OR counsellor* OR counselor* OR * cytopathologist OR dental hygienist* OR dentist* OR Dermatologist* OR diabetologist OR diet* OR dietician* OR dietitian* OR Doctor* OR EMT* OR Endocrinologist* OR Endodontist* OR Epidemiologist* OR epileptologist OR Gastroenterologist* OR Generalist* OR Geriatrician* OR gerontologist OR GP* OR gynecologist OR haematologist OR 'health care personnel' OR health practitioner*' OR hematologist OR hepatologist OR Hospitalist* OR HSCP* OR immunologist OR intensivist OR 'medical specialist*' OR midwife OR Midwives OR Nephrologist* OR Neurologist* OR Neuroradiologist* OR Nutritionist* OR Oncologist* OR Ophthalmologist* OR optometrist* OR Optometrist* OR Orthodontist* OR Orthoptist* OR orthotist* OR Otolaryngologist* OR paramedic* OR 'paramedical personnel' OR Pathologist* OR Pediatrician* OR paediatrician* OR perfusionist* OR pharmac* OR Phlebotomist* OR Physiatrist* OR</p>
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	Physician* OR Podiatrist* OR prosthetist* OR psychiatrist* OR psychol* OR psychooncologist* OR psycho-oncologist* OR psychother* OR Pulmonologist* OR radiographer* OR Radiologist* OR Radiotherapist* OR 'rescue personnel' OR Rheumatologist* OR sonographer* OR surgeon* OR therapist* OR ultrasonographer* OR Urologist* OR 'health worker*' OR 'healthcare worker*' OR Hypnotherapist* OR Psychoanalyst* OR 'Speech Therapist'
Concept - Application of complexity theory in empirical research in health and/or social care	'complexity theory' OR 'complexity science' OR 'complex adaptive system' OR 'complexity thinking' OR 'complexity leadership' OR 'complex responsive process theory' OR 'chaos theory' OR 'complex systems theory' OR 'Nonlinear Dynamics' OR Nonlinear Dynamics/
Context - Health and social care settings	'Healthcare' OR 'health care' OR 'health and care' OR 'health and social care' OR 'hospital' OR 'Treatment Facilit*' OR 'Mental Health Center*' OR 'Mental Health Centre*' OR 'health facilit*' or 'acute care' OR 'health organi*' OR 'health system*' OR 'Tertiary care' OR 'Tertiary Healthcare' OR 'Tertiary Health care' OR 'Tertiary Care Center*' OR 'Tertiary Care Centre*' OR 'secondary care' OR 'Secondary Health Care' OR 'Secondary Healthcare' OR 'Medical Center' OR 'Medical Centre' OR 'primary care' OR 'primary health care' OR 'primary healthcare' OR Surgery OR 'Health Centre' OR 'Health center' OR 'Family practice' OR 'Intermediate Care Facilit*' OR 'Skilled Nursing Facilit*' OR 'general practice*' OR 'aged care' OR 'Gerontological Care' OR 'Care Home' OR 'Old-age homes' OR 'Old age homes' OR 'Housing for the Elderly' OR 'Senior living' OR 'old people's Home*' OR 'residential aged care facilit*' OR RACF OR 'Homes for the Aged' OR 'home for the aged' OR 'geriatric home*' OR 'elder Care' OR 'nursing ho*' OR 'residential facility*' OR 'residential home' OR 'Residential Care Institution*' OR 'Assisted Living' OR 'Group Home*' OR 'Halfway House*' OR 'residential care' OR 'Respite Care' OR 'social care setting*' OR 'social care facilit*' OR 'clinic*' OR 'community care setting*' OR 'community care facilit*' OR 'Community Health Service*' OR 'Home Care Service*' OR 'Senior Center*' OR 'Day Care Center*' OR 'Day Care setting*' OR 'Day Care facilit*' OR 'Senior Centre*' OR 'Day Care Centre*' OR 'Health Service*' OR 'Counseling setting*' OR 'Counselling setting*' OR 'Counseling facilit*' OR 'Counselling Facilit*' OR 'Counseling centre*' OR 'Counselling centre*' OR 'Counseling center*' OR 'Counselling center*' OR 'family planning setting*' OR 'Family planning facilit*' OR 'family planning centre*' OR 'family planning center' OR hospice* OR 'health centre*' OR 'health center*' OR 'disability service*' OR 'mental health service*' OR 'psychiatric hospital*' OR 'older persons service*' OR 'geriatric service' OR 'paediatric service' OR 'pediatric service' OR rehabilitation center*' OR 'rehabilitation centre*' OR 'rehabilitation setting*' OR 'rehabilitation facilit*' OR 'ambulatory care hub*' OR 'ambulatory care centre*' OR 'ambulatory care center*' OR 'ambulatory care facilit*' OR 'ambulatory care facilit*' OR 'Postacute Care' OR 'Post acute

	<p>care' OR 'Post-acute care' OR 'speciality Care' OR 'Sub acute care' OR 'Sub-acute care' OR 'Subacute care' OR 'Transitional Care setting*' OR 'Transitional Care centre*' OR 'Transitional Care center*' OR 'Transitional Care facilit*' OR 'Palliative Care setting*' OR 'Palliative Care Centre*' OR 'Palliative Care center*' OR 'Palliative Care facilit*' OR 'Palliative Care service*' OR 'Terminal Care centre*' OR 'Terminal Care center*' OR 'Terminal Care setting*' OR Health Centre OR Health Center OR 'Delivery of Health Care'/ OR exp Hospitals/ OR exp Health Facilities/ OR Tertiary Healthcare/ OR Secondary Care/ OR Primary Health Care/ OR exp General Practice/ OR exp Nursing Homes/ OR exp Residential Facilities/ OR exp social support/ OR Student Run Clinic/ OR exp Community Health Services/ OR exp Health Services/ OR exp Mental Health Services/ OR Ambulatory Care/ OR subacute care/ or terminal care/ OR Transitional Care/ OR Respite Care/ OR Housing for the Elderly/</p>
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Appendix C: Complexity Scoping Review: Characteristics of Included Studies

Full Reference (Country)	Setting	Participants	Research Design	Application of Complexity Theory	Implication of Research
Anku PJ, Amo-Adjei J, Doku D, Kumi-Kyereme A. Challenges of scaling-up of TB-HIV integrated service delivery in Ghana. Plos one. 2020;15(7):e0235843. (Ghana)	Hospital	Coordinators, institutional HIV Coordinators, Medical Officers, Supporting nursing staff, Pharmacist, Laboratory Technician	Qualitative study	Theoretical framework, Data Analysis	Practice
Asefa A, McPake B, Langer A, Bohren MA, Morgan A. Imagining maternity care as a complex adaptive system: understanding health system constraints to the promotion of respectful maternity care. Sexual and reproductive health matters. 2020;28(1):e1854153-e. (Ethiopia)	Hospital	Midwives, nurses, integrated emergency surgical officer, health officer, GP, quality focal person, medical director, CEO, senior maternal health expert	Qualitative study	Data Analysis	Practice and Research
Augustinsson S, Petersson P. On discharge planning: Dynamic complex processes—uncertainty, surprise and standardisation. Journal of Research in Nursing.	Hospital	Nurses	Qualitative study	Theoretical Framework	Practice

2015;20(1):39-53. (Sweden)					
Barasa EW, Molyneux S, English M, Cleary S. Hospitals as complex adaptive systems: a case study of factors influencing priority setting practices at the hospital level in Kenya. Social Science & Medicine. 2017;174:104-12. (Kenya)	Hospital	Medical superintendents, hospital managers, CEO, Nurses and Frontline workers	Case study	Theoretical Framework, Data Analysis	Practice
Björkman A, Salzmann-Erikson M. Giving advice to callers with mental illness: adaptation among telenurses at Swedish Healthcare Direct. International Journal of Qualitative Studies on Health and Well-being. 2019;14(1):163-174. (Sweden)	Telephone advice nursing service centres	Nurses	Qualitative study	Theoretical Framework, Data Analysis	Unclear
Boustani MA, Frame A, Munger S, Healey P, Westlund J, Farlow M, Hake A, Austrom MG, Shepard P, Bupp C, Azar J. Connecting research discovery with care delivery in dementia: The development of the Indianapolis Discovery	Interdisciplinary network for dementia	Multidisciplinary team	Case study	Theoretical Framework, Development of Professional Network	Practice and Research

Network for Dementia. Clinical interventions in aging. 2012;7:509-16. (United States)					
Bungay V, Stevenson J. Nurse Leaders' Experiences of Implementing Regulatory Changes in Sexual Health Nursing Practice in British Columbia, Canada. Policy, politics & nursing practice. 2013;14(2):69-78. (Canada)	Public health nursing	Nursing	Qualitative study	Data Analysis	Practice and Research
Burge SK, Becho J, Ferrer RL, Wood RC, Talamantes M, Katerndahl DA. Safely examining complex dynamics of intimate partner violence. Families, Systems, & Health. 2014;32(3):259. (United States)	Primary care clinics	Women experiencing Intimate Partner Violence	Qualitative study	Theoretical Framework, Data Analysis	Research
Burge SK, Katerndahl DA, Wood RC, Becho J, Ferrer RL, Talamantes M. Using complexity science to examine three dynamic patterns of intimate partner violence. Families, Systems, & Health. 2016;34(1):4.	Primary care clinics	Women attending an Intimate Partner Violence clinic	Mixed Methods	Theoretical Framework, Data Analysis	Not reported

(United States)					
Burge SK, Katerndahl DA, Becho J, Wood R, Rodriguez J, Ferrer R. The dynamics of partner violence and alcohol use in couples: Research methods. Violence and victims. 2019;34(1):136-56. (United States)	Family medicine outpatient clinic	Heterosexual couples in violent relationships	Qualitative study	Theoretical Framework, Data Analysis	Research
Burrows KE, Abelson J, Miller PA, Levine M, Vanstone M. Understanding health professional role integration in complex adaptive systems: A multiple-case study of physician assistants in Ontario, Canada. BMC health services research. 2020;20(1):365. (Canada)	Family medicine, emergency medicine, general surgery and inpatient medicine	Physician assistants	Case study	Theoretical Framework, Data Analysis	Practice, Policy and Research
Caffrey L, Wolfe C, McKevitt C. Embedding research in health systems: Lessons from complexity theory. Health research policy and systems. 2016;14(1):54. (United Kingdom)	Academic Health Sciences Centre	Not stated	Case study	Theoretical Framework, Data Analysis	Practice
Ciemins EL, Brant J, Kersten D, Mullette E, Dickerson D. Why the interdisciplinary team	Integrated multispecialty health system	Physicians, Nurse practitioner, Nurses, Social workers and Chaplains	Qualitative study	Theoretical Framework, Data Analysis	Practice

approach works: insights from complexity science. Journal of palliative medicine. 2016;19(7):767-70. (United States)					
Colón-Emeric CS, Corazzini K, McConnell ES, Pan W, Toles M, Hall R, Cary MP, Batchelor-Murphy M, Yap T, Anderson AL, Burd A. Effect of promoting high-quality staff interactions on fall prevention in nursing homes: a cluster-randomized trial. JAMA internal medicine. 2017;177(11):1634-41. (United States)	Nursing homes	Multidisciplinary team	Randomised controlled trial	Complexity-informed Intervention	Practice
De Bock BA, Willems DL, Weinstein HC. Complexity perspectives on clinical decision making in an intensive care unit. Journal of Evaluation in Clinical Practice. 2018;24(1):308-13. (Amsterdam)	Intensive Care Unit	Multidisciplinary team	Qualitative study	Theoretical Framework	Practice and Research
Dickinson WP, Dickinson LM, Nutting PA, Emsermann CB, Tutt B, Crabtree BF, Fisher L, Harbrecht M, Gottsman A,	Community health centres and primary care practices	Clinicians, staff and patients	Randomised controlled trial	Complexity-informed Intervention	Practice

West DR. Practice facilitation to improve diabetes care in primary care: a report from the EPIC randomized clinical trial. The Annals of Family Medicine. 2014;12(1):8-16. (United States)					
Escrig-Pinol A, Corazzini KN, Blodgett MB, Chu CH, McGilton KS. Supervisory relationships in long-term care facilities: A comparative case study of two facilities using complexity science. Journal of nursing management. 2019;27(2):311-9. (Canada)	Long-term care facilities	Nurses	Case study	Theoretical Framework, Data Analysis	Practice
Essén A, Lindblad S. Innovation as emergence in healthcare: unpacking change from within. Social Science & Medicine. 2013;93:203-11. (Sweden)	Rheumatology Quality Registry	Physicians, Physician secretaries, Nurses, Physical therapists, Clinical managers	Qualitative study	Data Analysis	Practice and Policy
Ferreira DMC, Saurin TA. A complexity theory perspective of kaizen: a study in healthcare. Production	Surgical ward within a large tertiary teaching hospital	Nurses, pharmacists, physicians	Case study	Complexity-informed Assessment Framework	Practice and Research

planning & control. 2019;30(16):13 37-53. (Brazil)					
Fitzgerald K, Biddle L. Creating the conditions for change: an NHS perspective. Journal of Health Organization and Management. 2019;34(3):345-361. (United Kingdom)	Independent projects for cancer service change	Clinical and managerial leads	Qualitative study	Theoretical Framework, Data Collection, Data Analysis	Practice
Gary JC. The wicked question answered: positive deviance delivers patient-centered care. Dimensions of Critical Care Nursing. 2014;33(3):142-50. (United States)	Online	Critical care nurses	Delphi study	Theoretical framework, Data Analysis	Practice
Gear C, Eppel E, Koziol-Mclain J. Exploring the complex pathway of the primary health care response to intimate partner violence in New Zealand. Health research policy and systems. 2018;16(1):99. (New Zealand)	Research	Not applicable	Qualitative Study	Theoretical Framework, Data Analysis	Practice
Gear C, Koziol-Mclain J, Eppel E. Exploring sustainable primary care responses to intimate partner violence in New Zealand: Qualitative use of complexity	General practices	Multidisciplinary team	Qualitative study	Data Analysis	Research

theory. BMJ open. 2019;9(11):e031827. (New Zealand)					
Gordon L, Rees C, Ker J, Cleland J. Using video-reflexive ethnography to capture the complexity of leadership enactment in the healthcare workplace. Advances in Health Sciences Education. 2016;22(5):1101-21. (United Kingdom)	GP Practice, Hospital Ward	Multidisciplinary team	Qualitative study	Theoretical Framework	Practice and Research
Grady CM. Can complexity science inform physician leadership development? Leadership in Health Services. 2016;29(3):251-63. (Canada)	Not stated	Scholars, operational directors and physicians	Qualitative study	Theoretical Framework, Data Analysis	Practice and Research
Gremyr A, Andersson Gäre B, Greenhalgh T, Malm U, Thor J, Andersson A-C. Using Complexity Assessment to Inform the Development and Deployment of a Digital Dashboard for Schizophrenia Care: Case Study. Journal of Medical Internet Research. 2020;22(4):e15521-e.	Department for Schizophrenia Spectrum Disorders	Multidisciplinary team	Case study	Complexity-informed Assessment Tool, Data Collection	Research

(Sweden)					
Grudniewicz A, Tenbenschel T, Evans JM, Steele Gray C, Baker GR, Wodchis WP. 'Complexity-compatible' policy for integrated care? Lessons from the implementation of Ontario's Health Links. Social science & medicine (1982). 2018;198:95-102. (Canada)	Voluntary network	Clinicians and Administrators involved in implementing and managing Health Links in Ontario	Qualitative study	Theoretical Framework, Data Analysis	Policy
Hodiamont F, Jünger S, Leidl R, Maier BO, Schildmann E, Bausewein C. Understanding complexity—the palliative care situation as a complex adaptive system. BMC health services research. 2019;19(1):1-14. (Germany)	Not stated	Multidisciplinary team	Qualitative study	Theoretical Framework, Data Analysis	Practice, Policy and Research
Hilts L, Howard M, Price D, Risdon C, Agarwal G, Childs A. Helping primary care teams emerge through a quality improvement program. Family Practice. 2013;30(2):204-11. (Canada)	Academic primary care clinics	Multidisciplinary team	Case study	Data Analysis	Practice
Horvat A, Filipovic J. Service quality and maturity of	Healthcare organizations	Doctors	Quantitative study	Theoretical Framework, Data Analysis	Practice

health care organizations through the lens of Complexity Leadership Theory. Journal of Evaluation in Clinical Practice. 2018;24(1):301-7. (Serbia)					
Jolley G. Evaluating complex community-based health promotion: addressing the challenges. Evaluation and program planning. 2014;45:71-81. (Australia)	Community-based health promotion programs	Not applicable	Mixed Methods	Program Evaluation	Practice and Research
Karam E, Lévesque M, Jacquemin G, Delure A, Robidoux I, Laramée M, Odobescu A, Harris PG, Danino AM. Building a multidisciplinary team for burn treatment—lessons learned from the Montreal tendon transfer experience. Annals of Burns and Fire Disasters. 2014;27(1):3. (Canada)	Plastic surgery department and rehabilitation centre at a national reference centre	Not defined - Multidisciplinary teams	Qualitative study	Data Analysis	Practice
Khan Y, Sanford S, Sider D, Moore K, Garber G, de Villa E, Schwartz B. Effective communication	Provincial health system	Included both groups of professionals working with emergency departments and public health within urban,	Qualitative study	Theoretical Framework, Data Analysis	Practice and Research

of public health guidance to emergency department clinicians in the setting of emerging incidents: a qualitative study and framework. BMC health services research. 2017;17(1):1-12. (Canada)		urban-rural and rural context			
Khoo E, Nygren L, Gümüşcü A. From Needs to Relationships to Organisations: Transactional Complexity in Social Work in the Swedish Social Services. The British Journal of Social Work. 2020;50(7):2098-115. (Sweden)	Municipalities with social workers	Social workers in child welfare, elderly care, disability care, substance abuse and social assistance	Qualitative study	Theoretical framework, Data Analysis	Practice
Kottke TE, Huebsch JA, McGinnis P, Nichols JM, Parker ED, Tillema JO, Maciosek MV. Using principles of complex adaptive systems to implement secondary prevention of coronary heart disease in primary care. The Permanente Journal. 2016;20(2):17. (United States)	Primary care practice	Healthcare providers, Patients	Evaluation study	Complexity-informed Intervention, Data Analysis	Practice
Kramer M, Brewer BB,	Hospitals	Clinical Nurses, On-site	Mixed Methods	Theoretical Framework,	Practice

Halfer D, Maguire P, Beausoleil S, Claman K, Macphee M, Duchscher JB. Changing our lens: seeing the chaos of professional practice as complexity. Journal of Nursing Management. 2013;21(4):690-704. (United States)		investigators, Health Science Research Associates		Data Analysis	
Lalley C. Workarounds and obstacles: Unexpected source of innovation. Nursing Administration Quarterly. 2014;38(1):69-77. (United States)	Acute care hospital	Nurses, Clinical Nurse Manager, Pharmacist, Quality Nurse and Project Manager	Mixed Methods	Theoretical Framework, Data Analysis	Practice
Lanham HJ, Leykum LK, Pugh JA. Examining the complexity of patient-outpatient care team secure message communication : Qualitative analysis. Journal of medical Internet research. 2018;20(7):e218-e. (United States)	Department of Veteran Affairs outpatient clinics (mental health, allergy, geriatric)	Not specified - teams within the clinics	Qualitative study	Theoretical Framework, Data Analysis	Practice and Research
Lim D, Schoo A, Lawn S, Litt J. Embedding and sustaining motivational interviewing in clinical environments:	Clinical educator workshop	Unclear - 'Health professionals' 'interns'	Mixed Methods	Theoretical Framework, Data Analysis	Practice and Policy

a concurrent iterative mixed methods study. BMC medical education. 2019;19(1):1-12. (Australia)					
Lindberg C, Schneider M. Combating infections at Maine Medical Center: Insights into complexity-informed leadership from positive deviance. Leadership. 2013;9(2):229-53. (United States)	Community Hospital/ Tertiary Care Centre	Not stated	Case study	Theoretical Framework	Practice
Long KM, McDermott F, Meadows GN. Factors affecting the implementation of simulation modelling in healthcare: A longitudinal case study evaluation. Journal of the Operational Research Society. 2020;71(12):1927-39. (Australia)	Public Mental Health Service	Senior managers, researchers	Case study	Theoretical Framework	Research
Long JC, Gul H, McPherson E, Best S, Augustsson H, Churrua K, Ellis LA, Braithwaite J. A dynamic systems view of clinical genomics: a rich picture of the landscape in Australia using a complexity	Clinical genomics system (Research Institute, Laboratory, Clinic, Hospital, Australian Genomics)	Health service researcher, Medical science liaison, Genetic counsellor, Administrator, Research Assistant, Research Manager, Clinical Leads	Mixed Methods	Data Analysis	Practice, Policy and Research

science lens. BMC medical genomics. 2021;14(1):1- 15. (Australia)					
McKechnie AC, Johnson KA, Baker MJ, Docherty SL, Leuthner SR, Thoyre S. Adaptive leadership in parents caring for their children born with life- threatening conditions. Journal of pediatric nursing. 2020;53:41-51. (United States)	Paediatric healthcare setting	Mothers, fathers	Qualitative study	Theoretical Framework, Data Analysis	Practice and Research
McKinney SH, Corazzini K, Anderson RA, Sloane R, Castle NG. Nursing home director of nursing leadership style and director of nursing- sensitive survey deficiencies. Health Care Management Review. 2016;41(3):224 -32. (United States)	Hospital	Directors of Nursing	Quantitative study	Theoretical Framework	Practice
Mohrman SA, Kanter MH. Designing for health: learning from Kaiser Permanente. Organizing for Sustainable Health Care: Emerald Group Publishing Limited; 2012. (United States)	Health system	Physician leaders, managers and labour leaders throughout region	Case study	Theoretical Framework	Practice
Olive P. Classificatory	Hospital Trusts and	Service users, Emergency	Mixed Methods	Theoretical Framework	Practice

multiplicity: intimate partner violence diagnosis in emergency department consultations. Journal of clinical nursing. 2017;26(15- 16):2229-43. (United Kingdom)	three community- based specialist domestic violence services	Department Practitioners			
O'Sullivan TL, Kuziemyk CE, Toal-Sullivan D, Corneil W. Unraveling the complexities of disaster management: A framework for critical social infrastructure to promote population health and resilience. Social Science & Medicine. 2013;93:238- 46. (Canada)	Communities in Canada	Professionals and volunteers from emergency management, health and social service organisations, community members (incl. high risk populations)	Qualitative study	Data Analysis	Practice
Provost SM, Lanham HJ, Leykum LK, McDaniel RR, Pugh J. Health care huddles. Health care management review. 2015;40(1):2- 12. (United States)	Internal medicine clinic, Medical and Surgical Unit, Paediatric Hospital	Medical director, clinicians, admin staff, nurses, other staff, physicians, fall witnesses, Manager of patient services, safety officer, hospital environmental manager, interdepartment al representation, administrator on call; interdepartment al representation, Operating Room clinicians and	Not specified - authors established liaisons in each organisation	Theoretical Framework, Data Collection (i.e., Direct Observation), Data Analysis	Practice

		staff. Surgeons, head pharmacists			
Pyte P, Mertens F, Helewaut F, Krystallidou D. Healthcare teams as complex adaptive systems: Understanding team behaviour through team members' perception of interpersonal interaction. BMC Health Services Research. 2018;18(1):570-13. (United Kingdom)	Palliative care	Palliative home-care nurses, community nurses, general practitioners	Qualitative study	Theoretical Framework, Data Analysis	Practice and Research
Reed JE, Howe C, Doyle C, Bell D. Simple rules for evidence translation in complex systems: a qualitative study. BMC medicine. 2018;16(1):1-20. (United Kingdom)	Academic health partnership	Document analysis, Lead authors	Mixed Methods	Theoretical framework, Data Analysis	Practice, Policy and Research
Righi AW, Wachs P, Saurin TA. Characterizing complexity in socio-technical systems: a case study of a SAMU Medical Regulation Center. Work. 2012;41(Supplement 1):1811-7. (Brazil)	Mobile Emergency Medical Service	Medical doctors, Radio operators, Telephone attendants	Case study	Theoretical Framework, Data Analysis	Practice and Research
Roussy V, Riley T, Livingstone C. Together stronger:	Systems-based initiative to prevent obesity	Local government and community health-based	Qualitative study	Theoretical Framework, Data Analysis	Practice

boundary work within an Australian systems-based prevention initiative. Health Promotion International. 2020;35(4):671-81. (Australia)	and chronic diseases	health promotion practitioners and managers			
Sawyer A, den Hertog K, Verhoeff AP, Busch V, Stronks K. Developing the logic framework underpinning a whole-systems approach to childhood overweight and obesity prevention: Amsterdam Healthy Weight Approach. Obesity science & practice. 2021;7(5):591-605. (Amsterdam)	Health system	Not applicable	Logic Framework	Theoretical Framework, Complexity-informed Health Programme, Data Analysis, Development of a Logic Framework	Practice, Policy and Research
Ssengooba F, McPake B, Palmer N. Why performance-based contracting failed in Uganda—an ‘open-box’ evaluation of a complex health system intervention. Social science & medicine. 2012;75(2):377-83. (Uganda)	Private-not-for-profit health centres	Hospital managers, district health directors, pilot implementers and performance auditors.	Case study	Theoretical Framework, Data Analysis	Practice
Tang W, Wei L, Zhang L. Analysing a Chinese regional	Rural Healthcare System	Health Administrator, Insurance Administrator, County Hospital	Case study	Theoretical framework, Data Analysis, Development of Model of	Practice, Policy and Research

integrated healthcare organisation reform failure using a complex adaptive system approach. International Journal of Integrated Care. 2017;17(2). (China)		director, County Hospital Professionals, Township Hospital Manager, Township Hospital Clinician, Primary doctors, Village doctor		Policy Implementation Flow	
Trenholm S, Ferlie E. Using complexity theory to analyse the organisational response to resurgent tuberculosis across London. Social Science & Medicine. 2013;93:229-37. (United Kingdom)	Healthcare system regarding Tuberculosis	Tuberculosis Managers and Healthcare Professionals	Case study	Theoretical Framework, Data Analysis	Research
Tsasis P, Evans JM, Owen S. Reframing the challenges to integrated care: a complex-adaptive systems perspective. International journal of integrated care. 2012;12. (Canada)	Local Health Integration Network	Clinicians with boundary spanning roles from primary care, acute care, long-term care, home and community support and the Local Health Integration Networks. Their professional training was diverse and included nursing, medicine, social work and management.	Qualitative study	Theoretical Framework, Data Analysis	Practice, Policy and Research
Van Roode T, Pauly BM, Marcellus L, Stroscher HW, Shahram S, Dang P, Kent A, MacDonald M. Values are not enough:	Health Authorities, Ministry of Health	Senior executives, public health directors, regional directors and medical health officers	Qualitative study	Theoretical framework, Data Analysis	Practice and Policy

qualitative study identifying critical elements for prioritization of health equity in health systems. International Journal for Equity in Health. 2020;19(1):1-13. (Canada)					
Ward B, Lane R, McDonald J, Powell-Davies G, Fuller J, Dennis S, Kearns R, Russell G.. Context matters for primary health care access: a multi-method comparative study of contextual influences on health service access arrangements across models of primary health care. International Journal for Equity in Health. 2018;17(1):1-12. (Australia)	Primary health care services	GPs, Nurses, Allied Health, Administration	Mixed Methods	Data Analysis	Practice and Policy
Xiao Y, Zhao K, Bishai DM, Peters DH. Essential drugs policy in three rural counties in China: what does a complexity lens add? Social science & medicine. 2013;93:220-8. (China)	Rural counties	Heads of county health bureau, division chiefs in charge of the implementation of the essential drugs policy, central township health centre chiefs, doctors (including village clinicians) and patients	Case study	Theoretical Framework, Data Analysis	Policy

Yu CH, McCann M, Sale J. 'In my age, we didn't have the computers': Using a complexity lens to understand uptake of diabetes eHealth innovations into primary care-A qualitative study. PloS one. 2021;16(7):e0254157-e. (United Kingdom)	Primary care - Diabetes focused	Physicians, Nurses, Dietitians, Patients	Qualitative study	Data Analysis	Practice
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Appendix D: Complexity Scoping Review Citations

Author and year	Number of Citations	Title
O'Sullivan 2013	203	Unravelling the complexities of disaster management: A framework for critical social infrastructure to promote population health and resilience
Ssengooba 2012	167	Why performance-based contracting failed in Uganda - An 'open-box' evaluation of a complex health system intervention
Tsasis 2012	138	Reframing the challenges to integrated care: a complex-adaptive systems perspective
Provost 2015	123	Health care huddles
Reed 2018	90	Simple rules for evidence translation in complex systems: A qualitative study
Essén 2013	88	Innovation as emergence in healthcare: Unpacking change from within
Pype 2018	86	Healthcare teams as complex adaptive systems: understanding team behaviour through team members' perception of interpersonal interaction
Jolley 2014	75	Evaluating complex community-based health promotion: addressing the challenges
Dickinson 2014	69	Practice facilitation to improve diabetes care in primary care: A report from the EPIC randomized clinical trial
Xiao 2013	67	Essential drugs policy in three rural counties in China: What does a complexity lens add?

Author and year	Number of Citations	Title
Barasa 2017	65	Hospitals as complex adaptive systems: A case study of factors influencing priority setting practices at the hospital level in Kenya
Caffrey 2016	47	Embedding research in health systems: lessons from complexity theory
Trenholm 2013	46	Using complexity theory to analyse the organisational response to resurgent tuberculosis across London
Burge 2016	45	Using Complexity Science to Examine Three Dynamic Patterns of Intimate Partner Violence
Kramer 2013	38	Changing our lens: seeing the chaos of professional practice as complexity
Gordon 2017	37	Using video-reflexive ethnography to capture the complexity of leadership enactment in the healthcare workplace
Ciemins 2016	35	Why the Interdisciplinary Team Approach Works: Insights from Complexity Science
Grudniewicz 2018	32	Complexity-compatible policy for integrated care? Lessons from the implementation of Ontario's Health Links
Lindberg 2013	31	Combating infections at Maine Medical Center: Insights into complexity-informed leadership from positive deviance
Hodiamont 2019	30	Understanding complexity - the palliative care situation as a complex adaptive system
Burge 2014	30	Safely examining complex dynamics of intimate partner violence

Author and year	Number of Citations	Title
Hilts 2013	30	Helping primary care teams emerge through a quality improvement program
Horvat 2018	26	Service quality and maturity of health care organisations through the lens of Complexity Leadership Theory
Ferreira 2019	23	A complexity theory perspective of kaizen: a study in healthcare
Boustani 2012	21	Connecting research discovery with care delivery in dementia: the development of the Indianapolis Discovery Network for Dementia
Colon-Emeric 2017	20	Effect of Promoting High-Quality Staff Interactions on Fall Prevention in Nursing Homes A Cluster-Randomized Trial
Grady 2016(Grady, 2016)	20	Can complexity science inform physician leadership development?
Escrig-Pinol 2019	19	Supervisory relationships in long-term care facilities: A comparative case study of two facilities using complexity science
Lalley 2014	17	Workarounds and Obstacles
Olive 2017	16	Classificatory multiplicity: intimate partner violence diagnosis in emergency department consultations
Augustinsson 2015	13	On discharge planning: dynamic complex processes - uncertainty, surprise, and standardisation
McKinney 2016	13	Nursing home director of nursing leadership style and director of nursing-sensitive survey deficiencies

Author and year	Number of Citations	Title
Gear 2018	13	Exploring the complex pathway of the primary health care response to intimate partner violence in New Zealand
Kottke 2016	12	Using Principles of Complex Adaptive Systems to Implement Secondary Prevention of Coronary Heart Disease in Primary Care
deBock 2018	12	Complexity perspectives on clinical decision making in an intensive care unit
Mohrman 2012	11	Designing for health: learning from Kaiser Permanente
Righi 2012	11	Characterizing complexity in socio-technical systems: a case study of a SAMU Medical Regulation Center
Khan 2017	11	Effective communication of public health guidance to emergency department clinicians in the setting of emerging incidents: a qualitative study and framework
Lim 2019	10	Embedding and sustaining motivational interviewing in clinical environments: a concurrent iterative mixed methods study
Bungay 2013	10	Nurse Leaders Experiences of Implementing Regulatory Changes in Sexual Health Nursing Practice in British Columbia, Canada
Lanham 2018	9	Examining the Complexity of Patient-Outpatient Care Team Secure Message Communication: Qualitative Analysis

Author and year	Number of Citations	Title
Tang 2017	9	Analysing a Chinese Regional Integrated Healthcare Organisation Reform Failure using a Complex Adaptive System Approach
Roussy 2020	9	Together stronger: boundary work within an Australian systems-based prevention initiative
Bjorkman 2019	8	Giving advice to callers with mental illness: adaptation among telenurses at Swedish Healthcare Direct
Karam 2014	8	Building a multidisciplinary team for burn treatment - Lessons learned from the Montreal tendon transfer experience
Burrows 2020	7	Understanding health professional role integration in complex adaptive systems: a multiple-case study of physician assistants in Ontario, Canada
Gear 2019	7	Exploring sustainable primary care responses to intimate partner violence in New Zealand: Qualitative use of complexity theory
McKechnie 2020	7	Adaptive Leadership in Parents Caring for their Children Born with Life-Threatening Conditions
Long 2020	7	Factors affecting the implementation of simulation modelling in healthcare: A longitudinal case study evaluation
Burge 2019	6	The dynamics of partner violence and alcohol use in couples: Research methods
Gremyr 2020	6	Using Complexity Assessment to Inform the Development and Deployment of a Digital Dashboard for Schizophrenia Care: Case Study

Author and year	Number of Citations	Title
vanRoode 2020	5	Values are not enough: qualitative study identifying critical elements for prioritization of health equity in health systems
Ward 2018	5	Context matters for primary health care access: a multi-method comparative study of contextual influences on health service access arrangements across models of primary health care
Khoo 2020	4	From needs to relationships to organisations: Transactional complexity in social work in the Swedish social services
Asefa 2020	3	Imagining maternity care as a complex adaptive system: understanding health system constraints to the promotion of respectful maternity care
Fitzgerald 2019	2	Creating the conditions for change: an NHS perspective
Anku 2020	2	Challenges of scaling-up of TB-HIV integrated service delivery in Ghana
Yu 2021	1	'In my age, we didn't have the computers': Using a complexity lens to understand uptake of diabetes eHealth innovations into primary care-A qualitative study
Sawyer 2021	1	Developing the logic framework underpinning a whole-systems approach to childhood overweight and obesity prevention: Amsterdam Healthy Weight Approach
Long 2021	0	A dynamic systems view of clinical genomics: a rich picture of the landscape in Australia using a complexity science lens

Author and year	Number of Citations	Title
Gary 2014	0	The wicked question answered: positive deviance delivers patient-centered care

Appendix E: Complexity Scoping Review: Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	58
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	n/a
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	59
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	60
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	59
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	60
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	61
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Appendix B
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	61
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	62

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	63
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	n/a
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	63
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	58
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	64
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	n/a
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Appendix C
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	69
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	81
Limitations	20	Discuss the limitations of the scoping review process.	82
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	82
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	n/a

JB1 = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JB1 guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of 'risk of bias' (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of

evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: 10.7326/M18-0850.

Appendix F: Action Research and Health Care Scoping Review PubMed Database Search Strategy.

Population – people who work in healthcare	Patient* OR inpatient* OR outpatient* OR Client* OR End User* OR Service User* OR 'advanced practitioner' OR Nurse* OR Midwi* OR Physician* OR Physiotherapists OR Physical Therapist* OR psychologist* OR 'Industrial Psychology' OR 'Occupational Psychology' OR Doctor* OR Consultant* OR Health Services Manager* OR Minority Group* OR Geriatric* OR 'Disabled people' OR 'people with Disabilities' OR Pregnant OR breastfeeding OR HIV OR 'Human immunodeficiency virus' OR STI OR STD OR 'Sexually Transmitted Diseases' OR 'Intellectual Disability' OR 'Chronically ill' OR 'Patients'[Mesh:NoExp] OR 'Inpatients'[Mesh] OR 'Outpatients'[Mesh] OR 'Nurses'[Mesh] OR 'Physicians'[Mesh:NoExp] OR 'Cardiologists'[Mesh] OR 'Endocrinologists'[Mesh] OR 'General Practitioners'[Mesh] OR 'Geriatricians'[Mesh] OR 'Oncologists'[Mesh] OR 'Physicians, Family'[Mesh] OR 'Rheumatologists'[Mesh] OR 'Physical Therapists'[Mesh] OR 'Psychology'[Mesh:NoExp] OR 'Psychology, Industrial' [Mesh] OR 'Psychology, Social'[Mesh] OR 'Consultants'[Mesh] OR 'Minority Groups'[Mesh] OR 'Disabled Persons'[Mesh] OR 'Pregnant Women'[Mesh] OR 'Breast Feeding'[Mesh] OR 'HIV'[Mesh] OR 'Sexually Transmitted Diseases'[Mesh] OR 'Intellectual Disability'[Mesh] AND
Concept - studies using an action research approach in healthcare contexts	'Action Research' OR 'Appreciative Inquiry' OR 'Cooperative Inquiry' OR 'Co-operative Inquiry' OR 'Collaborative research' OR 'Participatory Action Research' OR 'Organisation Development' OR 'Organization Development' OR 'Organizational development' OR 'Organisational Development' OR 'Community Development' OR Co-design
Context – Any part of health service that people interact with.	Gerontology OR 'Medication Management' OR Drug administration OR Prescribing OR Prescriptions OR 'Long-term Care' OR Long term health care OR 'Mental Health Services' OR Psychiatric OR 'Nursing Homes' OR Rehabilitation OR Oncology OR Pain Clinic OR pain service OR Pain management OR 'Cancer hospital' OR 'Cancer Care' OR 'Home Nursing' OR 'Public Health' OR Hospital OR 'Community Development' OR 'Health Policy' OR ED OR 'Emergency department' OR Accident and Emergency Department* OR 'Emergency service' OR Emergency medical care OR Trauma Centers OR 'Hospital Medicine' OR 'Health Service' OR Healthcare OR 'Health Care' OR Maternity OR Maternal child nursing OR Birthing Centre* OR Birthing Center* OR Health Promotion* OR 'Occupational Health' OR 'Clinical Medicine'[Mesh] OR 'General Practice'[Mesh] OR 'Community Health Nursing'[Mesh] OR 'Community Medicine'[Mesh] OR 'Primary Health Care'[Mesh] OR 'Subacute Care'[Mesh] OR 'Pediatrics'[Mesh] OR 'Geriatrics'[Mesh] OR 'Medication Therapy Management'[Mesh] OR 'Long-Term Care'[Mesh] OR 'Mental Health Services'[Mesh] OR 'Psychiatric Department, Hospital'[Mesh] OR 'Social Work, Psychiatric'[Mesh] OR 'Nursing Homes'[Mesh] OR 'Hospitals,

	Rehabilitation'[Mesh] OR 'Oncology Service, Hospital'[Mesh] OR 'Pain Clinics'[Mesh] OR 'Cancer Care Facilities'[Mesh] OR 'Home Nursing'[Mesh] OR 'Public Health Practice'[Mesh] OR 'Hospitals'[Mesh] OR 'Social Planning'[Mesh:NoExp] OR 'Health Policy'[Mesh] OR 'Emergency Service, Hospital'[Mesh] OR 'Hospital Medicine'[Mesh] OR 'Health Services'[Mesh] OR 'Hospitals, Maternity'[Mesh] OR 'Birthing Centers'[Mesh] OR 'Health Promotion'[Mesh] OR 'Occupational Health Services'[Mesh]
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Appendix G: Action Research Scoping Review: Characteristics of Included Studies with Final Papers Highlighted

Author	Year	Title	Journal	Vol	Issue	Pages	Cit	Location	Discipline	Study setting	Study Aim	Methodology/type of action research	Context	Quality of relationships	Quality of All cycles of action (present tense)	Dual outcomes
E. Ezenwaokwu, M. Mosher, A. Midek	2016	Use of interdisciplinary researches by pregnant and childbearing age women: Action research in Southern Nigeria	African Journal of Midwifery & Women's Health	10	1	219-226	0	Nigeria, Africa	MDT	Sub-urban community	To determine the use of ITNs by pregnant women and other women of childbearing age, and, through the process of action research, to empower them to take action to prevent malaria through the proper use of ITNs.	Participatory action research design	Not stated	Discussed	Cycles described	Dual outcomes
J. Christie, M. McMillan, C. Currie, G. Matthews-Smith	2016	Developing person-centred practice in hip fracture care for older people	Nurs Stand	31	16	47-57	1	Scotland, Europe	MDT	Not stated	To facilitate a multidisciplinary collaborative approach to developing person-centred practice in hip fracture care for older people.	Collaborative inquiry	Not stated	Not discussed	Cycles described	Dual outcomes
C. Parnesian, N. Philp, K. McQuade, P. Sivara, R. Ntlangiso, S. Tarala	2016	Action Research: Development of a Diabetes Care Model in a Community Hospital	Pacific Rim International Journal of Nursing Research	20	2	219-231	1	Thailand, Southeast Asia	Nurses	Diabetes Care - community hospital	To develop a suitable model for diabetes care in community hospitals to improve service delivery and the health of people with DM.	Action research	Yes	Not discussed	Cycles described	No
M. Asadkhani, Z. Abdelmassih, H. Albrecht, A. Sall	2016	Design and Evaluation of Reform Plan for Local Academic Nursing Challenges Using Action Research	Asian Nursing Research	10	4	263-270	8	Iran, Asia	Nurses	School of Nursing and Midwifery and affiliated hospitals	To review a collaborative partnership between educators and practitioners to enhance educational practices for nursing students	Action research	Not stated	Not discussed	Cycles described	Dual outcomes
C. Pedwell, A. M. Moxley, P. Mawhood	2016	Insider action research and the microsystem of a Danish surgical ward	Action Research	14	2	184-200	10	Denmark, Europe	Physicians and nurses	Hospital	To improve interprofessional team performance at a surgical ward.	Action research	Yes	Not discussed	Cycles described	No
L. H. Jensen, K. H. Rikse, L. D. Utstein, K. Steadahl	2016	Promoting independence at mealtimes for older persons with severe dementia	International Practice Development Journal	6	2	146-153	10	Norway, Europe	Nurses	Hospital	To develop knowledge of how nurses promote independence at mealtimes for persons with severe dementia, and to explore their practice from a person-centred perspective.	Collaborative action research	Yes	Not discussed	Cycles described	Dual outcomes
J. Miguel Padilla, A. P. Sousa, F. M. Pereira	2016	Participatory action research: Strategy for improving self-care management in chronic obstructive pulmonary disease patients	Action Research	14	3	240-256	10	Portugal, Europe	Nurses	Hospital	To encourage the continual improvement of the quality of health services, improve self-care management skills of patients with COPD, and develop clinical guidelines valid for the context and useful for patients, nurses, healthcare services and for education	Participatory action research	Yes	Discussed	Cycles described	Dual outcomes
J. Blouch	2016	Learning networks – enabling change through community action research	Educational Action Research	24	1	21-33	11	Dublin, Ireland	MDT	University & community	To describe an early learning initiative	Action research	Not stated	Discussed	Cycles described	Dual outcomes
B. Horne, A. Newsham, G. Wilkes, S. Libersbach, M. Gilmore, P. Wright	2016	Development and evaluation of a specifically designed website for haematopoietic stem cell transplant patients in Leeds	Eur J Cancer Care (Engl)	25	3	402-418	11	England/Europe	MDT	The Leeds regional allo-HSCT unit	To provide allo-HSCT patients with web-based information and support as an adjunct to standard practice.	Participatory action research (PAR) approach	No	Not discussed	No cycles described	No
A. A. Mator, et al., C. Alencar, A. P. Toranzo	2016	Lean Principles in an Operating Room Environment	Journal of Health Management	18	2	239-257	13	Portugal, Europe	MDT	Hospital	To assess: 1. What is the impact of lean tools in the OR? 2. How to evaluate the impact of lean tools in the OR? How do the KPIs used reflect the improvements introduced by the lean tools?	Action research	Not stated	Not discussed	Cycles described	Dual outcomes
V. Nyman, M. Berg, S. Osseim, T. Bondeson	2016	Insider Action research as an approach and a method-Exploring institutional encounters from within a birthing context	Action Research	14	2	217-233	15	Sweden, Europe	Midwifery	Midwifery Hospital	To describe the first-person perspective of being a peer midwife and a novice researcher initiating collaborative AR in her own organization to develop knowledge about the first encounters between the labouring woman and her caregivers in a hospital birthing context.	Insider AR	yes	Not discussed	Cycles described	No

Author	Year	Title	Journal	Vol	Issue	Pages	Cit	Location	Discipline	Study setting	Study Aim	Methodology/type of action research	Context	Quality of relationships	Quality of All cycles of action (present terms)	Dual outcomes
C. Van Heerde, C. Moore, E.S. Jansen, van Rensburg	2016	Strategies to sustain a quality improvement initiative in neonatal resuscitation	Afr J Prim Health Care Fam Med	8	2	63-620	16	South Africa	Nurses	Neonatal ICU	To explore and describe the existing situation in the specific district hospital in order to develop strategies to sustain the quality improvement initiative implemented in neonatal resuscitation for decreasing neonatal mortality	Problem resolving action research	Yes	Not discussed	Cycles described	No
K. B. von Praetere, F. Waggle, H. Conradie	2016	Towards tailored teaching: using participatory action research to enhance the learning experience of longitudinal integrated clerkship students in a South African rural district hospital	BMC Med Educ	16	1	82	18	South Africa	Undergraduate medical students	Robertson District Hospital	To explore how to identify and implement a tailored teaching and learning intervention to improve workplace-based learning for LC students	A participatory action research approach was used in a co-operative inquiry group	Yes	Not discussed	Cycles described	Dual outcomes
J. Andersen, A. Bifield	2016	Action research in nursing homes	Action Research	14	1	19-35	34	Denmark, Europe	MDT	Public nursing home	To improve the professional skills and engagement of the care workers and to improve the life quality and participation of the residents	Critical action research	Yes	Discussed	No cycles described	Dual outcomes
E. W. Kwong, M. S. Hung, K. Woo	2016	Improvement of pressure ulcer prevention care in private for-profit residential care homes: an action research study	BMC Geriatr	16	1	192	31	Hong Kong Asia	MDT, patients and families	Nursing homes	To explore how an action research approach can change the practices of care staff on the prevention of pressure ulcers for improving the outcome of care and develop a pressure ulcer protocol for private for-profit RHL	Systems Model of the Action Research Process	Yes	Discussed	Cycles described	Dual outcomes
L. Ndlovu, O. H. Mhamed	2016	Impact of lean on patient cycle and waiting times at a rural district hospital in KwaZulu-Natal	Afr J Prim Health Care Fam Med	8	1	61-9	31	Natal-South Africa	MDT	QHO	To determine the impact of lean principles techniques, and tools on the operational efficiency in the outpatient department (OPD) of a rural district hospital	AR with Lean Principles	Yes	Not discussed	Cycles described	No
D. Schmidt, M. Kutz, S. Davidson	2017	Creating Rural Allied Health Leadership Structures Using District Advisers: An Action Research Project Using Program Logic	J Allied Health	46	3	186-191	1	New South Wales, Australia	MDT	Large rural health organisation	To understand the process of implementing this leadership structure from the perspective of the advisors along with the managers and clinicians they support Determine the relative value of activities undertaken by the advisors. Describe outcomes already achieved as a result of advisor activities. Identify any barriers to implementing this leadership model and Describe preferred future outcomes to suit the needs of advisors, clinicians and managers, clients, and the organisation in the medium to long term.	Underpinned by action research	No	Discussed	Cycles described	Dual outcomes
M. Brown, A. Gardner, Z. Kucenas, S. Kilaka	2017	Transition from an open-plan to a two-cohort neonatal intensive care unit: a participatory action research approach	J Clin Nurs	26	13	1093-1048	4	Australia	Nurses	Women and Children's Hospital	To facilitate staff transition from an open-plan to a two-cohort neonatal intensive care unit design	Participatory action research	Yes	Discussed	Cycles described	Dual outcomes
R. S. Saravanan, M. Muthu, A. R. Nardadi, M. Muthuswami, S. Yellaluri, A. Jafari	2017	Empowering nurses through action research for developing a new nursing handover program in a pediatric ward in Iran	Action Research	15	2	214-235	12	Iran, Asia	Nurses	Hospital	To develop a new nursing handover program in pediatric ward in Iran through action research.	Co-operative inquiry	Yes	Not discussed	Cycles described	Dual outcomes
J. Hansson, E. Högl, M. Nyström	2017	Action research for multi-level facilitation of improvement in health and social care: Development of a change facilitation approach for a local RSD unit	Action Research	15	4	330-356	13	Sweden, Europe	locally based RSD units	Health region	To investigate the potentials of an action research program used to develop a local RSD unit's way to facilitate improvement and change on several levels in their regional partner organizations	Action research	Yes	Discussed	Cycles described	Dual outcomes

Author	Year	Title	Journal	Vol	Issue	Pages	Cit	Location	Discipline	Study setting	Study Aim	Methodology/type of action research	Context	Quality of relationships	Quality of all cycles of action (present term)	Dual outcomes
L. Van Mulderen; P. De Vriendt; T. Meis; E. Gorus	2017	Active ageing in the nursing home: Could participatory action research provide the answer?	Action Research	15	3	230-257	17	Europe	Nurses	Nursing Home	To discuss possible contributions of participatory action research as structural method in a new Active Ageing-environment nursing home, enabling residents' participation and focuses on the practicalities of its implementation process.	Participatory action research	Yes	Not discussed	Cycles described	No
W. Sana K. Niazangaji; K. Samirindai; J. F. Smith; T. Phajon; S. Senglangthum	2018	Using Action Research to prevent work-related illness among rubber farmers in Northeast Thailand	Public Health Nursing	35	6	466-472	1	Thailand, Southeast Asia	Rubber farmers and community stakeholders	Community health	To enhance self-care among rubber farmers for preventing work-related illness.	Action research	Yes	Not discussed	Cycles described	Dual outcomes
R. Doderia; M. Terese; A. Polase	2018	Transforming End-of-Life Care by Implementing a Patient-Centered Care Model: Findings From an Action Research Project	J Hosp Palliat Nurs	20	6	531-541	5	Italy, Europe	MDT	Hospice	To report the process of transforming end-of-life care by implementing a patient-centered model of care in an Italian hospice.	Action research	Not stated	Not discussed	Cycles described	Dual outcomes
E. Ensson-Lidman; Sör; G. Lång	2018	Using a developed participatory action research process in practice to help care providers deal with troubled conscience in residential care of older people	Action Research	16	2	190-206	6	Sweden, Europe	MDT	Residential care facility	To assist care providers in residential municipal care of older people to constructively deal with their troubled conscience generated from various challenging situations.	Participatory action research	Yes	Discussed	Cycles described	Dual outcomes
G. B. Adnan; Y. Kibabwa	2018	Improving a health information system for real-time data entries: An action research project using socio-technical systems theory	Inform Health Soc Care	43	2	159-171	9	England, UK, Europe	MDT	Orthopaedic hospital	To improve a health information system (HIS)	Action research	Not stated	Not discussed	Cycles described	Dual outcomes
J. Amentrop; M. Wöckel; C. Trimmer; H. Larsen; K. D. Seffert; A. Nielsen; M. E. Lau; B. Wether; L. H. Jensen; E. A. Høft; H. C. Høft; G. P. van	2018	How participatory action research changed our view of the challenges of shared decision-making training	Patient Educ Couns	101	4	639-646	13	Denmark, Europe	MDT	Regional Hospital	To demonstrate how the use of P4H helped identify ways to respond to training challenges involved in SDM as part of a larger enterprise to change our hospital's communication culture	Participatory action research approach	Yes	Discussed	Cycles described	Dual outcomes
D. Madden; A. Sney; A. O'Farrell; B. McKelvie; B. O'Callaghan; K. Casey; L. Courtney; V. Fleming; V. Budy	2018	Using action research to develop midwives' skills to support women with perinatal mental health needs	J Clin Nurs	27	3	561-571	15	Dublin, Ireland	Nurses and midwives	Maternity hospital	To identify and develop midwives' skills to support women with mental health needs during pregnancy	Co-operative inquiry	Yes	Discussed	Cycles described	Dual outcomes
T. Jones; L. Ho; K. K. Kim; P. Williams; J. Shupath; R. Ratnayake; R. Loewenson	2018	Rebuilding people-centred maternal health services in post-Ebola Liberia through participatory action research	Glob Public Health	13	11	1650-1669	19	Liberia, Africa	Nurses	Maternity hospital	To improve maternity services	Participatory action research approach	Yes	Discussed	Cycles described	Dual outcomes
C. Casak; B. Cohen; J. Mignone; M. J. Charlier; Z. Luff	2018	Participatory action as a research method with public health nurses	Journal of Advanced Nursing	74	7	1544-1553	22	Canada	Nurses	Community	To develop a professional practice model.	Participatory action research	Not stated	Not discussed	Cycles described	Dual outcomes
S. Carilli; B. McCormack; T. McCauley	2018	Person-centred leadership: A relational approach to leadership	Journal of Clinical Nursing	27	15	3056-3069	56	Netherlands, Europe	Nurses	Urban general hospital	How does person-centred leadership manifest in clinical nursing	Participatory action research	Yes	Discussed	Cycles described	Dual outcomes

Author	Year	Title	Journal	Vol	Issue	Pages	Cit	Location	Discipline	Study setting	Study Aim	Methodology/type of action research	Context	Quality of relationships	Quality of AR cycles of action (present term)	Dual outcomes
M. Casey, D. Rourke, A. M. Brady, G. Fealy, J. Haggerty, C. Kennedy, M. McManus, E. Nicholas, R. O'Connell, L. O'Connor, D. O'Leary, P. O'Sullivan, D. Stokes	2019	Developing a new health-related policy analysis tool: An action research cooperative inquiry approach	Journal of Nursing Management (John Wiley & Sons, Inc.)	27	6	1233-1241	0	Ireland, Europe	Nurses	Higher education institutions	To develop a tool for the analysis of nursing, midwifery and health-related policy and professional guidance documents	Co-operative inquiry	Yes	Discussed	Cycles described	Dual outcomes
H. van Buren, D. Castelnau, S. Radabaugh, S. H. J. du Toit	2019	Screening fitness to drive by occupational therapists in Gauteng Public Healthcare - an Action Learning Action Research outcome	South African Journal of Occupational Therapy	49	1	04-Nov	0	South Africa	Occupational Therapists	Not stated	To present an Action Learning Action Research (ALAR) process that resulted in the development of a Screening Fitness to Drive tool and user manual.	Action Learning Action Research	Yes	Discussed	Cycles described	Dual outcomes
S. El Armani, M. Ramakurda	2019	The Implementation of Evidence-based Practice in a United Arab Emirates Hospital	Africa Journal of Nursing & Midwifery	21	1	Jul-22	0	UAE, Asia	Nurses	Hospital	To determine the attitude to and the level of confidence in implementing EBP in a United Arab Emirates hospital, t	Action research	Not stated	Not discussed	Cycles described	Dual outcomes
M. Kilauea-Trolier, H. Parry, R. Lamer, R. Naef	2019	Implementing family systems nursing through a participatory, circular knowledge-to-action research approach in women's health	International Practice Development Journal	9	2	Jan-15	1	Switzerland, Europe	Nurses	Acute Care Hospital	To create a family-centered care culture by integrating a family system nursing approach into clinical practice within the women's health division in an acute care hospital.	Action research	Yes	Discussed	Cycles described	No
S. Bhagiparan, S. Jodave, M. Malik, H. Piroosi, B. Ghorbani, N. Barani	2019	New visiting policy: A step toward nursing ethics	Nurs Ethics	26	1	203-206	4	Iran, Asia	MDT	ICU	To design, implement, and evaluate a new visiting policy in the intensive care units.	Action research	Not stated	Not discussed	Cycles described	Dual outcomes
H. S. Lee, T. B. Chen, C. L. Yang, T. Y. Chiu, W. Y. Hu	2019	Action research study on advance care planning for residents and their families in the long-term care facility	BMC Palliat Care	18	1	95	4	Taiwan, Asia	MDT, patients and families	Nursing home/Palliative care	To develop an ADP interview guideline and to develop an ADP care model	action research design	Yes	Not discussed	Clearly described	No
H. Prince, S. Nadir, M. Crowe, L. Maki, L. Menture, J. Smith, M. L. Kelley	2019	If you understand you cope better with it: The role of education in building palliative care capacity in four First Nations communities in Canada	BMC Public Health	19	1	768	5	Canada, North America	First Nations community	Communities in different regions	To report on the process and outcomes of the educational components of the EOPN research	Participatory action research	Yes	Not discussed	No cycles described	No
L. L. Magnusson, L. Almqvist, T. Bandari	2019	Appreciative inquiry in a Norwegian nursing home: a unifying and maturing process to forward new knowledge and new practice	Int J Qual Stud Health Well-Being	14	1	155-167	5	Norway, Europe	Nurses	Nursing Home	To explore and illuminate healthcare providers' participation over time in a Norwegian nursing home to develop new knowledge and practice, focusing on sensory gardens.	Appreciative inquiry	Yes	Not discussed	Cycles described	Dual outcomes
Y. T. Huang, C. F. Wu, T. H. Liang, S. S. Chen, G. L. Chen, P. M. Wu, G. B. Su, T. H. Jang, C. Y. Liu, C. Y.	2019	Developing a Decision-Aid Website for Breast Cancer Surgery: An Action Research Approach	J Med Internet Res	21	2	e10404	9	Taiwan, Asia	Nurses	Not stated	The objective of this study was to develop a multipurpose surgery decision-making website providing medical information, psychological support, and decision-related information for women during breast cancer surgery-related decision making.	Action research design	yes	Discussed	Cycles described	Dual outcomes

Author	Year	Title	Journal	Vol	Issue	Pages	Cit	Location	Guideline	Study setting	Study aim	Methodology/type of action research	Context	Quality of relationships	Quality of AR cycles of action (present tense)	Dual outcomes
Wang, L. M. Tong, S. J. Shau																
P. T. Chenawong M. Naidoo	2019	A description of community-based participatory research of hypertension awareness, prevention and treatment in a district of Matabeleland South Province, Zimbabwe	Afr J Prim Health Care Fam Med	11	3	1-9	12	Zimbabwe, South Africa	Hypertensive patients, VHWs and community leaders	Community area	To improve the community's knowledge about hypertension	Co-operative inquiry	Not stated	Not discussed	No cycles described	Dual outcomes
A. B. Moreno-Poyato P. Delgado-Villaz J. M. Lopez-Moral G. Casanova-Garrigós P. Martínez-Corzo	2019	Implementing evidence-based practice on the therapeutic relationship in inpatient psychiatric care: A participatory action research	Journal of Clinical Nursing (John Wiley & Sons, Inc.)	28	9	1014-1022	13	Spain, Europe	Nurses	Tertiary hospital	To produce changes in the therapeutic relationship between clinical practice nurses and patients in psychiatric units by implementing evidence-based practice	Participatory action research	Yes	Discussed	Cycles described	Dual outcomes
J. Wang, L. Wang	2019	Co-research with people living with dementia for change	Action Research	17	4	574-590	29	Canada	MCI	Hospital	To involve patients with dementia and bring the hospital staff together to improve dementia care in a medical unit.	Apprentice inquiry	Yes	Discussed	Cycles described	Dual outcomes
C. Kline, K. Gerrish, S. Price; E. Filling, P. Bayling, S. Gibson	2019	Developing family-centred care in a neonatal intensive care unit: An action research study	Intensive Crit Care Nurs	50		54-62	31	England, Europe	MCI	Neonatal ICU	To develop, implement and evaluate family-centred interventions to promote parental involvement in caregiving in a Neonatal Intensive Care Unit.	Action research	Yes	Not discussed	Cycles described	No
A. Bernadette, S. Poulsen	2020	Supporting staff in change leaders in consumer engagement in aged care: Learning from action research	J Nurs Manag	28	3	643-652	2	Australia	Nurses	Aged Care	To explore the process of staff leading change in consumer engagement practice in aged care.	Action research	Yes	Not discussed	Cycles described	No
P. Pandharan, C. David, S. Marx	2020	You are here! Negotiating liminality in place in the context of the National Disability Insurance Scheme	Qualitative Social Work	19	3	359-379	2	Tasmania, Australia	People with disabilities and partner representatives	Community	To co-create citizenship opportunities with co-researchers living with disability.	Participatory action research	Yes	Discussed	Cycles described	No
B. P. Murphy, P. O'Donnell, M. Carr	2020	Partnering the digital baby: Open innovation for development and optimization	Health Informatics Journal	26	4	2407-2421	3	Cork Ireland, Europe	MCI	Middlebury Hospital	To design and evaluate an action research approach for the optimization of the design of a summary page artefact within an electronic health record for newborn healthcare.	Action research	Yes	Not discussed	Cycles described	Dual outcomes
M. M. Fennell, M. A. Symons, L. Villars	2020	Early Mobility for Critically Ill Patients: Building Staff Commitment Through Appreciative Inquiry	Critical Care Nurs	40	4	66-72	3	Mass - USA, North America	Nurses	ICU	To explore whether appreciative inquiry would redeign an early progressive mobility initiative in a medical intensive care unit and improve and sustain staff commitment to providing regular mobility therapy at the bedside	Apprentice inquiry	Yes	Discussed	Cycles described	Dual outcomes
A. Almaraz, V. Wilson, J. Lewis	2020	Action research: A mechanism for active engagement of clinical nurses in a program of research	Nursing & Health Sciences	22	3	530-547	3	Sydney Australia	Nurses	Complex medical ward	To explore the outcomes of active participation in an action research project on building the research capacity of clinical nurses.	Action Research approach	Yes	Discussed	Cycles described	Dual outcomes
E. Burns, Tric, Z. affiliates: V. Schmidt	2020	Designing a model of breastfeeding support in Australia: An appreciative inquiry approach	Health & Social Care in the Community	28	5	1723-1733	4	NSW Australia	Nurses	One geographical area with lower than the Australian average breastfeeding rates	To co-design a model of breastfeeding support	Apprentice inquiry	Yes	Discussed	No cycles described	Dual outcomes

Author	Year	Title	Journal	Vol	Issue	Pages	Ct	Location	Discipline	Study setting	Study Aim	Methodology/type of action research	Contract	Quality of relationships	Quality of AR cycles of action (present tense)	Dual outcomes
D. Esmar-Rog, D. Haidich, N. Tahir, A. Chant, A. Khalid, M. Fat, R. Mirza, S. Javadi, S. Rana, R. Rashed, T. Frazier	2020	The developing role of occupational therapists in school-based practice: Experience from collaborative action research in Pakistan	British Journal of Occupational Therapy	83	6	375-386	8	Pakistan, South Asia	Occupational Therapy	Primary Schools	To develop the role of occupational therapy in initiative education	Action research	yes	Discussed	Cycles described	Dual outcomes
V. Tripathi, and, C. Anand, P. Singh	2020	Removing barriers to fistula care: Applying appreciative inquiry to improve access to screening and treatment in Nigeria and Uganda	Health Care for Women International	41	5	584-599	6	Nigeria and Uganda, Africa	Not stated	Fistula care	To improve access to screening and treatment	Appreciative Inquiry	No	Not discussed	No cycles described	No
J. Mwakikye, S. Turdie, U. Anisimov, S. Nyamathi	2020	Palliative Care Guidelines for Physicians and Nurses Caring for Children and Their Families in the Pediatric Intensive Care Units: A Participatory Action Research Study	Pacific Rim International Journal of Nursing Research	24	2	203-218	8	Thailand, Southeast Asia	MDT	Pediatric ICU	To develop a set of Palliative Care Guidelines for Physicians and Nurses in Pediatric Intensive Care caring for children and families	Participatory action research	Yes	Not discussed	No cycles described	No
F. Sepúlveda, F. Mohammadpour, S. Pinsky, M. Zaghari-Tafreshi, V. Shamsi, F. Alami, K. Shokri	2020	Improving nurses' organizational commitment by their participation in their performance appraisal process	J. Nurs Manag	28	3	522-535	11	Iran, Asia	Nurses	ICU	To promote the nurses' organizational commitment by their participation in the improvement of the performance appraisal process	Participatory action research	yes	Not discussed	Cycles described	No
B. Gower, V. Baur, L. Ball, L. Connolly, D. K. McLaughlin, K. Newport, S. Roberts, L. Stephens, T. Nudd, K. L. Linton, N. Clayton	2020	Engaging and developing student midwives' experiences [EMW]—An appreciative inquiry study	Midwifery	91		818-826	12	Scotland, Europe	Midwifery Education	Hospital	To generate an experience-based understanding of what works well in relation to the student midwife experience and from this understanding co-create ways to enhance students' experiences.	Appreciative Inquiry	Yes	Discussed	No cycles described	Dual outcomes
R. Steingard, R. Kolb, J. B. Jernett, S. Angel	2021	Action research as a catalyst for change: Empowered nurses facilitating patient participation in rehabilitation	Nursing Inquiry	28	1	111-120	3	Denmark, Europe	Nurses	Spinal cord injury	To collectively learn how to solve the problems related to patient participation in a meaningful way to clinical practice.	Action Research	Yes	Not discussed	No cycles described	Dual outcomes
C. Hogg, E. J. Davidson, J. B. Lee	2021	Integrating family and friend support: Information technology and diabetes education in community-centric diabetes self-management	Journal of the American Medical Association	28	2	261-275	3	Hawaii, North America	Nurses	Community-diabetic patients	To design the MOC-F, guided by social capital theory and empirical research on DSM intervention, to develop action plan along with key stakeholders in the community, to implement and monitor the program over 6 months, and to evaluate outcomes to generate new knowledge and insights	Action research	Yes	Discussed	Cycles described	Dual outcomes
S. A. Goudier, J. Hult, D. Baidaroff, B. Burrows, L. Kay, D. Morgan, J. Fry	2021	Spirituality and childbirth: An international virtual co-operative inquiry	Women & Birth	38	2	e115-e115	5	New Zealand, Zealandia	Midwifery	Online	To collaboratively and through consensus explore ways that spirituality could be harnessed in 21st Century maternity care.	Co-operative Inquiry	Yes	Discussed	No cycles described	Dual outcomes

Appendix H: Action Research Scoping Review: Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) Checklist

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
TITLE			
Title	1	Identify the report as a scoping review.	94
ABSTRACT			
Structured summary	2	Provide a structured summary that includes (as applicable): background, objectives, eligibility criteria, sources of evidence, charting methods, results, and conclusions that relate to the review questions and objectives.	n/a
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known. Explain why the review questions/objectives lend themselves to a scoping review approach.	94
Objectives	4	Provide an explicit statement of the questions and objectives being addressed with reference to their key elements (e.g., population or participants, concepts, and context) or other relevant key elements used to conceptualize the review questions and/or objectives.	96
METHODS			
Protocol and registration	5	Indicate whether a review protocol exists; state if and where it can be accessed (e.g., a Web address); and if available, provide registration information, including the registration number.	95
Eligibility criteria	6	Specify characteristics of the sources of evidence used as eligibility criteria (e.g., years considered, language, and publication status), and provide a rationale.	97
Information sources*	7	Describe all information sources in the search (e.g., databases with dates of coverage and contact with authors to identify additional sources), as well as the date the most recent search was executed.	98
Search	8	Present the full electronic search strategy for at least 1 database, including any limits used, such that it could be repeated.	Appendix F
Selection of sources of evidence†	9	State the process for selecting sources of evidence (i.e., screening and eligibility) included in the scoping review.	98
Data charting process‡	10	Describe the methods of charting data from the included sources of evidence (e.g., calibrated forms or forms that have been tested by the team before their use, and whether data charting was done independently or in duplicate) and any processes for obtaining and confirming data from investigators.	99

SECTION	ITEM	PRISMA-ScR CHECKLIST ITEM	REPORTED ON PAGE #
Data items	11	List and define all variables for which data were sought and any assumptions and simplifications made.	98
Critical appraisal of individual sources of evidence§	12	If done, provide a rationale for conducting a critical appraisal of included sources of evidence; describe the methods used and how this information was used in any data synthesis (if appropriate).	n/a
Synthesis of results	13	Describe the methods of handling and summarizing the data that were charted.	99
RESULTS			
Selection of sources of evidence	14	Give numbers of sources of evidence screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally using a flow diagram.	100
Characteristics of sources of evidence	15	For each source of evidence, present characteristics for which data were charted and provide the citations.	99
Critical appraisal within sources of evidence	16	If done, present data on critical appraisal of included sources of evidence (see item 12).	n/a
Results of individual sources of evidence	17	For each included source of evidence, present the relevant data that were charted that relate to the review questions and objectives.	Appendix G
Synthesis of results	18	Summarize and/or present the charting results as they relate to the review questions and objectives.	105
DISCUSSION			
Summary of evidence	19	Summarize the main results (including an overview of concepts, themes, and types of evidence available), link to the review questions and objectives, and consider the relevance to key groups.	106
Limitations	20	Discuss the limitations of the scoping review process.	108
Conclusions	21	Provide a general interpretation of the results with respect to the review questions and objectives, as well as potential implications and/or next steps.	108
FUNDING			
Funding	22	Describe sources of funding for the included sources of evidence, as well as sources of funding for the scoping review. Describe the role of the funders of the scoping review.	n/a

JB1 = Joanna Briggs Institute; PRISMA-ScR = Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews.

* Where *sources of evidence* (see second footnote) are compiled from, such as bibliographic databases, social media platforms, and Web sites.

† A more inclusive/heterogeneous term used to account for the different types of evidence or data sources (e.g., quantitative and/or qualitative research, expert opinion, and policy documents) that may be eligible in a scoping review as opposed to only studies. This is not to be confused with *information sources* (see first footnote).

‡ The frameworks by Arksey and O'Malley (6) and Levac and colleagues (7) and the JB1 guidance (4, 5) refer to the process of data extraction in a scoping review as data charting.

§ The process of systematically examining research evidence to assess its validity, results, and relevance before using it to inform a decision. This term is used for items 12 and 19 instead of 'risk of bias' (which is more applicable to systematic reviews of interventions) to include and acknowledge the various sources of

evidence that may be used in a scoping review (e.g., quantitative and/or qualitative research, expert opinion, and policy document).

From: Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. PRISMA Extension for Scoping Reviews (PRISMA ScR): Checklist and Explanation. *Ann Intern Med.* 2018;169:467–473. doi: 10.7326/M18-0850.

Appendix I: Semi-structured Interview Guide

The design of the research interview followed the seven stages defined by Kvale (1998).

The researcher will have a reflective and adaptative approach during the conversation and have some flexibility to react to new information and discoveries during the interview to get in-depth understanding or for clarification.

- i. Can you tell me how do you feel the Medical Board is functioning currently?
- ii. What do you think is working well?
- iii. What do you think isn't working well?
- iv. What suggestions do you have to make things better?
- v. How do you feel about the move to the new hospital?
- vi. How might any concerns be addressed?
- vii. Have you any other thoughts you'd like to share?

Possible follow up question prompts:

What happened in the episode mentioned?

Could you say something more about that?

Can you give a more detailed description of what happened?

Do you have further examples of this?

If a theme is exhausted by breaking off long irrelevant answers: 'I would now like to introduce another topic:....'

Allow Silence: By allowing pauses the interviewees have ample time to associate and reflect and break the silence themselves.

Interpreting questions: 'You then mean that....?' 'Is it correct that you feel that...?' 'Does the expression.... Cover what you have just expressed?'

Appendix J: A Layperson's Guide to Co-operative Inquiry and Patient Information Sheet

Information Sheet

Title of research project: Unpacking The Black Box of Medical Leadership in Complex Adaptive Systems

This research project investigates if an action research approach to leadership development can support the successful transition to a new hospital with an improved patient and staff experience.

The research forms part of my DBA academic qualification at Henley Business School at the University of Reading.

Part of the research, involves working with key leaders within the NRH using a co-operative inquiry action research to develop the medical leadership capacity and capability to successfully transition to the new hospital.

If you agree, you will be asked to participate in a co-operative inquiry Co-operative inquiry which is a systematic approach to developing understanding and action. And while every group is different, each one can be seen as engaged in cycles of action and reflection. The group apply their agreed actions in their everyday life and work: they initiate the actions and observe and record the outcomes of their own and each other's behaviour. A co-operative inquiry often engages in some six to ten cycles of action and reflection.

You can choose not to take part and you are free to withdraw from the study at any time.

The data collected will be kept securely and either destroyed after the completion of the project or retained securely for inclusion in publications directly related to this research subject to participants consent to do so.

At every stage your identity will remain confidential. Your name and identifying information will not be included in the final report.

A copy of the completed project will be available on request on completion of the project.

The project has been subject to ethical review in accordance with the procedures specified by the University of Reading Research Ethics Committee and has been given a favourable ethical opinion for conduct.

If you have any further questions about the project, please feel free to contact me at the email address below.

Name of researcher: Prof Áine Carroll.....

Email address: aine.carroll@ucd.ie.....

Date:06.11.2019.....

Consent Form

*Title of research project: Unpacking The Black Box of Medical
Leadership in Complex Adaptive Systems*

I have read and had explained to me by Áine Carroll the information sheet relating to the project and any questions have been answered to my satisfaction.

1. I agree to the arrangements described in the information sheet insofar as they relate to my participation.
2. I understand that my participation is entirely voluntary and that I may withdraw from the project at any time.
3. I agree to the output of the workshops and reflective practice being used for the purposes of this research
4. I agree to the primary data being used in publications directly related to this research. I understand that data will be retained securely for this purpose.
5. I have received a copy of this consent form and of the accompanying information sheet.
6. I am aged 18 or older.

Name of participant:

Signed:

Date:

Contact details of Researcher:

Prof Áine Carroll

Room C307 Health Sciences Building

UCD

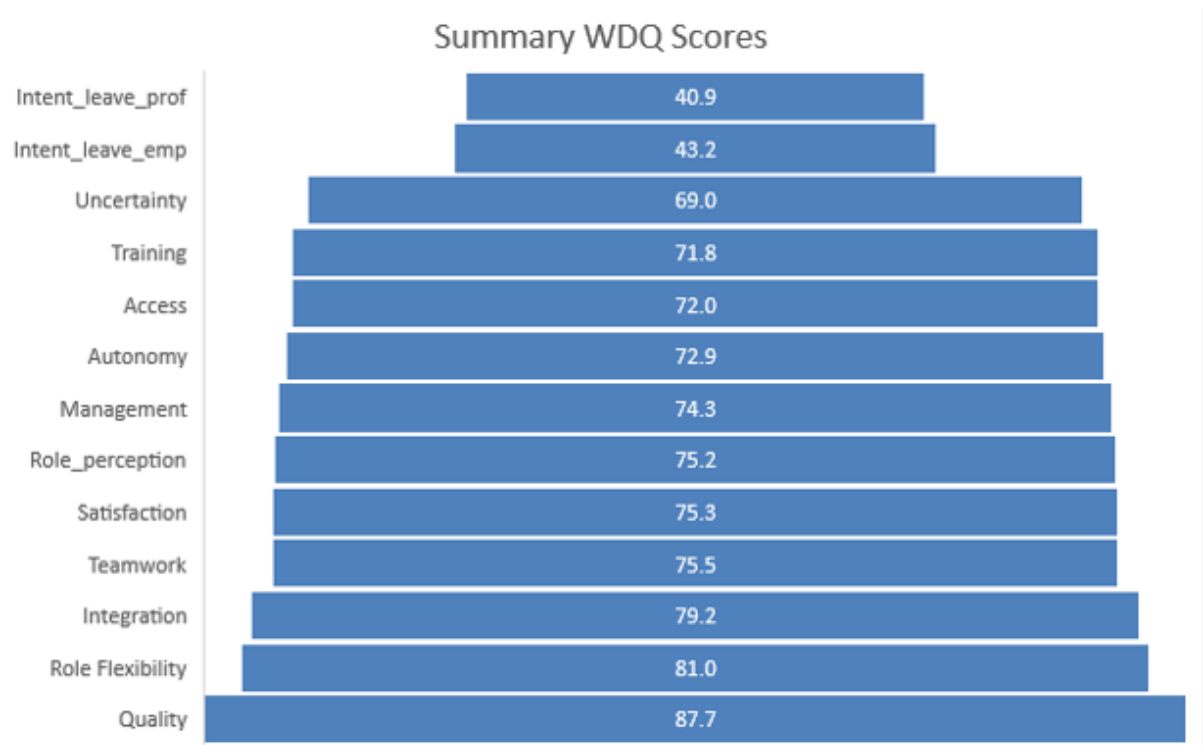
Belfield Campus

e-mail: aine.carroll@ucd.ie

Appendix L: Workforce Dynamics Questionnaire Summary Results

Overall summary WDQ Scores (Only 2 medical responses)

	N	Minimum	Maximum	Mean	Std. Deviation
Autonomy	113	33.3	100	72.9	14.7
Role Perception	123	50.0	97.92	75.2	12.1
Integration	127	33.3	100	79.2	17.6
Teamwork	120	36.7	100	75.5	12.5
Training	117	33.3	100	71.8	14.1
Uncertainty	129	37.5	100	69.0	13.7
Satisfaction	141	40.0	100	75.3	14.5
Intent to Leave employer	120	33.3	100	43.2	17.2
Role Flexibility	125	44.4	100	81.0	13.1
Management	134	33.3	100	74.3	19.6
Access	124	33.3	100	72.0	15.5
Quality	128	50.0	100	87.7	11.5
Intent to leave profession	121	33.3	100	40.9	16.0
Valid N (listwise)	73				



Appendix M : Complex Adaptive Leadership (CAL™) Organisational Capability Questionnaire (OCQ)

Initials:

Date:

Consider each question below with respect to your own organisation. Each question has one of five possible answers (from Strongly Disagree to Strongly Agree) and each answer has one of two possible scores. So, for example, if in question 1 you are neutral, select either a 5 (if your neutrality has a slight tendency to disagreement) or 6 (if your neutrality has a slight tendency to agreement).

1. People in the organisation have a strong sense of common purpose.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

2. Each individual has a clear, measurable individual objectives.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

3. People are encouraged to take the initiative and act on opportunities when they arise.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

4. The boundaries of responsibilities between people and teams/departments are clear.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

5. People are well qualified and skilled to do their work.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

6. The rules of the organisation are clear and understood by all.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

7. There is an effective, well-defined process for continuous feedback.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

8. Although there is an element of chaos in this organisation, things seem to work well.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

9. The organisation has a shared idea of how it contributes to society/the wider world.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

10. Everybody knows what is expected of them and what they have to achieve.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

11. People are free to decide how to do their work and do not feel controlled.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

12. It is clear what each team/department/unit is responsible for.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

13. People have a high degree of motivation in this organisation.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

14. The rules of the organisation are few but effective.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

15. There is a degree of ambiguity about how things are achieved, but objectives are met.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

16. Individuals know how well they are doing towards achieving their objectives at any given time.

Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1 or 2	3 or 4	5 or 6	7 or 8	9 or 10

Total:

Add up the scores. The following should be a guide.

More than 120 = Excellent score – if Complexity Leadership is not apparent then individual leaders may need some development work.

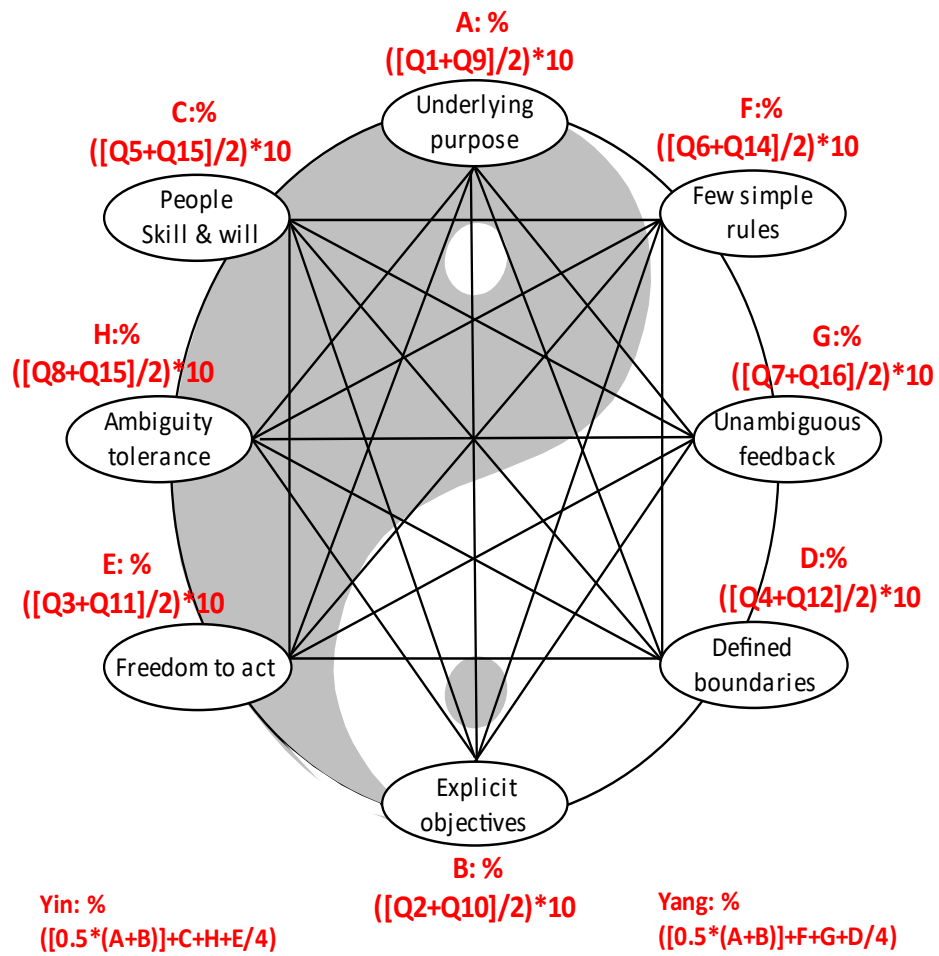
100-120 = Good – some individual areas may need attention.

60-100 = Danger Zone – that organisational effectiveness is sub-optimal, attention across the board is needed.

30-60 = severe danger – action needs to be taken if individual and organisation effectiveness are to be safeguarded.

Less than 30 = still existing?

Appendix N: Complex Adaptive Leadership (CAL™) Scoring Template

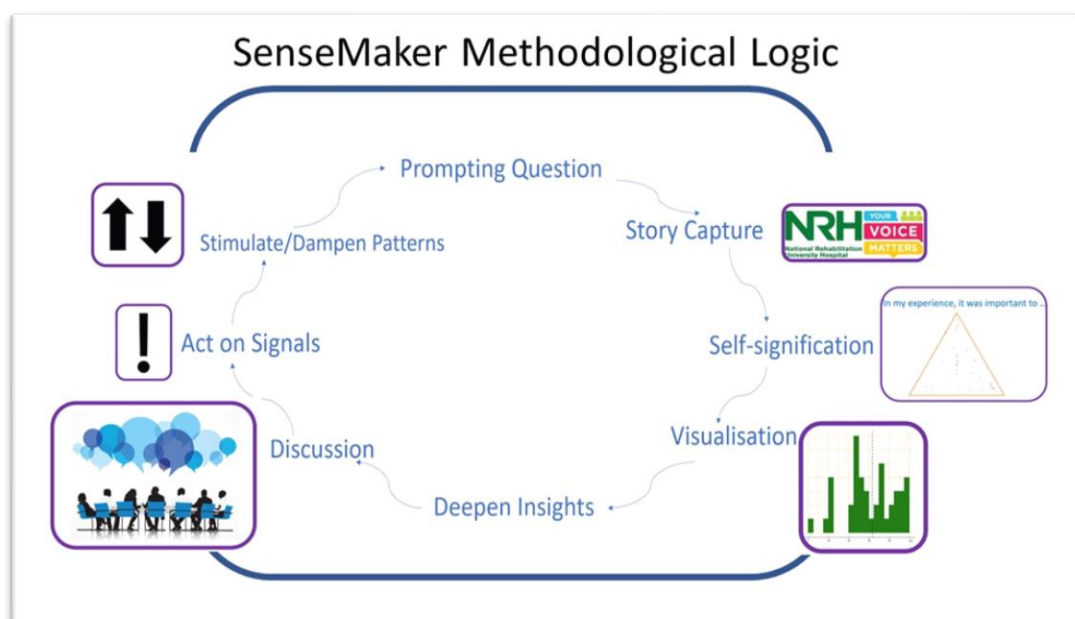


Appendix O: SenseMaker© Survey Results



Information sharing from September to October 2020
Survey

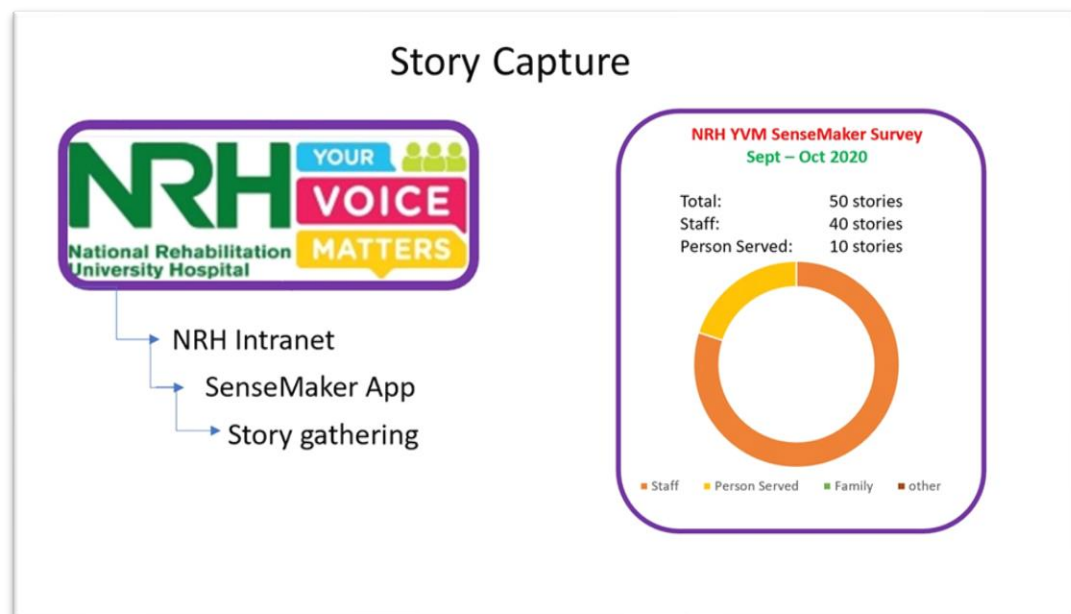
Slide 1



Slide 2



Slide 3

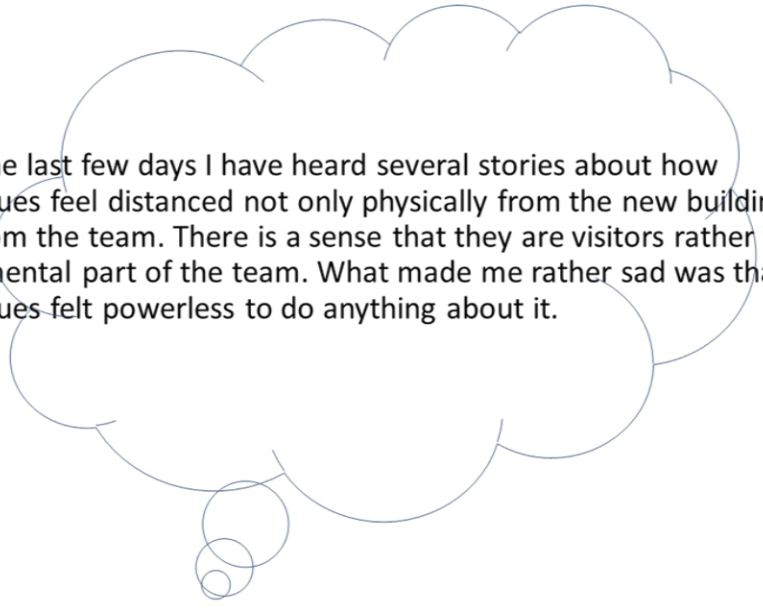


Slide 4

Sensemaker

- 5 medical responses
- 1: researchers only
- 4: Anyone
- 4F:1M

Slide 5



Over the last few days I have heard several stories about how colleagues feel distanced not only physically from the new building but also from the team. There is a sense that they are visitors rather than a fundamental part of the team. What made me rather sad was that my colleagues felt powerless to do anything about it.

Slide 6

when it comes to a crisis and a crunch it is wonderful to know that you are part of a team that can down tools and refocus pull together to help a youngster in crisis. Early in the pandemic crisis, the paediatric MSW, PDOC BI liaison and preadmission team, downed tools for the plight of xxx, long on the waiting list for PDOC bed and destined to be the first-admission to new Holly unit with the opening of the new hospital. Patient immunocompromised, respiratory insufficiency, trach anticipated to be transferred out of single room in an acute hospital to a general ward with the onset of COVID-19, family and team fearful of the potential risk of COVID-19 if the child contracted on open ward. Team advocated for admission earlier to NRH with a view to already planned admission, move sooner than later to accommodate in NRH PDOC team rather than risk open ward infection and compromise. This was accomplished, but unfortunately clinical deterioration and stormy hospital course NRH SVUH ultimately returned to NRH. Patient remained stable and well completed SMART in the new Rose/Holly unit and ready for discharge to LTC. The new unit at NRH Holly unit designed and built for PDOC patients and their families, single on suite rooms and safety in infection prevention and control, plus fit for purpose facility and specialized PDOC team - I hope the Holly unit can be staffed and open to other clients ASAP

Slide 7

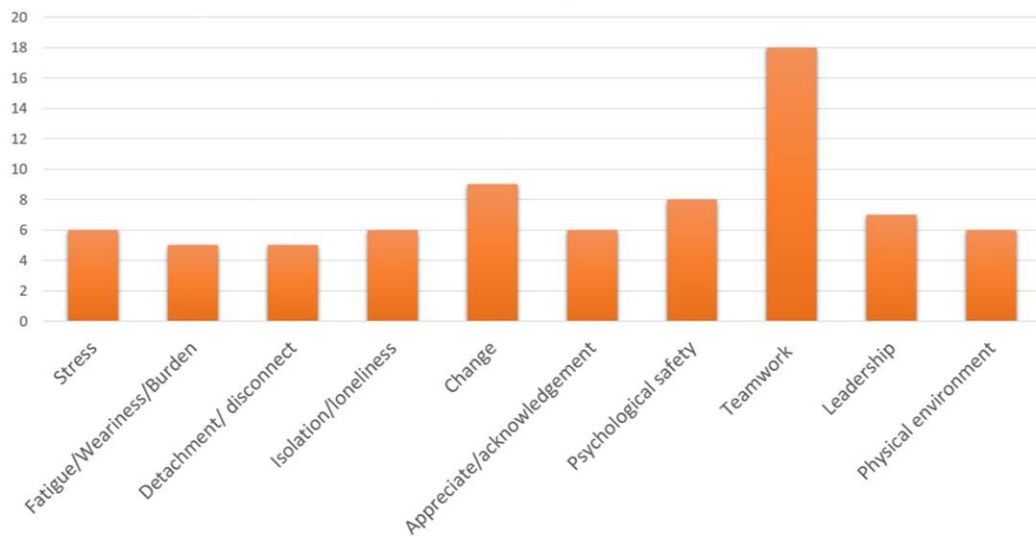
Truly, I feel I have had enough of the NRH. If I had an alternative place to work in Ireland, I would have resigned by now. In fact, I might yet leave but have to be considered in my decision as I would need to be prepared to work in an area of less interest to me or to move overseas. I feel I can no longer carry the burden of trying to deliver such a poorly accessible service. Patients are not getting what they need, when they need it. The system of care incl. the NRH portion of this care have declined over the past 10 years. We have contributed to the HSE clinical care programmes, to the development of a trauma & a neuro-rehabilitation strategy & all we have to show for it is less beds, longer waiting lists & patients being admitted with complications. This worry of this causes sleep disturbance and then fatigue during the week, longing for the weekend to come when I can sleep easy knowing that I do not have to face the NRH for 2 days. Sometimes I have suggested ways of working to try to overcome these challenges or I have asked questions of what we are doing/how we are doing certain tasks - but I am either oppressed or I am criticised for questioning. The new hospital is a beautiful building and a lovely working environment but I am not based there. It is ironic that we are being asked to review our team working but half the team are far away from our patients and working area. The technology also leaves a lot to be desired - one would expect state of the art IT in the new building but alas, this isn't so. In summary, I used to love coming to work every day but sadly, no longer do.

Slide 8

Over the course of the 2 day move, I remember thinking how like the London Olympics it seemed(the NHS piece) - the beds moving, the roles and responsibilities being clear - everyone involved - volunteers - clapping and party bags. It made me proud to be part of team NRH. We must hold onto that feeling.

Slide 9

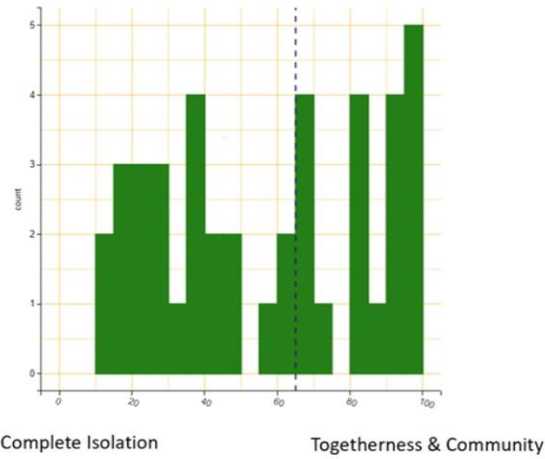
Visualisation: Key Themes



Slide 10

Deepen Insight: 'Teamwork'

This experience happened in a feeling of,



Slide11

Deepen Insight: 'Teamwork'

"For staff in the old building it can sometimes feel like we are the 'the forgotten'"

"I work on two units... the ability to collaborate is vastly different... one is positive, we share roles and responsibilities, support colleagues, provide rehab focused care. On the other suggestions are met with resistance"

"(Before COVID) I thought teamwork could have been stronger.... During COVID everyone stepped up to the frontline... dealing with the unknown , feeling unsafe... this was real teamwork"

"...feel distanced not only physically from the new building, but also from their team... sense they are visitors rather than a fundamental part of the team"



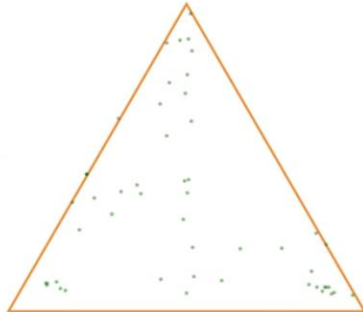
"the highs of pulling together in COVID crisis were gone and there was fragmentation as staff & departments focused on their needs and losses"

Slide 12

Visualisation & Deepen Insight: 'Change'

In this experience I,

Carried on as usual



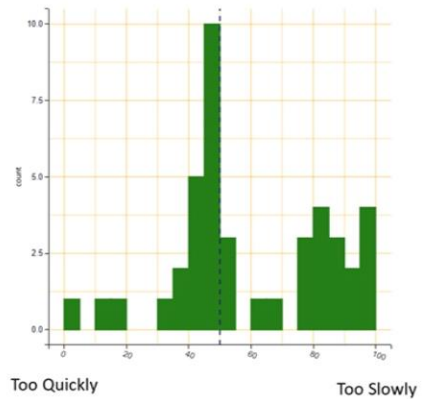
Made small changes as & when needed



3 out of 4 people have made changes

Made drastic changes/had a complete overhaul

In my experience any change was happening,



Too Quickly

Too Slowly

Slide 13

Visualisation & Deepen Insight: 'Change'

"We were juggling changes in government guidelines... changes in work practice related to PPE, supporting ward staff and work patterns, changes in home life, oncoming changes in long term work patterns and changes in building...as things settle it feels more normal again"

"The NRH has completely changed over the last few months...too many changes have happened over a short span of time"

"...COVID hasn't gone away, nothing has really changed for patients, but we have stopped providing support on Saturdays and it seems it will not easily return"

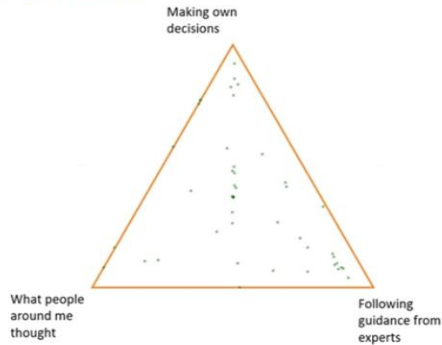


"changes in practice have been positive...being able to continue with the new practice after COVID is so beneficial to patient and staff"

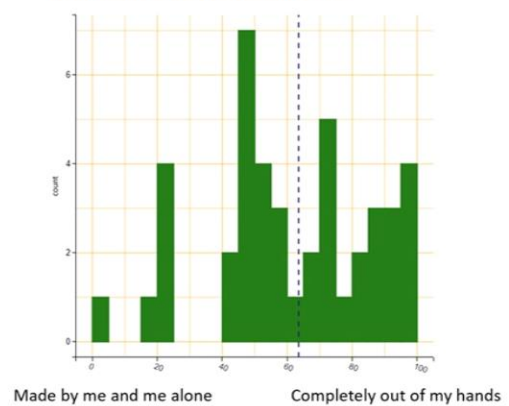
Slide 14

Visualisation & Deepen Insight: 'Decision-making'

In deciding what to do in this experience, what helped me was ...



In my experience decisions were ...



Slide 15

Visualisation & Deepen Insight: 'Decision-making'



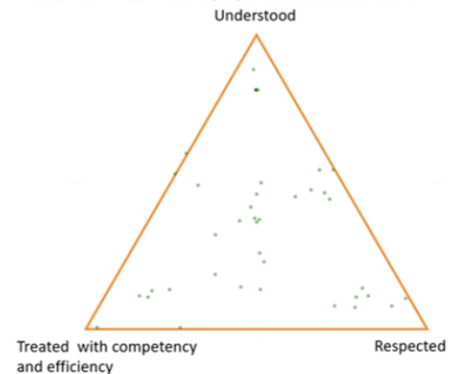
Slide 16

Visualisation & Deepen Insight: 'Decision-making'

What was valued in my story was ...



In relation to communication, in my experience at the NRH I was ...



Slide 17

Visualisation & Deepen Insight: 'Appreciation & Gratitude'

"(To work) was a privilege in the sense that we could help the patients to feel better in small ways but also a huge responsibility when people were feeling very personally stressed"

"staff morale has dipped very low; staff appear burnt out.... It is sad for staff who give so much on a daily basis feel despondent, unappreciated and stressed"

"At the unit huddle ... a member of staff was awarded the star for doing a good job"

"I think it's really important to acknowledge the hard work and daily acts of kindness that are seen in NRH so frequently"



"We are lucky to work in an organisation that supports staff... in relation to personal needs, providing resource and training to do our jobs"

Slide 18

Discussion



Slide 19



Act on Signals

Slide 20

Stimulate/Dampen patterns



Stimulate

What do we want to see more of?
How will we enable this?

Dampen Down

What do we want to see less of?
How will we enable this?

Appendix P: WhatsApp Analysis

WhatsApp Analysis

Created 23.09.2020.

Analysed to 22.6.2020.

Topic	Frequency (conversation)
Coffee	5
Light-hearted/uplifting	14
COVID	5
Internet	1
New hospital	1 (opening) 2
Co-operative Inquiry	2
Appraisal	1
Patient outcome & discussion	1
Posts	1
E-mail problems	1
Human library	1
Microsoft Teams issues	1

WhatsApp 2nd Analysis

Analysed 05.10.2020.

Topic	Frequency (conversation)
Coffee	6
Light-hearted/uplifting	19
COVID	6
internet	1
New hospital	1 (opening) 2
Co-operative Inquiry	3
Appraisal	1
Patient outcome & discussion	1
New Consultant Posts	1
E-mail problems	1
Human library	1
Microsoft Teams issues	1
London marathon	1

WhatsApp 3rd Analysis

Topic	Frequency (conversation)
Coffee	2
Light-hearted/uplifting	18
Colleagues' retirement	5
Farewell to colleague	1
BST Interviews	1
COVID	1
Christmas	3
New Year	6
Internet/Teams issues	1
Post COVID group	1
Thanks	1
Interesting event	1
Co-operative Inquiry	1
Internet Scam	1
Interesting papers	1

WhatsApp 4th Analysis

Topic	Frequency (conversation)
Light-hearted/uplifting	58
COVID	3
Registration issues (IARM)	1
E-mail problems/ICT	2
Phone issues	1
Welcome new members	3
Handover	2
Congratulations	4
Book	2
Trainee Awards	1
NRH media pieces	1
USA election	5
Dictation	1
Internet Scam	2
Golf gate	2
Conferences	1
Interesting papers	1

Appendix Q: NRH Strategy



Section	Item	Page No.
1	Executive Summary	2
2	Strategic Achievements to date	4
3	Strategic Pillars Overview	6
4	Aligning Strategic Priorities & Pillars	7
5	Strategic Priorities – Detailed Overview	9

1.Executive Summary:

Introduction

The 2020-2023 Strategic Plan follows on directly from the 2016-2019 Plan. Achievements to date are summarised on Page 3-4. This strategic plan has been developed through engagement with many internal and external key stakeholders. It reflects feedback from patient and staff over the years, input from service leads at national and local level and reflects the dynamic environment within which the NRH will operate in 2020-2023. Due to the level of ongoing change it is expected that this strategy will become a rolling strategy necessitating periodic review during [it's](#) lifetime. In August and September 2021 managers across the hospital completed the first periodic review and this updated strategic plan encapsulates their recommended updates.

Context and Background

The four strategic pillars which have been in operation heretofore (Fit for purpose facility, Expert staff, Focussed collaboration with stakeholders, Effective processes) has been joined by a fifth pillar (Digital strategy) which reflects the evolution of the organisation. Each strategic pillar is linked to a number of strategic objectives which in turn are set out in detail identifying what will be achieved by 2023. This has now been extended to 2024, the fifth pillar is now a foundation and has been joined by a further underpinning item which is to become a learning organisation by responding to data.

It is important to understand that the plan is ambitious and reflects the diverse needs of the hospital and it's key stakeholders. A prerequisite for achieving this plan will be that appropriate funding is received in a timely manner to support activities. The Board and staff of the NRH cannot deliver on these objectives in isolation and look forward to collaborating with the wider health system in order to progress the necessary actions. It is planned for the NRH to change governance structure and incorporate the NRH as a company limited by guarantee. This change in governance brings new corporate and fiduciary responsibilities. The traditional funding approach is unlikely to support the directors' governance obligations and therefore changes in funding mechanism including a more proactive approach will be required to assist directors in meeting their legal responsibilities.

2

Values

The NRH values encapsulate Equity, Accessibility, Effectiveness, Efficiency, Appropriateness, Responsiveness and Dignity. These values are enshrined in the strategic objectives 2021-2024.

Milestones

This plan outlines 15 Strategic Objectives which are linked to four Strategic Pillars and two Foundations. In order to measure success in delivery, each objective sets out a delivery mechanism and also describes the changes / improvements expected to be in place by 2024. It is planned to continue to utilise the existing governance structures in place to monitor and report on progress throughout the period. Each action will be assigned an individual responsible for overseeing [it's](#) implementation and reporting on progress. Updates will continue to be provided to the Board throughout each year.

3

2. Strategic Achievements to date:

Achieving objectives set out in previous iterations of this strategy placed the hospital in a strong position to respond promptly to major unplanned events such as COVID 19 global pandemic and international [cyber attack](#) on national health services. This reaffirms the importance of the strategic planning process and provides confidence that the correct areas are being selected for focus.

1. New Hospital Build

- Phase 1 build is now [complete](#) and the building has been operational since June 2020. Focus is now on Cedars Building and Phase 2 Development.

2. Integrated Team Treatment / Interdisciplinary Working in the New Hospital

- Integrated team working in the new NRH hospital is supported by the IDT Project Group with the establishment of scheduled training and pilot activities. A particular focus will continue to centre on staff feedback with attention to staff wellbeing and staff relationships.

3. Reform of Project Approval Process / An Organised Approach to Quality Improvement at NRH

- The establishment and initial meetings of the Project Approval and Review Group (PAR) has been a key milestone in the development of an organised approach to quality improvement at NRH. There is now a clear process for planning, approval, and prioritising, monitoring and reporting projects at NRH. All PAR projects are aligned to the NRH strategic goal priorities.

4. NRH Academic Development Plan including an outreach education [programme](#)

- The establishment of the post for an academic lead person and an academic lead administrator has enabled the NRH to take a key step to further develop, organise and streamline training and education opportunities for both internal and external healthcare professionals to gain expertise in meeting the needs of patients with neurological conditions. This has been further enhanced by the opening of the Academic Centre in the Ivy building, agreements with universities and growth of the team.

4

5. Electronic Patient Record

- The tendering process has been completed and solution selected. Recruitment for the next phase project team is underway and ongoing engagement process with the vendor and key stakeholders is underway.

6. Developing and Building Powerful Performance Management Systems

- A crucial recommendation from CARF is that one of the key guiding principles for a quality organisation is the proper analysis of data. While the advent of an electronic HCR will advance this capacity greatly in the organisation nonetheless the NRH continues to make gains in the development of databases, [dashboards](#) and automated report generation with a greater capacity for data analysis. This has now been expanded with the new learning organisation foundation enshrined in the updated strategy.

7. Workforce Planning

- Key to the delivery of care in the new hospital is having the appropriate skill mix and staffing numbers to deliver safe and effective rehabilitation. The revised workforce planning document submitted to support the opening and the full capacity operation of the new hospital has been accepted by the HSE. Recruitment is well underway, recurring funding in baseline is awaited.

8. Admission of Ventilator Dependent Patients

- This key strategic priority for the SCSC Programme has been achieved with the collaboration of the MMUH and the securing of consultant and nursing posts, communication systems between the hospitals, staff training and the purchase of necessary equipment.

9. Management and Storage of Healthcare Records

- The HCRSG continues to plan for the most efficient management of the large number of paper records. In addition, the HCRSG continues to audit all existing paper documents in preparation for the necessary collaboration with the planned electronic patient record. Significant work on management of paper records has taken place.

5

10. Microsoft SharePoint.

- The IM&T department continues to develop the documentation management system to assist in the efficient management of Policies and Procedure and SOPs and the management of the hospital Risk Register. This has been facilitated through the development of a hospital intranet and micro sites for some departments.

11. Extended Therapy Working Day and Evening and Weekend Activity

- Based on patient feedback the NRH has commenced the project to oversee the extension of the therapy week and day to provide additional rehabilitation opportunities during evenings and at weekends

6

3. Strategic Pillar Overview

The four strategic pillars identified through staff consultation remain at the core of our strategic direction. These are illustrated below and are now underpinned with an NRH digital strategy and becoming a learning organisation which is assisted through the academic centre developments since development of the 2020 plan.




7

4. Aligning Strategic Priorities & Pillars




8

5.1 Strategic Priority No 1: Capital Expansion

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 Fit for Purpose Facility	Complete the application for Phase 2 build now that Phase 1 is complete.	<ul style="list-style-type: none"> Provide state of the art facilities for all patient care including ambulatory care and support services. Expansion of bed base to support national trauma strategy, national neurorehabilitation strategy and national model of care.
	Accessible building to meet the needs of persons served	<ul style="list-style-type: none"> Ensure Phase 2 is designed to maximise accessibility building on the developments enshrined in Phase 1.
	Maximise usage of legacy building providing optimal space for services	<ul style="list-style-type: none"> Programmatic treatment spaces (POLAR/SCSC) Expanded Pharmacy Improved changing area Ireland East Hospital Group (IEHG) Bed Capacity

9

5.2 Strategic Priority No 2: IT Tools

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
	Fit for purpose infrastructure to support IT and Hospital Strategy	State of the art data centre providing resilient computing Appropriately resourced IM&T dept. Wireless Phones for wards & Therapy CRMS Single Sign-on (potential required from CRMS) Unified Network <ul style="list-style-type: none"> Resilient Data LAN to support clinical and administrative system Resilient Building LAN (network) to support new hospital building systems Clinical grade wireless in the new hospital extended to clinical areas of the existing buildings (mHealth)
	Further develop cybersecurity	Improved system security
Fit for Purpose Facility	Rollout IPTV	<ul style="list-style-type: none"> Patient Entertainment Digital Signage Wayfinding Emergency Signage
	Optimise use of Office 365	<ul style="list-style-type: none"> Individual staff identities (AD Account, email) SharePoint Teams Workflow Mobility (mHealth) Security
	Telemedicine	<ul style="list-style-type: none"> Telehealth (mHealth) Workstations on Wheels for wards and therapy departments Mater ICU/HDU Intensivist digital link


10

5.3 Strategic Priority No 3: Workforce Planning

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 Expert Staff	Funding submissions to HSE to support resource requirements (i.e. 70% pts high dependency (tertiary centre) resource needs to match). Develop HR Strategic Plan to inform organisation structure, role definitions, succession planning, leadership competencies, retention and employee development Updated measurement and performance management.	<ul style="list-style-type: none"> Optimised organisation structure / resources Role Definition & Development Recruitment Strategy in place Leadership Competencies defined Employee development / retention initiatives in place Succession Planning implemented Updated performance management Updated metrics / measures – COBE


11

5.4 Strategic Priority No 4: Interdisciplinary Team Working

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 Expert Staff	Progress the Interdisciplinary Team project to business as usual in the organisation. NRH IDT Framework embedded into the design of services across all programmes.	<ul style="list-style-type: none"> • Work practices continue to reflect CARF standards and improved interdisciplinary team practices in the new work environments optimising patient care and outcomes. • Implementation of interdisciplinary team competencies and team review aligned to the NRH IDT Framework. • Standard working day defined and implemented by interdisciplinary team practices. • IDT initiatives are implemented to optimise patient experience and outcomes.


12

5.5 Strategic Priority No 5: Education, Research and Academic Leader

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 Expert Staff	Further development of the Academic centre and brand development of NRH in line with corporate branding guidelines to encompass university linkages. Establish new governance arrangements to support the Research and Education Strategy. Identify and progress funding opportunities.	<ul style="list-style-type: none"> • Achievement of University hospital status • Hospital brand development to reflect university status • Development of Academic Hub in former convent building. • Development of a Research and Education Strategy for NRH • Continued support of ongoing education, skills training and research opportunities for staff to reflect our University Hospital status. • Pursuit of research funding opportunities and collaborative partnerships

13


5.6 Strategic Priority No 6: Patients

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 <p>Focussed Collaboration with Stakeholders</p>	<p>Improving services in the NRH by using the knowledge, <u>skills</u> and experiences of those who use services with those who provide them.</p> <p>Expand patient engagement in design of <u>services</u></p> <p>In conjunction with patients and families, develop a guiding document that sets out the vision for where we want to be in terms of Patient and Family Engagement, governance, roles and responsibilities, aims, objectives, <u>milestones</u> and timelines to get there.</p>	<ul style="list-style-type: none"> Staff across the NRH will have an increased awareness and understanding of patient engagement; the benefits of it, the levels and forms it takes, and their role in supporting it throughout their day. Patients and families will be participating in various committees and working groups as equal partners in activities such as policy development, audits, service evaluations, service <u>design</u> Patients' expectations pre-admission, at goal setting and at discharge will be captured and incorporated into CRMS. This will be co-designed with patients.

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5.7 Strategic Priority No 7: Clinical Strategy / Rehabilitation Continuum

Incl. MCNs / Trauma / National Clinical Programmes

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 <p>Focussed Collaboration with Stakeholders</p>	<p>Branding and marketing of NRH in line with corporate branding guidelines as rehabilitation leader.</p> <p>Clinical Strategy Interface</p> <p>New service developments / prioritisation / collaboration</p>	<ul style="list-style-type: none"> The NRH will continue as the rehabilitation leader nationally through supporting the development of the new acute rehabilitation units, national clinical programmes work, developments in level 2 rehabilitation sites and other national and regional initiatives. Usage of the managed clinical networks to develop services in most appropriate setting, avoiding duplication of specialist services.
	<p>Support HSE programme for Managed Clinical Network Development.</p>	<ul style="list-style-type: none"> Collaboration with other rehabilitation services to provide integrated pathway for patients. NRH leverage <u>its</u> role as tertiary centre in the provision of education to other rehabilitation facilities as required.

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	<p>Support the three Major Trauma Networks Collaborate with Acute Hospital Services re admissions and also to develop specialised medical support from acute services.</p> <p>Support Hyper Acute Rehab facilities.</p> <p>Develop plan to expand NRH infrastructure to support growing demand and facilitate more timely access to NRH services.</p>	<ul style="list-style-type: none"> Increased throughput of trauma patients through all programmes A defined pathway for trauma patients including links pre-admission and pre / post discharge. Integration of processes with MTC and TU and Hyper Acute Rehab Facilities. Recognition as national centre of excellence for trauma rehab care.
	<p>Lead and support developments as outlined in national clinical programmes</p>	<ul style="list-style-type: none"> Standardisation of patient pathways.

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	<p>e.g. Rehabilitation Medicine, Paediatrics, NeuroRehabilitation strategy. Support implementation of agreed pathways. Lead on development of national model of care for neurobehavioural disorders</p>	<ul style="list-style-type: none"> Resources in place to support optimal patient pathways as developed. (VT) Educate and support regional and local specialist rehab facilities in line with the Model of Care. (VT) Implementation of PDOC pathway. (VT) Neurobehavioural model of care documented. (VT)
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5.8 Strategic Priority No 8: Engagement with Referrers

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 <p>Focussed Collaboration with Stakeholders</p>	<p>Utilise information received from referrers to inform process improvements.</p> <p>Proactively continue to seek feedback from referrers and act on same.</p>	<ul style="list-style-type: none"> Standardised processes agreed with other rehabilitation facilities in the network. Supporting patient care through the continuum of care to optimise access to NRH for most appropriate referrals. Initiate pathway supporting single point of entry e.g. central triage and waiting list management.

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5.9 Strategic Priority No 9: CARF, Compliance, HIQA and Quality Improvement


Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
	<p>CARF accreditation will be maintained by evidencing compliance with all existing business and clinical standards while addressing any new standards and maintaining the CARF requirement to its Annual Conformance to Quality Report.</p>	<ul style="list-style-type: none"> The NRH will have addressed any recommendations in its last survey through implementation of the previous survey Quality Improvement Plan and again seek CARF accreditation in 2023
Effective Processes	<p>We will continue to comply with the relevant HIQA standards to safeguard our service users and improve the safety and quality of the services we provide.</p>	<ul style="list-style-type: none"> The NRH will continue to maintain compliance with all relevant HIQA standards and will action any recommendations from inspections.

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	Continue to develop NRH QI programme. The Project Assessment and Review (PAR) Team will support quality initiatives with staff time protected for direct and indirect patient treatment while also ensuring that projects align with the NRH strategic objectives.	<ul style="list-style-type: none"> Continued active engagement with national QI Team. The NRH will use a comprehensive and robust process to plan, implement, support and sustain agreed projects and quality improvement initiatives with clear reporting responsibilities. (VT)
	We will continue to comply with the relevant standards to safeguard our service users and staff. Through the implementation of these standards, we aim to improve the safety and quality across our services, i.e. HSA / EPA/HQIA/EHO e.g. new Radiation Standards	<ul style="list-style-type: none"> The NRH will maintain compliance with the standards set by external regulatory bodies and will continue to fulfil all requirements to engage in inspection/audit processes and action all recommendations.

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5.10 Strategic Priority No 10: eRehab System / Electronic Patient Management (CRMS)


Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
 <p>Effective Processes</p>	<p>Tender, evaluate submissions and appoint successful vendor.</p> <p>Implement a CRMS that provides operational and clinical benefits in the provision of quality, person centred healthcare.</p> <p>Define and implement workflows tailored to clinical and administrative functions, enhancing both the patient, clinician and management experience.</p>	<p>EPR in place.</p> <ul style="list-style-type: none"> Improved real-time access to patient information. Improved legibility of clinical notes. Improved ability to manage patient safety with greater opportunity for identification of discrepancies. Reduction in volume of paper used for clinical purposes. Electronic medications management in place to improve medication safety. Development of standardised protocols and data capture across NRH services that supports the delivery of consistent standards of care. Less duplication of information. Increased clinical audit efficiency.

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	<p>Implement a CRMS which will enhance and support the delivery of interdisciplinary and person-centred care across all NRH services.</p> <p>Implement a CRMS that supports the NRH in adhering to statutory requirements e.g. HiQA.</p>	<ul style="list-style-type: none"> • All NRH staff who use the CRMS will have engaged in required training activities and have access to resources that will support ongoing training needs. • Utilisation of the CRMS to capture rehabilitation activity of all new patients admitted to the NRH. • Improved staff digital literacy with a shift towards digitally mature ways of working to support and enable health IT innovations that directly improve safety and efficiencies.
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5.11 Strategic Priority No 11: Optimised Patient Pathways / Access

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
	Extend working day; increase therapy / rehab opportunities for patients	<ul style="list-style-type: none"> • Patients will have a more activities-based programme that will take place over a longer day and extended to weekends as required.
Effective Processes	OPD Waiting List Management: Managed waiting list systems throughout all NRH OPD services including POLAR, SCSC Urology, OPD Consultant and MDT Clinics and OPD Therapies.	<ul style="list-style-type: none"> • Compliance with national waiting list management protocol.
	Improved minimum dataset compliance for patient <u>referrals</u>	<ul style="list-style-type: none"> • Complete development of NRH Referral Policy • Complete and organisational agreement of SOP for relevant stakeholders within NRH (<u>Consultants</u> and Administration Staff) • Referrer information through website
	Implement national rehab needs assessment and associated rehab prescription	<ul style="list-style-type: none"> • Rehab needs assessment in <u>place</u> • Rehab prescription implemented


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5.12 Strategic Priority No 12: Optimised Patient Pathways / Discharge

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
	Support patients' transition post discharge: <ul style="list-style-type: none"> Provide patients with links to relevant community services during their <u>stay</u> Establish a mechanism for post discharge follow up with patients 	<ul style="list-style-type: none"> Establish baseline patient feedback on experience post <u>discharge</u> Establish follow up patient feedback to ascertain if improvements have resulted in improved patient experience.
Effective Processes	Design and develop patient <u>self management</u> support programmes	<ul style="list-style-type: none"> Self-management programmes in place for Stroke programme as a pilot.
	Work with HSE to establish centralised funding to <u>enable</u> timely and effective discharge	<ul style="list-style-type: none"> Agreed centralised funding in place to support patient care and equipment to facilitate timely discharge and agreed mechanism to avail of same.


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5.13 Strategic Priority No 13: Rehabilitation Technology Leader

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
	Participation in ROSIA project	<ul style="list-style-type: none"> Tender process for ROSIA
Effective Processes	Utilise technology to assist patients with their rehabilitation journey onsite and offsite.	<ul style="list-style-type: none"> Evaluation process for ROSIA
	Exploration of other rehabilitation technology solutions NRH will pilot new technology to support rehabilitation.	<ul style="list-style-type: none"> Identification of potential solutions
	We will be an exemplar of being a learning organisation	<ul style="list-style-type: none"> Trial rehabilitation technology solutions Inspire NRH Project Support National Clinical Programmes work on Health Technology Assessment for domiciliary ventilatory care - <u>SCSC</u>

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5.14 Strategic Priority No 14: Digital Strategy

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
	Use of technology to support patient care	<ul style="list-style-type: none"> • Patient Paging System for Day / OPD pts • GuideDoc
All Pillars	Use of Website / Intranet for to assist timely and appropriate communication to key stakeholders, provide workflows to support process efficiency, Team sites to assist Dept & Team efficiency.	<ul style="list-style-type: none"> • Rollout of new Website and Intranet
	Digital pathways to assist with pt care & records	<ul style="list-style-type: none"> • Rollout of eRehab/CRMS solution and utilisation of same for documenting patient care. • Electronic prescribing • Telehealth / mHealth Mobility
	Use of technology to improve efficiency of processes	<ul style="list-style-type: none"> • Increased use of Surface/Mobile Device or equivalent devices for meetings • Improved access to digital workstations • New paging system • Inpatient therapy scheduling & timetabling • Consider robotic dispensing

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	Use of stakeholder feedback and technology developments to develop MIS. Monthly Reporting – develop to meet stakeholder need improved clarity through visual display and dashboard development. Timely information provision through use of Intranet	<ul style="list-style-type: none"> • Updated activity reports / dashboard relevant to need developed for individual committee needs • Business Intelligence • Smart building systems monitoring • Use of Intranet to support MIS dissemination
	Update Business Continuity preparation from an IT Perspective.	<ul style="list-style-type: none"> • Updated Business Continuity Plans in place and tested.
	Develop and implement a social media strategy	<ul style="list-style-type: none"> • Social media strategy in place.
	Use of digital media to enhance communication and branding.	<ul style="list-style-type: none"> • Digital noticeboards in place. • Development of multimedia resources for patient / staff and visitor information.
		<ul style="list-style-type: none"> • Virtual Server environment to provide NIMIS access within the New Hospital
		<ul style="list-style-type: none"> • RTU Infrastructure refresh project
		<ul style="list-style-type: none"> • Cyber Security Project based on CyQu report
		<ul style="list-style-type: none"> • Data Classification Project
		<ul style="list-style-type: none"> • Penetration Testing procurement
		<ul style="list-style-type: none"> • Business Continuity Incident Response Management

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		<ul style="list-style-type: none"> Asset Inventory Project
		<ul style="list-style-type: none"> Two-Factor authentication/ Single-sign on feasibility study
		<ul style="list-style-type: none"> Cyber Security user awareness training including Remote Working considerations
		<ul style="list-style-type: none"> Clinical Photography Policy, Procedures and support solution for image storage
		<ul style="list-style-type: none"> Staff Onboarding (Starters, Movers & Leavers) workflow project (Office 365 + Scanning workflows)
		<ul style="list-style-type: none"> Smart-Speaker Policy and management
		<ul style="list-style-type: none"> Disabled Drivers rip and replace
		<ul style="list-style-type: none"> OPD Hardware Refresh (Win 10 upgrade)
		<ul style="list-style-type: none"> OPD AV upgrade

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5.15 Strategic Priority No 15: Becoming a Learning Organisation

Relevant Pillar	How we will achieve this Objective	What changes / improvements you will see by 2024
	<p>Hospital in partnership with the academic department and universities identify relevant research, data to support, improvement and development opportunities. Expand organisation approach to education.</p>	<ul style="list-style-type: none"> Taking action from all sources of information as appropriate Improved data collection e.g. TATA – CARF Improved engagement with Students and expand placements Utilise feedback from Students / Researchers in a formalised manner to improve services where appropriate Engage with stakeholders (incl referrers) and utilise positive / negative feedback to improve the services and / or processes

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