Patient Safety and Employee Voice: The Role of Second Victims in Overcoming the Hierarchical Challenge

By

John George Richmond

A thesis submitted in partial fulfilment of the requirements

for the degree of Doctor of Philosophy in Management

University of Warwick, Warwick Business School

August 2018

Table of Contents

List of Tables

List of Figures

Acknowledgements

I would like to thank the National Institute for Health Research (NIHR) - Collaboration for Leadership in Applied Health Research and Care West Midlands (CLAHRC-WM), for funding my PhD at Warwick Business School, University of Warwick. To my supervisors, Drs' Graeme Currie and Nicola Burgess, thank you for supporting me over the last three and a half years, your critical and constructive feedback has helped to develop and refine this thesis to where it is today. I am incredibly grateful for all the opportunities you have provided and look forward to continuing our work together in the years ahead. To Dr. Allen Tien, President & Founder of mdlogix (Baltimore, USA), thank you for your guidance and mentorship over the years, and influencing my career decision to focus on healthcare. Finally, I would like to thank my loving family who is always there for me: my mum Dr. Heather Richmond, PhD, and dad, George Richmond Q.C., older brother Dr. Ian Richmond, MD, and older sister Diana Richmond, LLB, love you guys!

Declaration

This thesis is my own work and has not been submitted for a degree at another university.

Publications

Refereed Article:

Currie, G., Faulconbridge, J., Gabbioneta, C., Muzio, D., & Richmond, J. (Forthcoming). Professional Misconduct in Healthcare: Setting out a Research Agenda for Work Sociology. *Work, Employment and Society.*

Book Chapter:

Richmond, J. (2018). 'Unlearning and Patient Safety'. In A. McDermott, M. Kitchener, & M. Exworthy (Eds.), *Managing Improvement in Healthcare: Attaining, Sustaining, and Spreading Quality* (pp. 117–134). Cham, Switzerland: Palgrave Macmillan.

Conference Papers:

Richmond, J. (2018, May). 'Patient Safety and Employee Voice: The Role of Second Victims in Overcoming the Hierarchical Challenge'. *11th International Organisational Behaviour in Healthcare Conference.* McGill University. Montreal, Canada

Richmond, J. (2018, February). 'Patient Safety and Employee Voice: The Role of Second Victims in Overcoming the Hierarchical Challenge'. *Organising Healthcare Research Network*. Warwick Business School. Coventry, UK.

Richmond, J. (2016, June). 'Unlearning and Patient Safety'. *2nd International Symposium on Healthcare Improvement and Innovation.* Monash University Prato Centre, Florence, Italy.

Richmond, J. (2016, April). 'Unlearning and Patient Safety'. *10th International Organisational Behaviour in Healthcare Conference*. Cardiff University. Wales, UK.

Richmond, J. (2015, June). 'A New Vision for Patient Safety Learning'. *International Doctoral Consortium. Saint Mary's University.* Halifax, NS, Canada.

Richmond, J. (2013), Oct). 'Risk Management, Incident Reporting, and Sentinel Events'. *New Brunswick Healthcare Quality Interest Group & The Canadian College of Health Leaders.* Moncton, NB, Canada.

Abstract

Healthcare organisations have struggled to improve safety. Over the last 20 years rates of patient harm have remained at around 10%, despite implementation of various improvement initiatives linked to the patient safety movement. This study identifies key conditions perpetuating this safety 'implementation gap': 1) a hierarchical challenge and 2) second victim phenomenon. Employee voice is adopted as a sensitising concept. The aim is to identify conditions which moderate the hierarchical challenge, encouraging the enactment of voice, leading to prevention of further medical errors. This PhD's original contribution to knowledge is: second victims are key actors in attenuating hierarchical barriers through enactment of positively valenced practices. Adopting a practice-based approach identifying medical errors as break-downs in professional practice, three cases of serious medical error at a single NHS Trust are chosen for comparative analysis. Data collection includes over 100 hours of observations, 50 interviews, and review of 35 documents. Evidence for a climate of silence was found in each case stemming from: a hierarchical culture, blame culture, and futility of voice. Acquiescent or defensive silence contributed directly to each serious medical error. Second victims were found in each case, generally experiencing guilt, shame, anger, and compassion. The recovery trajectory of these second victims varied, with one 'thriving' while others 'survived' or 'dropped out'. Positively valenced practice changes, which set the conditions for voice, were enacted by affectively charged individuals, either the second victim themselves, or through a process of emotional contagion, their colleagues. These conditions for voice included: setting expectations for voice, management engendering voice, closer adherence to policy and standard operating procedures, and a reinvigorated sentiment of care. These changes led to development of a voice climate encouraging the enactment of both defensive and prosocial voice. A safety incident model of voice for second victims was developed and transferability discussed.

Abbreviations

AER – After-Event Review

AMA – American Medical Association

BMJ – British Medical Journal

BRI – Bristol Royal Infirmary

BSREC - Biomedical and Scientific Research Ethics Committee

CLAHRC-WM - Collaboration for Leadership in Applied Health Research and Care West Midlands

CS – Case Study

CUSP – Comprehensive Unit-based Safety Programme

DFCI - Dana-Farber Cancer Institute

GMC - General Medical Council

IOM – Institute of Medicine

MUM - Mum about Undesirable Messages

NHS – National Health Service

NPSA – National Patient Safety Agency

NRLS – National Reporting and Learning System

RCA – Root Cause Analysis

RFO – Retained Foreign Object

SOP – Standard Operating Procedure

SUI – Serious Untoward Incident

SECTION I: Introduction, Literature Review and Methods

Chapter 1: Introduction

Introduction

The aim of this thesis is to understand the role second victims of medical error play in the enactment of positively valenced practices, which moderate the hierarchical challenge, leading to the enactment of voice, and improved patient safety. This chapter begins by presenting a general overview of the problem area and study goals. The catalyst for this researcher's ambition to pursue a PhD is described. Next, an overview of the structure of the manuscript is provided.

The context for this PhD is that when medical errors occur, not only are patients and their families harmed, known as first victims, but healthcare professionals, known as second victims, are also found to suffer. While the many negative consequences felt by second victims are well established, there is little known about what positive actions might result from these experiences.

Further, a prime contributing factor to medical error are failures in communication between professionals. This 'hierarchical challenge', where cultural barriers between professions inhibit communication, exacerbate the issue, perpetuating a gap in patient safety. As such, this PhD aims to place second victims as key actors in moderating hierarchy through establishing the conditions leading to voice, preventing further errors from occurring.

Problem Area and Study Goals

Despite efforts to improve patient safety, rates of medical harm have not improved (Landrigan et al., 2010). Implementation of numerous initiatives to address medical harm began with the rise of the patient safety movement beginning in the early 2000s. However, despite widespread adoption of methods to improve safety, hospitals' have been found to rarely learn from their failures (Nicolini, Waring, & Mengis, 2011; Tucker & Edmondson, 2003). Subsequently improvements based on learning from such failures are rarely implemented. This prevailing outcome is described as an implementation gap.

This study, through review of four historically significant cases of medical harm, positions the hierarchical challenge (Senot, Chandrasekaran, & Ward, 2016), and second victim phenomenon (Wu, 2000), as key conditions perpetuating the implementation gap in patient safety.

To explore how these challenges might be attenuated, employee voice, the discretionary communication of concerns about work-related issues intended to improve organisational or unit functioning (Elizabeth Morrison, 2011), is adopted as a sensitising concept. Specifically, this study aims to explore how the second victims

of medical error can potentially moderate the hierarchal challenge, to enact voice, improving patient safety.

Research Genesis

The genesis for this research stems from this researcher's pre-PhD career where he spent 10 years working in healthcare management. During his most recent post as a hospital risk manager he was responsible for incident reporting, medico-legal advice, and investigating adverse events using a root cause analysis technique. It was during this time, investigating safety incidents and developing recommendations for improvement, that he observed a disturbing trend. There was a failure to learn from past events, resulting in the re-occurrence of similar serious safety incidents.

Having met with the family involved in one of these serious incidents on a maternity ward, to re-assure them safety measures had been put in place, he soon-after learned of another very similar incident having occurred. This tragic incident should have been prevented, safety measures were in place, but it slipped through.

Reflecting on these tragic experiences, and how they might be avoided going forward required a deeper level of thought and analysis than was possible in a day to day managerial role. As a result, he decided to pursue his PhD to begin to think more deeply, about analysing these problems, and how they might be overcome, with a goal to make a broader contribution to the field of patient safety.

Embarking on the PhD has been a journey, and development of theoretical ideas occurred iteratively as he progressed towards his goal. Initially, 'unlearning', the discarding of obsolete organisational practices to make room for new learning, was chosen as a theoretical base for this study (Rushmer & Davies, 2004). Unlearning resonated with this researcher given his professional background, and experience implementing safety recommendations, which often require healthcare professionals to abandon obsolete or unsafe practices, replacing them with safer ones. However, after preliminary data analysis was conducted, themes related to professionals' affective experiences, and positive changes which they enacted (i.e. voice), began to emerge. As such, the researcher was guided by the data, to explore theoretical themes of greater relevance.

Thus, the focus of theoretical concern shifted to second victims, their affective experiences, and the enactment of practices which established the conditions for voice. If readers of this thesis are interested to learn more about unlearning, the original literature review for this PhD was published as a book chapter 'Unlearning and Patient Safety' (Richmond, 2018).

Structure of Thesis

This thesis is structured across three sections, consisting of ten chapters, an overview of each is described next.

Section I: Introduction, Literature Review & Methods:

Chapter 2 Literature Review Part I: A State of the Art Review of the Patient Safety Movement

Chapter 2 sets the foundation for this thesis with a state of the art review of the patient safety literature. This includes identification of the patient safety implementation gap which is found to be perpetuated by second victim phenomenon and hierarchical challenge. Historically significant cases of medical error, including American cases: the story of Betsy Lehman at the Dana-Farber Cancer Institute in Boston, Josie King at Johns Hopkins Children's Centre, and United Kingdom cases: the Bristol Royal infirmary and Mid Staffordshire, are described to draw out the organisational and professional consequences of medical error. These historical cases highlight the problematic barriers to communication that result from cultural and hierarchical differences between professions, and the traumatic negative affective impact medical errors are known to have. Further, these cases are credited, particularly Betsy Lehman's drug overdose in America, as influencing the broader patient safety movement.

With the emergence of the patient safety movement in the late 1990s, came the adoption of numerous safety improvement methodologies, including the widely adopted root cause analysis (RCA) investigative technique. An overview of RCA methodology is provided, along with a discussion of the benefits and limitations of this approach. Further a summary of RCA is provided and ideas for how it might be improved are included.

Chapter 2 concludes by identifying a need to draw upon the organisational behaviour field, specifically employee voice, to explore how the challenges identified in chapter 2 might be moderated.

Chapter 3 Literature Review Part II: Employee Voice: Organisational Dynamics and Psychological Processes.

Continuing the literature review which began in chapter 2, chapter 3 introduces the theoretical construct of employee voice (Morrison, 2011). First context is provided in the form of examples from other safety sensitive industries where individuals were silenced, leading to serious safety incidents. Employee voice is described by a cognitive process where individuals must decide 1) whether it is safe to speak up and 2) whether speaking up will be effective. Further, emotions are found to play a role in this process as well. Additional influences include hierarchy & status, team leaders and psychological safety, and consideration of one's motive for voice.

Chapter 3 is structured to explain voice as influenced by both organisational dynamics and psychological processes. Organisation dynamics relevant in this context include: professional organisation of doctors and nurses, multi-professional action teams, and the 'turbulent' nature of the healthcare work environment. Psychological Processes include a detailed look at healthcare professionals as second victim, emphasising the negative affective consequences they are known to experience. Power, specifically that which exists between hierarchically arranged professions, is explained as influencing subordinates decision to voice concerns or remain silent. Group voice climate is introduced, with a climate of silence (Morrison & Milliken, 2000) explaining the conditions which render individuals silent vs. a climate which encourages voice, the latter drawing on the concept of psychological safety (Edmondson, 1999).

Chapter 4 Research Strategy: Methods, Design, and Data

In Chapter 4 an overarching research design is described for the study. This includes researching the hierarchical challenge through identification of breakdowns in practice (Nicolini, 2013; Sandberg & Tsoukas, 2011) and classifying the affective experiences of second victims. Affective experiences, such as guilt, common to second victims are listed, and compared with Lazarus (1991) and Lazarus and Cohen-Charash's (2001) core-relational themes for emotional appraisal, to guide the researcher's classification of affective experiences which arose from the study's data.

An abductive case research method (Voss, Johnson, & Godsell, 2016) including sampling controls and selection criteria is explained. The access provided for this study was in-depth, with the researcher being appointed as an honorary research fellow at the NHS trust where data collection was completed. Observations included trust wide governance quality committees, as well as more micro-level departmental interactions with staff. Trust risk management provided the researcher

with access to departments where serious medical errors had recently occurred, root cause investigation had been carried out, and recommendations for improvement put in place, or were in progress. Chapter 4 provides an overview of data sources for the study, including over 100 hours of observations, 50 interviews, and 35 document reviews.

An in-depth look at how data was analysed for the study is provided. Raw data was compiled into a qualitative database using NVIVO software and analysed using an inductive coding method (Pratt, 2009). Descriptions of how first order codes were collapsed into second order categories, and eventually into themes, is provided.

Section II: Empirical Findings

Chapter 5 Overview of Cases

Chapter 5 introduces each of the three empirical cases. Given the complex nature of each case, including both human and system factors implicated in each serious safety incident, an overview necessitated its own chapter, prior to the full exploration of findings in chapters 6, 7, and 8. Chapter 5 starts by summarising the study's cases, providing a rationale for them, and highlights from each. Full descriptions of each case including the departmental context, the incident, and the findings of the RCA investigation are provided, setting the stage for the findings presented in the next chapters.

Chapters 6, 7, and 8 Case Findings

Chapter's 6 Surgery, 7 Maternity, and 8 Urology and Ward x, provide the findings for the study. Each chapter follows a similar layout including first, evidencing the conditions for silence which lead to each serious safety incident. Second, an overview of key second victims and their affective experiences are described with an emphasis on the role these experiences play in enacting positively valenced changes to practice. Third, evidence for these recommended or emergent practice changes, which create the conditions for voice, are described. Fourth, evidence for the specific type of voice found is shown. Fifth, a summary of each cases' findings is provided in a tabular format.

Section III: Discussion and Conclusion

Chapter 9 Discussion

Following presentation of the study's findings in chapters 6, 7, and 8, they are discussed in a comparative, cross-case analysis, in chapter 9. First the concept of group climate is reintroduced to provide a foundation for the chapter, which shows the *"painful journey"* the healthcare professionals in each case went through, as they traversed from a climate of silence, to a voice climate. The conditions for a climate of silence from each case are compared, leading to two forms of silence, acquiescent and defensive, with direct attribution to the serious safety incidents.

Following the occurrence of serious safety incidents numerous second victims were identified from each case. These individuals are classified along a recovery trajectory (Scott et al., 2009) with some 'thriving', while others 'survive', or 'drop out'. The positive practices enacted by these second victims, and their colleagues through a process of emotional contagion, setting the conditions for voice, are discussed.

Voice climate across all cases is described, and the conditions from which it emerged are compared. This climate which encourages speaking-up led to two types of voice: defensive and prosocial, the consequence of each are discussed and compared. Rounding out the discussion is presentation of the study's safety incident model of voice for second victims. This model is intended to be general and applicable to other safety sensitive industries.

Chapter 10 Conclusion

Concluding this thesis is a final chapter which reminds readers of the research gap addressed and to which area of literature this study is contributing. Transferability of this study's findings are discussed, and considerations for applicability to other safety sensitive fields are explained. Practical recommendations are listed with an aim to harness the affectively charged second victims of medical error for the enactment of positive change, creating a voice climate, and improving patient safety.

Finally, the study's limitations are explained with rationale for why they persisted and ideas for future research discussed.

Chapter 2: A State of the Art Review of the Patient Safety Movement

Literature Review Part I

Introduction

Chapter 2 provides an overview of the empirical context for this study, the healthcare industry, specifically the UK's NHS, where this study takes place. Through an exploration of recent and historical patient safety literature, this chapter provides an overview of the patient safety movement internationally. Establishing this broader context sets up the research question posed by the study: how second victims of medical error can potentially moderate the hierarchical challenge, to enact voice, and improve patient safety. Key challenges which perpetuate this gap in patient safety are highlighted as a 'hierarchical challenge' (Senot et al., 2016) and second victim phenomenon (Wu, 2000).

The last few decades have seen major examples of inquiries into quality of care, negligence on behalf of care providers, and heightened public pressure for improving patient safety. An overview of these important events, across four cases of medical error in the USA and UK is provided to establish the background for the study's context, and establish the scope of the 'implementation gap' which this study addresses.

Root Cause Analysis (RCA), an internationally adopted tool for accident investigation, has taken hold in healthcare, and has arguably become the primary method for investigating patient safety incidents. The history of RCA, an overview, its benefits and limitations as found in several recent studies, as well as potential next steps for the practice, are highlighted.

The Patient Safety Movement

The patient safety movement can trace its origins back to several major international reports which describe, for the first time in a comprehensive way, the scale of the patient harm problem (Department of Health, 2000; Kohn, Corrigan, & Donaldson, 2000). These national level reports, the UK's 'an organisation with a memory' (2000), and USA's 'to err is human' (2000), explore the nature of medical error, rates of harm, and highlight human and organisational factors, which have contributed to a failure to improve practice following medical error. Refer to Table 2.1 Comparison of National Rates of Adverse Events for an overview of the scale of this problem among Western nations.

The release of these reports prompted healthcare organisations to implement various initiatives aimed at improving patient safety. While the release of these reports is associated with an increased number of patient safety publications and research awards (Stelfox, Palmisani, Scurlock, Orav, & Bates, 2006), unfortunately, there has been little evidence of widespread safety improvement resulting from this heightened attention to patient safety (Landrigan et al., 2010; Waring, 2013), and recent calculations list medical error as the third most common cause of death in the US (Makary & Daniel, 2016).

Perhaps the most popular of these initiatives to improve safety is Root Cause Analysis (RCA), a family of bundled methodologies for the structured and retrospective investigation of near misses, adverse events, and never events (Nicolini, Mengis, Meacheam, Waring, & Swan, 2016). RCA did not originate in healthcare, it was adopted, as an "anxiety-reassurance" package, riding in on the wave of the patient safety movement (Nicolini et al., 2016). RCA stemmed from the nuclear safety industry, where it grew in popularity among safety engineers following the 1979 Three Mile Island incident (Nicolini et al., 2016).

Numerous researchers have analysed the initiatives undertaken by healthcare organisations to learn from incidents and prevent recurrences (Iedema et al., 2006; Iedema, Jorm, & Braithwaite, 2008; Nicolini et al., 2011; Vincent, 2003; Waring & Bishop, 2010; Waring & Currie, 2011; Wu, Lipshutz, & Pronovost, 2008).These studies have tended to emphasise the way in which incidents were analysed using methods like RCA, identification of risks, and how lessons learned were shared using reports. It is these RCA reports which are aimed at changing the practices of healthcare professionals and the systems in which they work, via listing recommendations for improvement and assigning responsibility for each.

Table 2.1 Comparison of National Rates of Adverse Events

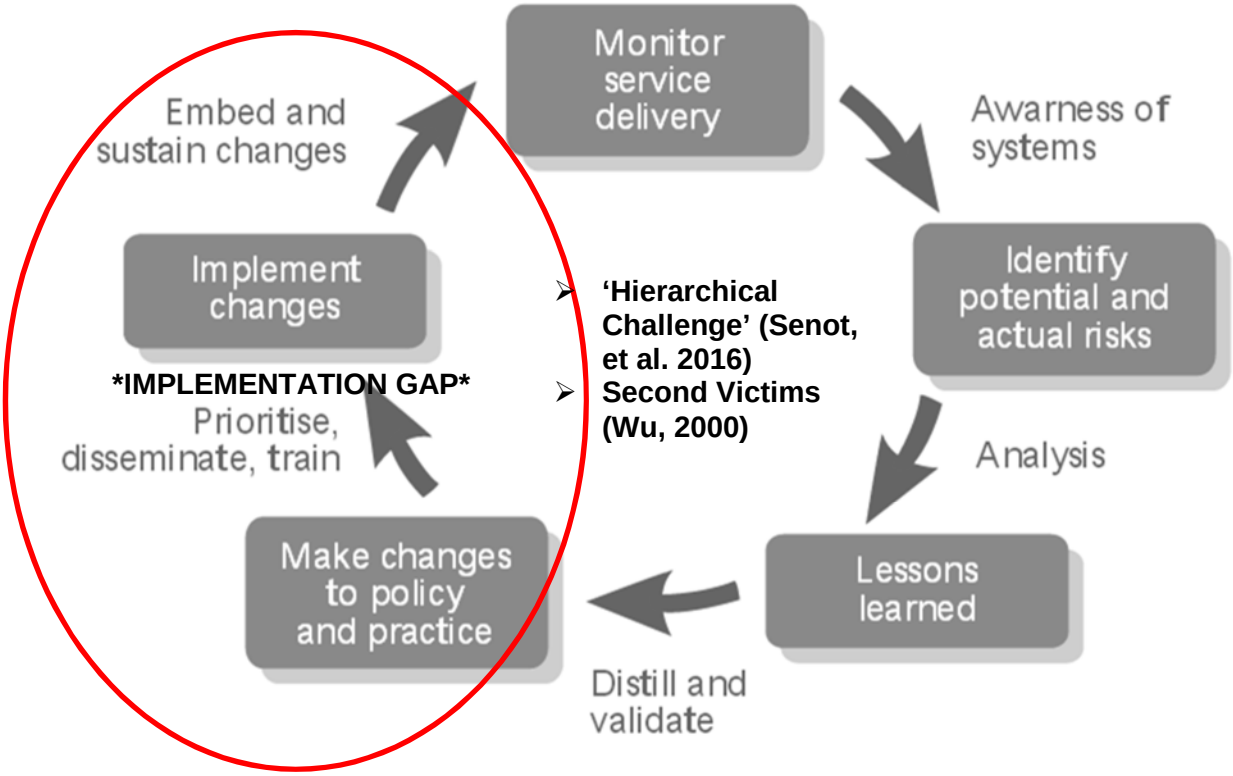
Country	United States	Australia	United Kingdom	Canada
Study	US Harvard Medical Practice Study 1991 (Brennan et al., 1991)	The Quality in Australian Healthcare Study (Wilson et al., 1995)	Reducing Error in Medicine (Vincent, 2000)	Canadian adverse events study (Baker et al., 2004)
Proportion of inpatient episodes leading to harmful adverse events	3.7%	16.6%	10%	7.5%
Proportion of adverse events deemed preventable	70% (Leape, 1994)	50%	Around 50%	37%
Extrapolation of findings by Country	44,000 and perhaps as many as 98,000 deaths in US each year. If these rates are typical, then the analogous impact would be the equivalent of a jumbo jet crashing every 2 days (Leape, 1994)	470,000 adverse events / year Approximate cost of $1 billion.	850,000 adverse events per year. Up to £2 billion direct cost of additional bed-days.	185,000 adverse events per year.

The Implementation Gap

Despite widespread adoption of methods to improve safety, we know that hospitals rarely learn from their failures (Nicolini et al., 2011; Tucker & Edmondson, 2003), subsequently improvements based on learning from such failures are rarely implemented. This prevailing outcome is hereby referred to as an 'implementation gap'.

Figure 2.1 below is the learning circle used by the UK's Department of Health (2000) to conceptualize the process of investigating, learning from, and preventing medical errors. It is shown here as a framework in which the 'implementation gap' is superimposed.

Figure 2.1 The Implementation Gap (Adapted from Department of Health, 2000).



While this inability to implement safer practices has been broadly hypothesized as the result of barriers including a normalization of deviance among staff (Vaughan, 1999; Waring, 2005), the promotion of quick fixes and work-arounds rather than systematic analysis (Tucker & Edmondson, 2003; Waring, Harrison, & McDonald, 2007), and a predominant culture of blame (Carroll, Rudolph, & Hatakenaka, 2002; Department of Health, 2000; Waring & Currie, 2011), it is arguably other challenges, those which professionals' regularly and directly confront at the "sharp end" of care (Hollnagel, Braithwaite, & Wears, 2013, p. 228) that perpetuate

this ‘implementation gap’.

Chief among these concerns are 1) whether healthcare professionals feel able to speak up when safety is at risk, and 2) how second victims manage the affective impact of such errors on their trajectory towards learning, recovery and improvement.

Given nearly 85% of medical errors are caused by faulty communications (Ayd, 2004), a critical obstacle to addressing this gap in improving practice is arguably the ‘hierarchical challenge’, a cultural barrier which is found to exist between healthcare professions (Senot et al., 2016). This barrier inhibits nurses from respectfully challenging physicians in case of quality issues, reducing collaboration between physicians and nurses, and contributing to the delivery of lower quality care (Senot et al., 2016).

While it’s known that a positive relationship exists between emotional response and the severity of medical error, there is much that is not well understood about emotional response to medical error (Sirriyeh, Lawton, Gardner, & Armitage, 2010). For example, diminishing empathy among physicians, and high levels of burn out, were associated with an increased chance of committing a medical error (West et al., 2016). Thus, experiencing medical errors can result in a loss of compassion among physicians. This link is suggestive of a “vicious cycle” where physicians are involved in errors, leading to personal distress, which then contributes to further poor patient care (West et al., 2016, p. 1075). Professionals involved in errors often experience the second victim phenomenon (Wu, 2000) which has been known to impair clinical confidence and performance, resulting from detachment, anxiety, and depression, for example.

In light of the relationship between medical errors and second victims it is important to consider what the implications of affective experience might be for initiatives like RCA aimed at learning from error. Consideration for the role of affect in organisational learning is highlighted by Dewey (1859-1952) as integral to understanding the experience of individuals. Dewey understood learning a transaction between individuals and the environment consisting of more than just thinking and knowledge, but also including body sensations, intuitions, and emotions (Dewey, 1980; Dewey, 1981; Dewey, 1987; Dewey, 1988). Further supporting the importance of consideration for affect in organisational learning is the work of Vince (2001), who drew upon a psychodynamic tradition that proposes learning as visible in the organisational dynamics created by the interaction between power relations and emotion.

Current approaches to safety and learning are underpinned by a “find and fix” mind-set (Hollnagel, 2013, p.6), resulting in a narrow focus by healthcare institutions on the process of investigating incidents and compliance, while skirting the issue of post-investigation learning and practice change. This emphasis on systems and practices which have gone wrong is known as a safety-I perspective, while attempting to consider where things have gone exceptionally well – as a starting point to improve safety – is known as safety-II perspective.

Root Cause Analysis, which this study explores through cases of medical error, is firmly rooted in a safety-I type approach, thus as a starting point this study places emphasis on this “find and fix” approach to safety, in order to understand its shortcomings in enacting practice improvements which exacerbate the ‘implementation gap’.

Perspective on Safety-I & Safety-II

Negative aspects of safety, i.e incidents, have received greater interest than the positive. Some have argued (i.e Waring, 2013) the narrow focus of safety initiatives on what goes wrong, rather than what goes right, has led us to where we are today with little evidence of sustained safety improvement (Landrigan et al., 2010). Calls for more thorough reflection on the “problem of patient safety” have been made (Waring, 2013).

Healthcare is thought to have a 1:10 ratio of harm to care (Reason, Carthey, & de Leval, 2001). This implies that for every instance we expect that something will go amiss, there are 9 times where we should expect that things will go right, and lead to the intended outcome. Despite the higher probability of intended outcomes, initiatives to improve safety are dominantly associated with harm events (i.e Incident Reporting and RCA). This focus on harm is explained in psychological literature by our innate negativity bias, where humans are more attentive to and influenced by negative emotions and events than by the positive ones (Baumeister, et al., 2001; Rozin, Royzman, 2001).

Safety-II originated from the resilience-engineering field, which emphasises ‘work as done’ versus ‘work as imagined’ (Hollnagel, Woods, Leveson, 2007). Safety-II considers a system resilient when it’s able to adjust it’s functioning in response to changes in conditions. The goal of this approach is to ensure as many successful outcomes as possible by identifying and learning from good practice. There are similarities between safety-II and a ‘positive deviance’ approach which looks at individuals or groups who perform exceptionally well, and identifies and disseminates best practices to improve wider performance (Lawton, Taylor, Clay-Williams, et al.,

2014).

Hollnagel (2013, p. 11) suggests a transition to safety-II from safety-I would require changing our definition of safety *"from 'avoiding that something goes wrong' to 'ensuring that everything goes right' – or more precisely, to the ability to succeed under varying conditions, so that the number of intended and acceptable outcomes is as high as possible"*.

This transition would alter the basis of safety management to become a practice of understanding why things go right and emphasise understanding everyday activities. The aim of safety-II is to develop resilient healthcare systems, a concept refined through application in air traffic management and nuclear power generation. A system is thought to be resilient when it possess an intrinsic ability allowing it *"to adjust its functioning prior to, during, or following changes and disturbances, so that it can sustain required operations under both expected and unexpected conditions"* (Hollnagel, 2013, p. xxv). In other words, resilience is not limited to only dealing with threats or errors, nor constrained to scenarios where things can go wrong.

Safety-II methodologies are not that common in healthcare (Kelly, Blake, & Plunkett, 2016). In practical terms, it's not entirely clear what types of initiatives or programmes healthcare organisations in pursuit of a safety II strategy might adopt. An argument could be made that safety-II, with it's emphasis on understanding the minutiae of clinical professionals daily work, presents a daunting task for already cash-strapped healthcare systems, who already made significant investment in safety-I type approaches driven on by the Patient Safety Movement in early 2000s (Nicolini, et al, 2016).

One promising example of a safety-II approach that merits review is the Learning from Excellence (LfE) programme developed at a children's hospital in the UK (Kelly, et al., 2016). LfE aims to eliminate the negative emphasis in healthcare today and accentuate the positive aspects. This is done efficiently by piggybacking on existing safety-I type initiatives such as incident reporting and serious incident investigation, to introduce voluntary reporting of episodes of excellent practice. These incident reports, known as "IR2" forms, are submitted by staff using hospital wide intranet and are purposefully free style to allow the reporter to apply their own definition of 'excellence'.

IR2 reports are reviewed weekly at Improving Resilience, Inspiring Success (IRIS) meetings, which are reverse of the acronym SIRI, for Serious Incident Report Investigation meetings. An appreciative inquiry methodology that nurtures a positive mind-set is used to facilitate group dialogue on each IR2 report. *"These hour-long*

informal reviews aim to identify how excellence was achieved, including 'workarounds' or innovations employed, and to generate ideas for sharing and promoting excellence." (Kelly, et al., 2016, p. 789).

In evaluating the LfE programme via survey, excellence reporting was correlated with improved staff morale and quality of care. Investigating reports of excellence was found to be just as valuable as reflecting on individual error, and both were more valuable than studying specific human errors, which can lead to negative affective experience and the emergence of 'second victims' (Kelly, et al., 2016).

LfE's relevance to this discussion is it's potential as a model which melds safety-I & II approaches. This integration is attractive in terms of it's ease of transferability to other hospitals who already invested in safety I approaches, such as those discussed in this study, but who now seek to improve upon their foundations. Future approaches to patient safety might integrate safety-I & safety-II perspectives as part of a broader strategy, which builds upon existing resources, and is mindful of second-victims, to more equitably balance analysing failures as well as successes in way that avoids assigning blame or assigning one root cause to any incident.

Reviewing Historically Significant Cases of Medical Error

With so much energy directed towards safety improvement and with continued failure of such efforts, concerned members of the public, patients, family, clinicians, and researchers, might be prompted to ask the simple questions 'how did we get to this point'? and 'where do we go from here' to improve patient safety today?

To answer these questions, a review of international, historically significant healthcare mistakes, which are known to have acted as a catalyst for the patient safety movement, is necessary. By understanding the historical events which led to the adoption of a patient safety movement and its closely related tools and programmes (i.e. Root Cause Analysis), this chapter highlights areas of concern which are chief antecedents to, and consequences of, medical errors, mainly 1) the 'hierarchical challenge' (Senot et al., 2016), which includes elements of professional power & culture, and 2) the affective consequences of, and recovery, from medical error known as the second victim phenomenon (Wu, 2000).

Four historical cases from the United Kingdom, and United States, which contributed to the development of the patient safety movement in western healthcare, are reviewed in this section. Elements which contributed to these medical errors will be highlighted, with emphasis on factors that have gone largely unaddressed in current mainstream improvement initiatives, namely: professional power and culture

which vary by hierarchical position, and the emotional consequences of error on professionals

Dana-Farber Cancer Institute (DFCI) in Boston, the case of Betsy Lehman, 1994

Perhaps the most well publicised episodes of medical error in the USA is the tragic case of Betsy Lehman, 39, health columnist for The Boston Globe, who, in November 1994, died as a result of a medication error. Mrs. Lehman was a patient at Dana-Farber Cancer Institute (DFCI) in Boston where her husband, a scientist, worked. She was receiving experimental treatment for an advance case of breast cancer, along with another patient, who was also injured and later died.

Lehman's death was the result of a mistake by a physician working as a research fellow who misinterpreted the study protocol and ordered four times the intended dose. Nurses caring for the patients administered 6,520 milligram doses of cyclophosphamide, a chemotherapy drug, each day, for four consecutive days (Brink, 1995). While both patients demonstrated adverse reactions, these were ignored as reasonable side effects from the 'pushing the envelope' chemotherapy doses. Doctor's also ignored Lehman's warnings that something was drastically wrong with her prior to discharge (Altman, 1995).

The Boston Globe reported *"It was a blunder compounded or overlooked by at least a dozen physicians, nurses and pharmacists, including some of the institution's senior staff"* (Altman, 1995). At least five other doctors, and nurses, countersigned the order including the leader of the team. It wasn't until two months later during a routine data review that a clerk discovered the inappropriate order for the chemotherapy drug which pushed DFCI to disclose the error.

Organisational Consequences

The DFCI, one of the USA's premier cancer centres, had its reputation destroyed after, perhaps, the most widely publicized drug overdose in history (Crane, 2001). The impact of the error shook the organisation, resulting in those in positions of authority leaving the organisation, including the president, chief medical officer, financial leaders and numerous department heads.

In an effort to learn from the error and prevent similar events from re-occurring, massive organisational efforts were undertaken with an initial price tag of $1.3 million (Brink, 1995). These included creating and maintaining a computerised drug-ordering system, a state of the art incident reporting system, training staff and undertaking root cause analysis for every mistake, increasing the number of nurse practitioners and

physician assistants to 45 from 12, adopting a policy of full disclosure, and creating a committee consisting of patients to provide input on a range of issues at DFCI (Allen, 2004).

Professional Consequences

The impact on the professionals involved in Lehman's care was profound, with major disciplinary action across the board. Physicians involved in the case were reported to the Massachusetts Board of Registration in Medicine with several having clinical privileges suspended, while 16 Nurses, and 3 pharmacists, were all formally reprimanded.

These tragic events not only devastated the patients' families, but also the clinicians who provided the care. As Conway and Weingart (2005) found, DFCI clinical staff were victims of this medical error, experiencing shame, blame, and distance from their organisation, colleagues and external regulatory agencies.

The physician research fellow who ordered the lethal dose, felt vilified by hospital leaders and left the organisation, this professional's reaction can be understood through Wu's second victim terminology (Wu, 2000). Second victims progress through a post-event trajectory and eventually move along three potential paths: dropping out, surviving, or thriving (Scott et al., 2009). Those who 'survive' their post-event recovery may get back to performing at expected levels but will remain disturbed by the error, while those who 'drop out', as was the case with the DFCI research fellow, change roles, for example away from clinical duties, or they leave the organisation, and/or profession entirely.

"It's an extremely sad time here," Dr. Livingston, then chief-physician, said in an interview (Altman, 1995). Within a day of learning about the medical error, Dr. Livingston along with doctors involved in the cases, and other staff directly informed both families of the error. *"Those two meetings, which took place within hours of each other, were the two saddest individual occurrences I remember. I looked into their eyes and all I could see was abject grief and misery. It was the kind of misery that was penetrating."* (Altman, 1995). Nurse Judith Prisby expressed a similar view held by many staff members at the time of the error *"it was a pretty public humiliation … my whole world changed in an instant"* (Allen, 2004)

Influencing the Broader Patient Safety Movement

One does not have to look far to see the impact Lehman's overdose had on influencing the broader patient safety movement, with reference to her death in the first line of the Institute of Medicine's (IOM) report 'To Err is Human' (Kohn et al.,

2000). The IOM's publication, with its headline-making statistic that as many as 98,000 fatal mistakes occur every year in US healthcare, is cited as a landmark report (Charles Vincent & Amalberti, 2016), credited with urging investment and launching major initiatives to improve patient safety in the USA (Landrigan et al., 2010), acting as a key catalyst for the patient safety movement.

As found by Nicolini et al (2016, p. 10) *"the report (IOM) changed the opinion of a lot of people … from then on people could not say that medical malpractice was not a serious problem … this served to put the issue of patient safety, which previously had been invisible, on the radar screen."*

Prior to the IOM report, prevailing beliefs from industries such as aviation, that a certain amount of injury is inevitable, was still largely accepted in healthcare (Ayd, 2004). This led to hospitals largely examining each error as an isolated incident. Whereas the IOM report encouraged looking at flaws in how the health care system itself is organized, to strengthen systems, so the mistakes *"they're (professionals) bound to make don't snowball into actual harm"* (Ayd, 2004).

A world leading hospital system, Johns Hopkins in Baltimore, MD was right in the middle of developing plans to address safety gaps identified by the 2000 IOM report. Making patient safety their number one priority, when a young patient named Josie King arrived at their Children's Centre Intensive care unit, with severe burns from a freak home accident.

Johns Hopkins Children's Centre, the case of Josie King, 2001

Josie King was 18 months-old in 2001 when she was admitted to the burn centre at Johns Hopkins for first and second-degree burns she accidentally suffered in a bath at her Baltimore home. Parents Sorrel and Tony King handed their child's life into the care of an organisation considered to be a world leader in medicine. *"These people are a hell of a lot smarter than I am and they know what they're doing"* said Mrs King (Kalb, 2006). Josie, following a transfer to Hopkin's paediatric intensive-care unit, began slowly healing from the treatment of medications and skin grafts.

It's at this point that things begin to decline. Only days before she was due to be discharged from care, Josie's condition suddenly deteriorated. She appeared to be dehydrated, thirstily sucking on a washcloth after a bath, when her eyes rolled back in her head. Mrs. King was reassured that Josie's vital signs were fine and the patient was given a dose of methadone as a painkiller. Clinical staff ignored Mrs King's concerns about her child's dehydration. Shortly after, Josie's heart stopped, suffering irreversible brain damage, and was later taken off life support.

This patient's death was classified as a "Sentinel Event", an unexpected death or serious injury that must be investigated. The hospital, who invited Mrs. King to describe her recollection of events, concluded that Josie was severely dehydrated and that her mother's concerns had been repeatedly overlooked (Kalb, 2006). The final methadone dose was ordered by a doctor as part of a diminishing-dosage strategy to wean Josie off the drug, and while the drug didn't cause the cardiac arrest, Mrs. King is informed there were "complications".

Hospital administration admits Josie should not have died, and they should have listened to Mrs. King's concerns (Landro, 2009). Mrs. King was vocally against the methadone dose, mentioning she heard a doctor verbally order 'no further narcotics', but the nurse gave it anyway (Landro, 2009). The hospital later concluded that Josie was severely dehydrated. And one thing was clear: the voice of the mother had been ignored (Kalb, 2006).

Organisational Consequences

The Josie King case defined and reshaped the culture of safety at Hopkins (Morath, 2010). The King family reached an out of court settlement with Hopkins and donated a portion of the funds back to establish the Josie King Patient Safety Program (Ayd, 2004). Building on existing organisational efforts from the Institute of Medicine report (Kohn et al., 2000) to improve safety, partnering with the Kings gave a new sense of urgency to these ideas for safety improvement at Hopkins. *"That was one of the most important catalysts to move us forward"* said Beryl Rosenstein, Hopkins Hospital vice president for medical affairs (Ayd, 2004).

That the Josie King case was a catalyst for organisational change and improvement is an understatement, a considerable number of initiatives were spawned to improve patient safety. These initiatives included: establishing the Centre for Innovation in Quality Patient Care which acts as a learning laboratory for front line clinicians, instituting executive safety rounds, where corporate executives 'adopt' a medical unit, becoming its advocate, and attending monthly staff meetings. The use of checklists, similar to the aviation industry, has reduced incidence of bloodstream infections by more than 50%, and introduction of a daily goals sheets, which among other factors identify each patient's greatest safety risk, and promote team work. Finally, medication errors were targeted with introduction of a phased-in $20 million information system.

Professional Consequences

Dr. Peter Pronovost, Medical Director of Hopkins Centre for Innovation in Quality Patient Care, was the first person the King family met following the incident

who really understood what they were going through. Pronovost, a national expert in patient safety, had personally experienced an adverse event when his father died because of an error at a hospital in New England. His work at Hopkins focuses on ensuring lessons learned from medical error are spread across the organisation, and most critically addressing an overall “culture of secrecy and blame” among the medical profession (Ayd, 2004).

"We pay an awfully high price for silence in health care," says Dr. Pronovost in reference to faulty communications being cited as a cause of nearly 85% of medical errors (Ayd, 2004). This stems from traditional hierarchy associated with the medical professions, where nurses may feel hesitant to raise concerns with doctors, residents lack challenge to second-guess attending physicians, and patients and families’ concerns are overlooked by doctors and nurses (Ayd, 2004).

The lack of this drug dose being checked by, or discussed, among different professionals in this case, highlights a historical reluctance by physicians, nurses, and other clinicians to speak openly, as explained by Beryl Rosenstein, Hopkins Hospital vice president for medical affairs *“We’re trained from our earliest days in school that health professionals don’t make mistakes, and if you do, you don’t talk about it,”* (Ayd, 2004). This has led to encouraging parents as vocal participants in their children’s care, drug doses being checked multiple times (involving communication among professions), and introduction of Comprehensive Unit-based safety program (CUSP) that emphasizes a no-fault approach for reporting errors.

This partnership between a courageous Mrs. King, and Dr. Pronovost, with his own personal experiences of error, supports continued national efforts at safer healthcare in the USA, leading to many further partnerships between hospitals, patients, and their families, and arguably launching the patient safety movement into the mainstream (Morath, 2010)

The United Kingdom’s Patient Safety Record

The United Kingdom’s NHS is an exemplary case given recent public calls for improved safety, resulting from several high profile failings in care that resulted in government led inquiries for improvement. Similar to how healthcare events unfolded in the USA, matters in the UK began a dramatic turn in the late 1990’s and early 2000s following another scandal surfacing. An inquiry found catastrophic systemic failures at the Bristol Royal Infirmary, located in southwest England, which were compounded by a culture of secrecy and collusion, leading to the preventable death of at least thirty children.

Bristol Royal Infirmary, 1991-1995

The tragic events at Bristol Royal Infirmary (BRI) from 1991 to 1995, where between 30 – 35 babies died needlessly, resulted largely from a behavioural commitment by surgeons that shaped their interpretation, action, and minimized cross-specialty communication (Kennedy, 2001; Weick & Sutcliffe, 2003).

Ian Kennedy, a law professor, was tasked with leading the almost three-year inquiry into the scandal at BRI. At the time, the BRI inquiry was considered the most detailed and far reaching investigation into the NHS ever undertaken, addressing critical issues of accountability and clinical safety, professional culture, and the rights of patients (Butler, 2002). The report 'Learning from Bristol' (Kennedy, 2001) found a system looking after vulnerable and sick children that was *"shot through with flaws"* (Dyer, 2001).

BRI was at the bottom of the rankings table for specialist units doing open-heart surgery on babies, with a death rate twice as high as anywhere else in the NHS. It was found that the hospital never performed enough heart surgery operations on children, so that its surgeons, more familiar with adult patients, could become skilled. Many Surgeons thought they were simply experiencing a "learning curve", that their statistics would improve, but this never happened.

Broadly the report found evidence of an "old boys" culture among doctors that resulted in secrecy around their performance, poor communication with patients, low priority given to children's services, a laid back approach to clinical safety, and a lack of external oversight of performance (Butler, 2002).

This case highlights the importance of "safety culture", a term which had only recently emerged in healthcare literature at the time of the BRI inquiry, which describes a set of practices and assumptions necessary for healthcare organisations to provide optimal care (Kohn et al., 2000). Culture promotes sustained collective action by providing individuals with a similarity of priorities, approach, and outlook (Weick & Sutcliffe, 2003).

Yet, as was the case with the BRI, shared assumptions, norms and values can also be a source of danger when they enforce a 'culture of entrapment', a term used to describe the collective behaviour at BRI: *"the process by which people get locked into lines of action, subsequently justify those lines of action, and search for confirmation that they are doing what they should be doing."* (Weick & Sutcliffe, 2003, p.73)

Further complicating matters was the existence of professional "tribes" within the organisation which were loosely coupled, fragmented, and self-contained

subcultures. The culture at BRI trapped professionals into behavioural commitments which saw them justify and rationalize poor performance stemming from a supposedly high volume of unusually complex patient cases, rather than considering their own failings or systematic issues. Staff at BRI continued to believe that adverse events were simply an anomaly, rather than resulting from unacceptably poor practice.

Organisational Consequences

The inquiry was divided into two phases, the first of which interrogated the events of BRI, the second phase emphasized spreading these findings more broadly to improve care in the future. Specifically the second phase was concerned with how to *"extrapolate from one particular set of circumstances to a whole set of wider observations … you could generalise from Bristol and use it for making wide-ranging observations."* said Kennedy (Dyer, 2001).

While the inquiry made close to 200 recommendations, the need for openness is one of the strongest messages. The report calls for a non-punitive reporting system like those used by airlines, with incentives for staff to report errors so that lessons can be learned, and possible disciplinary action for those who cover up.

Several other key recommendations for implementation across the NHS included: greater transparency of consultant performance with mortality rates for every cardiac surgeon in England being published starting in 2004, reforming the NHS complaints procedure so that patients become "equal partners" with their healthcare professionals to make decisions about care and treatment. Children's health services will be improved and better led by each NHS organisation appointing a senior member of staff as head of children's services. Finally, the NHS established a new council for the quality of healthcare, and introduced a new contract and mandatory code of conduct for NHS managers.

Professional Consequences

Two of the main surgeons involved Mr Wiseheart and Mr Dhasmana, along with former Chief Executive of the United Bristol Healthcare NHS Trust, Mr Roylance were charged with serious professional misconduct under the General Medical Council (GMC). Mr Wisehart and Mr Roylance were struck off the medical register and Mr Dhasmana was banned from performing operations on children for four years by the GMC.

Consultants working at the trust felt that indiscriminate blame had been laid on "doctors in Bristol" by the Royal College of Surgeons, the Department of Health, and Managers (Prasad & Butler, 2002).

Report: An Organisation with a Memory

Simultaneous to the ongoing investigation at Bristol, continuing public outcry led to an investigation into the overall NHS's capacity to learn from incidents and prevent harm. The report "An Organization with a Memory" (Department of Health, 2000), released the same year as USA's 'To Err is Human', found that the NHS consistently failed to learn from its errors.

A key theme within the report draws upon aviation industry practices and techniques to emphasize a focus on system factors rather than individual human factors. Report author, then-Chief NHS Medical Officer, Liam Donaldson explains *"Plane crashes are not usually caused by pilot error per se but by an amalgam of factors which predispose to human error or worsen its consequences... Experience and research from other sectors, in particular the airline industry, show the impact of human error can be reduced."* (Harrison, 2010).

"Building a Safer NHS for Patients" was published in 2001 to implement the recommendations of "Organisation with a Memory". Report authors identify its purpose as a "Programme of Implementation" and explained how extensive contact and discussion between representatives of the UK, USA, and Australia lead to the adoption and recommendation of several best practices (Department of Health, 2001). Key among these new initiatives include development of the national reporting and learning system (NRLS) for reporting adverse events, building of expertise within the NHS in Root Cause Analysis (RCA), a more in-depth approach to investigating adverse events through identifying causal or system factors. Creation of an independent body the National Patient Safety Agency (NPSA) to collect, analyse, and assimilate information on adverse events across the NHS, and promote patient safety research which at this time is a young field (Department of Health, 2001). However, despite introduction of efforts to improve safety, another major episode of poor care was right around the corner.

Mid Staffordshire, 2005-2009, and beyond

It's been estimated that 400 patients died because of poor care between January 2005 and March 2009 at a small hospital in Staffordshire, UK. An investigation into this scandal was headed by Robert Francis QC. The Francis Inquiry found the Mid Staffordshire NHS Foundation Trust Board did not listen sufficiently to its patients and staff, or ensure the correction of deficiencies was brought to their attention (Francis, 2013). This again highlights the critical role miscommunication plays as a leading cause of adverse medical events.

Francis's Inquiry heard evidence from over 900 patients and families who

spoke of lacking basic elements of care including pain relief, food, and hygiene all neglected by staff. The care was simply “of appalling standards” and the trust employed “chaotic systems for looking after patients” (Campbell, 2013).

National Consequences

The Mid Staffordshire scandal was felt throughout the entire English NHS. The scope of the investigation led by Francis and its recommendations included creating a more open and transparent national health service, through introducing a statutory duty of candour for all NHS doctors, nurses, and midwives. These guidelines set standards for apologizing to, and informing patients of incidents and near misses, reporting errors as early as possible, and to support colleagues raising concerns about patient safety (Nursing & Midwifery Council, 2015).

Such was the magnitude of the “hierarchical challenge” (Senot et al., 2016) in UK healthcare, where certain professional groups felt unable to speak-up about safety, that Francis (2015) was commissioned a second time, to investigate ongoing concerns raised by NHS staff about how their NHS organisations dealt with this sensitive and critical challenge, framed as ‘whistle blowing’. The 2013 NHS staff survey found that only 72% of respondents were confident that it is safe to raise a concern. The aim of Francis’s report “Freedom to Speak Up – A review of whistleblowing in the NHS”, was to provide advice and recommendations to ensure that NHS staff feel confident that they will be listened to, safe to raise concerns, and that concerns will be acted upon (Francis, 2015).

Despite the initiatives spawned from these investigations, the gap in learning from incidents remains an ever-present concern for both the public and government, as claimed by UK Health Secretary Jeremy Hunt (2015), the NHS records 800 avoidable deaths every month, and ‘wrong site surgery’ incidents occurring twice a week on average.

In summary, four historical cases have been reviewed which highlight elements of a ‘hierarchical challenge’ including professional power, culture, and consideration of emotional affect in relation to medical errors, and their role in perpetuating the ‘implementation gap’.

The final section of this chapter is dedicated to understanding perhaps the world’s most popular initiative for investigating safety incidents, Root Cause Analysis (RCA). While broadly endorsed by healthcare systems worldwide for the investigation of medical errors, its potential for learning has remained under-realised (Wu et al., 2008), now is the time for a critical review of this “family of structured methodologies” for investigating safety incidents (Nicolini et al., 2016).

Root Cause Analysis (RCA)

As suggested in the Institute of Medicine report (2000), health care is a decade or more behind many other high-risk industries such as aviation and aerospace. In an attempt to improve safety it has become increasingly popular for healthcare institutions across the world to adopt a formalized investigation procedure known as root cause analysis (RCA) (Department of Health, 2001; Department of Veteran Affairs, 2008; Incident Analysis Collaborating Parties, 2012).

RCA was first used by engineers in the aviation and aerospace industries to analyse industrial accidents and built upon a foundation of systems engineering and human factors knowledge (Carroll, 1998). Since then, important concepts underlying RCA have evolved slightly and continue to borrow heavily on work from other fields and industries including James Reason's Swiss cheese model (2000), and systems thinking (Incident Analysis Collaborating Parties, 2012). As a result, RCA tends to focus on 'latent' or systemic factors while minimizing 'active' or human errors and strives to identify 'error chains', which according to Reason (2000) can condition, enable or heighten the potential for active error.

While RCA may have developed in other industries, it has recently been acknowledged that healthcare, due to its dynamic nature, involving interactions between vulnerable patients, numerous providers, and intricate care processes, is actually more complex than aviation and other high-risk industries (Vincent, 2010). Given these findings, one might question whether RCA is the right tool for an increasingly complex job, and ponder if the practice of RCA can evolve to address the complicated nature of investigating medical errors. Further weakening RCA's usefulness in the complex setting of healthcare is its name, which suggests a singular, linear cause can tidily be found to explain each investigation (Peerally, Carr, Waring, & Dixon-Woods, 2016). This has led to at least one country, Canada, to discontinue use of the term "root cause" analysis (Incident Analysis Collaborating Parties, 2012).

RCA Overview

The US was the first country to import the practice of RCA from manufacturing into healthcare, through deploying this set of investigative techniques at the Veterans Affairs chain of hospitals in 1999 (Heget, Bagian, Lee, & Gosbee, 2002; Iedema et al., 2008). In the UK, RCA was adopted in 2000 by the Department of Health, and gradually was promoted more widely as the NHS's primary method for organisational learning (Nicolini et al., 2011). As of 2006, more than 8,000 NHS staff were trained in RCA (Nicolini et al., 2011).

There is consensus among the literature that RCA is a device for both systems analysis and organisational learning (Iedema et al., 2008). The National Patient Safety Agency (2004) describes RCA as a structured investigation process which utilises tools and techniques to identify the true cause of an incident, by understanding what, why and how a system failed. Analysis of these system failures and true causes enables targeted actions to be developed and implemented which aim to reduce likelihood of recurrence. The process is intended to be objective and identifying specific individuals as responsible for error is not a goal of RCA.

RCA investigations are conducted in stages (see table 2.2 Stages of RCA), and analyse the underlying causes, and environmental context in which an incident happened, by looking beyond merely the individuals involved and taking a systems analysis perspective.

Table 2.2 Stages of RCA (Adapted from National Patient Safety Agency, 2004).

	Stages of RCA
1	Identifying which incidents should be investigated;
2	Gathering the information;
3	Mapping the events;
4	Analysing the information;
5	Barrier analysis;
6	Developing solutions and an action plan for implementation;
7	Completing a report.

RCA investigations are retrospective and include bringing together a multidisciplinary investigation team to identify the sequence of events working backwards from the time of incident; the goal being to reveal the actual cause(s) of the incident so that learning can occur and recurrences prevented through implementation of corrective action and improvements.

As found by Nicolini et al. (2011), in their study investigating how RCA practices and procedures are undertaken at two hospitals in the NHS, RCA is a 'tool box' of up to 40 techniques for the investigation team to use, rather than a single method for incident analysis. NPSA (2004) suggests RCA investigation teams focus on the following techniques *"barrier analysis, brainstorming, brain writing, change analysis, five whys, narrative chronology, nominal group technique, tabular timeline,*

time person grid, and simple timeline" (Nicolini et al., 2011, p. 218).

RCA Benefits

Given the rising prominence of RCA for investigating clinical incidents among the global healthcare community (Nicolini et al., 2016), one would assume RCA is an effective tool at improving patient safety. There seems to be a respectable number of research findings which demonstrate the positive attributes of RCA for healthcare.

As highlighted by Nicolini et al. (2011), RCA aids healthcare professionals in developing a safety sensitive viewpoint, through enabling a dedicated space for structured reflection among investigation team members, enabling a time for reflection on their practices. Another benefit stems from the development of a stronger commitment to safe practices via the simple act of increasing the number of people, through forming an investigation team, involved in the direct management of clinical incidents.

Waring & Currie (2009) learned that following the presentation of RCA recommendations, a hospital's risk management committee gained valuable insight into various risks which helped to bring about worthwhile change. For example, as it pertained to a trend of patient falls occurring on a ward, the committee learned about a range of factors influencing this trend and were able to develop new parameters for the monitoring of these patients.

An analysis of RCA practice in a chemical plant by Carroll, Rudolph & Hatakenaka (2002) presented a number of interesting findings that are transferrable to, and could benefit the healthcare industry. First, it was discovered RCA led to a change in culture that resulted in more trust and openness among staff, and was found to nurture more disciplined thinking about problems in the organisation. Second, as a result of this disciplined thinking, RCA team members learned to acknowledge the relationships between causes of accidents, observe interactions between different components within the system, and sought more than one cause when explaining an accident. Third, the formation of a multidisciplinary team, enabled individuals to become aware of any taken for granted assumptions they might be hanging onto. Perhaps most importantly, it was found that RCA can facilitate a more open safety culture (Department of Health, 2001; Leape et al., 1998)

RCA Limitations

Despite the widespread adoption of RCA in healthcare institutions, conclusive evidence of its effectiveness as an investigative practice for improving the safety of healthcare has not yet been produced (Iedema et al., 2008). Wu, Lipshutz &

Pronovost's (2008) study analysed use of RCA practice in US healthcare and found that there are fundamental challenges to translate RCA recommendations into real service change.

Nicolini's et al. (2011) findings suggest RCA is highly problematic and urged alternate ways for policy makers and organisations to address RCA's failure to contribute to persistent learning or change. Key criticisms included RCA's tendency for closure rather than systemic inquiry, lack of orientation towards managing change following publication of recommendations, and that both analysis of problems and scope of potential learning were tightly bound to the local level (Nicolini et al., 2011).

This results in RCA becoming too narrowly focused on the facilitation of an arbitrary process of investigation and recommendations, leading to a lack of accountability when ensuring the prescribed recommendations lead to service improvements. It is implied by Nicolini et al. (2011) that this gap results from RCA supporting a problem-driven view, which is linear and cognitive in nature and does not consider the organisational, political and emotional challenges to implementing improvements, such as the 'hierarchical challenge' or affective consequences, and thus falls short.

Iedema, et al. (2008) describe how senior health managers felt RCA recommendations were a burden to complete, of variable quality resulting in more work for senior management to revise or replace them, and viewed as having limited impact on organisational performance. Of the nine managers they interviewed, only one was positive about having been able to implement the RCA recommendations.

The findings of Carroll's, et al. (2002) study of RCA in a chemical plant were not all positive. It was generally felt that overall quality of RCA analysis was dependent upon information being input into the process, this was found to be problematic as people by nature choose and interpret data to support certain biases, opinions and to satisfy certain audiences in the organisation who hold power, in other words political hijacking (Peerally et al., 2016)

Several recent studies have suggested RCA engenders a culture of blame, rather than a culture which supports organisational learning (Currie et al., 2014; Nicolini et al., 2011). A culture of blame, as mentioned in Waring (2005), represents an environment where, people, due to long standing assumptions they will be considered at fault, held independently responsible and punished for the incident, are hesitant to be honest and transparent about their experiences of error.

Unfortunately, a culture of blame, engendered through RCA, would seem to make employees hesitant to speak-up, out of fear of repercussions. Thus prosocial

employee voice, beneficial for improvement and learning, is inhibited (Morrison, 2011). Therefore, blame culture might be found as a condition leading to a climate of silence, where employees feel that speaking up about problems is dangerous or futile (Morrison & Milliken, 2000). This could have serious implications for the prevention of further patient safety incidents, particularly where such a climate might harbour 'defensive silence' among employees. Defensive silence involves the withholding of information from those in positions of power, it's proactive, involving a conscious decision to withhold opinions, information, and ideas, due to fear of negative consequences (Pinder & Harlos, 2001).

We might conclude a summary of the limitations of RCA with a quote that encapsulates several of the problematic areas of RCA: *"Pursuing facts and digging out causes is difficult, confusing, time consuming, annoying, uncertain, and politically hazardous*" (Carroll, et al., 2002, p 268).

RCA Summary and Ideas for Improvement

In light of the critical and largely negative view of RCA seen in recent studies one could conclude healthcare has adopted a highly problematic bundle of methodologies. Despite the wide reach of RCA adoption, questions about whether, and how the practice can improve patient safety are largely unanswered.

Given what is known about RCA, it is easy to question how and why the practice has become so popular in healthcare today. A large part of the answer stems from the practice's framing as an "anxiety-reassurance" package (Nicolini et al., 2016), which health policy makers in the Western world have acquired, to address the growing patient safety movements, in their own countries.

In fairness to the practice of RCA, one might wish to step back and place RCA within the larger context of the healthcare system. The data collected in the studies of RCA examined are largely provided by managers and clinical hybrid-managers, who are arguably struggling with rising complexity in their own organisations (Baker, 2001), reflecting an increasingly sensitive publicly and politically charged environment. As countries like US and the UK struggle under tightening budgets, cuts to services, changes to healthcare programs are common. One could argue, the tremors from these changes are felt adversely by managers and clinicians running our healthcare institutions, and negative feedback, opinions and perspectives on programs such as RCA, are simply a reflection of broader trends in the system.

Another consideration might be the acknowledgement that RCA, as a practice, is trying to do too much. Take for example Iedema, et al.'s (2008) description of the practice: *"RCA should lead to horizontalised workplace relationships,*

liberalised scrutiny of clinical expertise, disciplines and practices, and democratised views of the kinds of recommendations that can be formulated" (p. 573). Given these idealised outcomes, how can we reasonably ask health system managers, in an environment of increasing complexity (Baker, 2001), to pursue all of these outcomes using a practice which has been proven to fail at much of what it sets out to do.

Conclusion

This chapter drew upon foundational cases from the patient safety field to frame the implementation gap as perpetuated by two issues which healthcare professionals must grapple with as they encounter and recover from medical error. First is the hierarchical challenge, cultural barriers between professions which can inhibit communication. The cases demonstrated how there is often a lack of voice enacted between healthcare professionals of varying position, patients, and their families. Further, the voices of lower-hierarchically professionals may be rendered futile when concerns are not acted upon by higher-positioned professionals. Next, resulting from the occurrence of tragic medical errors, the second victim phenomenon was found, where healthcare professionals are adversely affected by their involvement in medical error.

Examples from both the UK and US were highlighted as having significantly contributed to the patient safety movement in their respective countries. This movement, leading to the adoption of a formalized investigation procedure known as root cause analysis (RCA) was discussed. The benefits and limitations of this investigative technique were described, including a summary, and ideas for how RCA might be improved in the future.

To analyse the hierarchical challenge and second victim phenomenon identified in this chapter, and frame the study, the next chapter draws upon literature from the organisational behaviour field, specifically employee voice, as a sensitising concept to explore how these challenges might be moderated.

In Chapter 3, to understand the intricacies of professional dynamics pertaining to patient safety, including power, culture, and status which vary by hierarchical position, this study draws upon employee voice to explore potential contingencies which might moderate the 'hierarchical challenge' and incorporate second victims. First the employee voice literature is reviewed generically, before specifically examining it within the context of patient safety and the implementation gap.

Chapter 3: Employee Voice: Organisational Dynamics and Psychological Processes

Literature Review Part II

Introduction

The role of professional power, status, and culture has been highlighted in the previous chapter through review of historical cases of patient safety failures. The gap in implementing improvements following medical error and RCA investigation was framed as a hierarchical challenge between healthcare professions. Given the emphasis upon barriers in communicating between groups of varying status and hierarchical position, this study lays a theoretical foundation based on the premise of employee voice as a means to attenuate this challenge.

Employee voice, defined as the: *"discretionary communication of ideas, suggestions, concerns, or opinions about work-related issues with the intent to improve organizational or unit functioning."* (Morrison, 2011, p. 375), is a rich phenomenon of interest in the organisational sciences (Brinsfield, Edwards, & Greenberg, 2009). Employee voice as a construct is not only about whether employees speak up, but whether they remain silent.

The goal of this chapter is to advance our understanding of organisational dynamics and psychological processes which can moderate the 'hierarchical challenge' to promote voice and address the implementation gap. The affective impact of medical error on healthcare professionals, known as 'second victims' (Wu, 2000), is explored as a moderator of formal hierarchy which inhibits voice behaviour.

This chapter is organised in two sections. Section one – Building the foundation: includes a brief historical review of the voice literature including short examples from safety sensitive industries other than healthcare. Next, a general exploration and definition of current conceptualizations of employee voice, including work on organisational silence and climate, is described. Part one is rounded out by connecting the relevance of employee voice to the context of patient safety.

Section two expands upon the construct in greater detail, emphasizing employee voice as a multidimensional construct with numerous antecedents organised under two main headers: organisational dynamics and psychological process.

Organisational dynamics include professional organisation of healthcare workers, team leaders and multi-professional action teams, and work context. Psychological processes which impact upon voice behaviour include leader and employee cognition, formal power, the affective impact of medical errors, and psychological safety.

This chapter concludes with a summary of the topics covered and leads into chapter 4 research design and methods.

Section One – Building the foundation

Historical Context

To introduce the historical significance, provide context, and highlight the relevance of employee voice to safety sensitive environments, consider the following examples, where voice was not heard, silenced prevailed, and disaster ensued:

- On December 28, 1978 United Airlines flight 173 crashed near Portland, Oregon in a wooded area, seriously injuring 23 people and killing 10. The National Transport Safety Board's investigation found that the plane's flight crew had failed to escalate concerns regarding critically low fuel levels to the captain (NTSB, 1979).
- In April 14, 1994, two US Army Black Hawk helicopters were shot down by US Air Force F-15s over a Northern Iraq no-fly-zone, in one of the worst air-to-air friendly fire accidents in military history (Snook, 2002). While no single cause was identified, hundreds of hours of investigations by different teams identified over 130 different mistakes as contributors to the friendly fire, including visually misidentifying the helicopters (Leveson, Allen, & Storey, 2002). The US military's tall and complex hierarchical control structure explains the lack of co-ordination, whereby helicopters and F-15s engaged in separate communication channels, which only join high up in the hierarchy, at the commander level, thus the pilots made no efforts to communicate.
- On February 1, 2003, as it re-entered the earth's atmosphere the Space Shuttle Challenger broke apart, killing all seven astronauts aboard. The investigation into this accident found that communication of important engineering-related concerns had been blocked by NASA's tall hierarchy and complex organisational structure which silenced people, overlooked signals, and kept critical dissenting views and critical information from being heard and acted upon (National Aeronautics and Space Administration, 2003).

While these examples demonstrate the extreme effects of silence among employees, everyday there are instances, albeit less severe, of people who are afraid to speak up in their place of work. And while less head-line grabbing than instances of disaster discussed here, the decision to be mute about issues at work can result in serious negative consequences, for both the employee and their organisation.

To demonstrate how concepts of employee voice and silence originated and developed over time in organisational research, a brief historical review covering key

points from this field is presented.

Research into employee voice can be linked back to Hirschman's (1970) book *Exit, Voice and Loyalty,* which focused on customer dissatisfaction in organisations and how voice was one possible response available to them. Customers could voice their complaints to management as an active attempt to instigate change.

The MUM affect, proposed by Rosen and Tesser (1970), is another foundational piece of the early employee voice field. Keeping MUM (Mum about Undesirable Messages) explains employees' reluctance to voice negative information because of the discomfort associated with doing so. This discomfort is thought to stem from factors such as damaging relationships with the recipient (Morran, Stockton, and Bond, 1991) and feeling guilty about not sharing the burden with the recipient (Rosen & Tesser, 1970). This work has kept its relevance in recent times, identified as one possible explanation for why employees fail to speak up about problems encountered in the workplace (Milliken, Morrison, & Hewlin, 2003).

Whistle-blowing, another foundational construct, came into significance during the early 1980s when government and corporate scandals were a pressing topic. This led researchers to explore how employees make decisions about reporting unethical behaviour in organisations. This interest coincided with increasing public attention to the role of ethics in business, and whistle-blower protective legislation in the US (Brinsfield et al., 2009). While similar distinctions between voice and whistle-blowing can be made, voice is discretionary communication with an aim to positive change, while whistleblowing is criticism intended to stop negative, often extreme activity, defined as disclosure by organisational members of perceived organisational wrong doing to authorities, who can take action (Near & Miceli, 1985). The increasing research on whistleblowing found that organisational culture, and the nature of the perceived wrongdoing, have a greater influence on whistle-blowing than do individual characteristics (Brinsfield, et al 2009).

This earlier research, specifically whistleblowing, was primarily focused on speaking-up behaviour, what went unexamined were factors associated with failing to speak-up. The work of Peirce, Smolinski and Rosen (1998) which explored sexual harassment complaints in organisations, has been credited (Brinsfield, et al. 2009) with prompting researchers to evaluate in a more focused way, the factors where employees remain silent about critical organisational issues.

Since these earlier works, silence has emerged as a burgeoning phenomenon of interest in the organisational sciences with a special issue of the *Journal of Management Studies* (Morrison & Milliken, 2003) focused on this topic. This increase

in interest reflects the idea that silence has meaningful implications beyond simply the absence of voice.

Employee Voice a Multi-Dimensional Construct

While some researchers in the past have argued voice and silence are separate constructs (Brinsfield et al., 2009; Detert & Edmondson, 2011; Kish-Gephart, Detert, Trevino, & Edmondson, 2009), this research adopts Morrison's (2011) argument that voice and silence should be integrated under a single theoretical construct: employee voice. However, this review does not suggest that voice, the expression of ideas, is the opposite of silence, the intentional withholding of ideas (Van Dyne, Ang, & Botero, 2003), as such employee voice is a multi-dimensional construct.

This distinction is important when considering that silence does not always mean the absence of voice. To explain further, understanding what an actor's motive is for speaking up, vs withholding ideas about work related improvements, is a key feature that differentiates these behaviours. For example, researchers propose that employees who withhold information might be doing so out of cooperation, or for altruistic reasons, describing this as prosocial silence (Van Dyne et al., 2003). Further, actors might withhold information for self-protective reasons based on fear or keep quiet based on resignation.

A multi-dimensional perspective on employee voice is justified for this study, given failures to speak up are a common cause of many medical errors, and improvements to employee communication are commonly recommended (Toft & Reynolds, 1997). As such this researcher acknowledges that employee voice is both an antecedent for medical error (i.e. choosing not to speak-up), and a potential outcome of medical error (i.e. changing practice to be more assertive).

Morrison and Milliken (2000) introduced the term organisational silence, which moves beyond individual level motivations for speaking up (such as those covered by whistleblowing), to consider collective-level phenomenon that help us understand widespread withholding of information, opinions, or concerns by employees about work-related issues or problems. The emphasis is not on why employees as a collective do not choose to speak up, but rather, why they intentionally choose to remain silent.

Considering collective-level influences upon an actor's decision to voice or remain silent, environmental conditions, referred to as group climate, are known to weigh upon this decision. A 'climate of silence' is thought to play a key role in

sustaining organisational silence, while a 'favourable voice climate' encourages speaking up. Morrison and Milliken (2000, p.78) define climate of silence as:

> *"widely shared perceptions among employees that speaking up about problems or issues is futile and/or dangerous. When such a climate exists, the dominant response within an organization will be silence, rather than voice"*

Thus where a climate of silence is present employees will feel that speaking up about problems is not worth their effort, and a dangerous activity which can invite retaliation. As suggested by Morrison and Milliken (2000), the development and maintenance of a climate of silence stems from organisational and contextual conditions which include the personal characteristics of employees and managers, characteristics of senior management teams, communication practices, organisational structures and policies (Morrison & Milliken, 2000). These conditions are addressed in greater depth in the next section, defining employee voice. In Section II, the connection between climate and psychological safety will be introduced.

Given the shared nature of climate it's important to consider not only individual attitudes and perceptions, but also how voice could be shaped by group-level beliefs. As suggested by Morrison, Wheeler-Smith, and Kamdar (2011), research combining the individual and group levels of analysis is required for a fuller understanding of voice, given numerous studies (e.g. Lindell & Brandt, 2000; Naumann & Bennett, 2000) which evidence employee behaviour as shaped by shared perceptions, beliefs and states, that exist at the group level, and not only individual conditions.

Collective level beliefs have been shown to shape voice within work groups (Morrison & Milliken, 2000). Employees in work groups engage in more pro voice behaviour when their group is distinguished by shared beliefs that it is worthwhile, and safe to communicate concerns, suggestions, and opinions (Morrison et al., 2011). This is also known as a "favourable voice climate" (Morrison, 2011, p. 388).

Group voice climate has been found to be shaped by shared beliefs about safety and efficacy developed through 1) social interactions, 2) leadership behaviour (Detert & Treviño, 2010), and 3) by vicarious learning and salient events in the history of the group (Milliken et al., 2003).

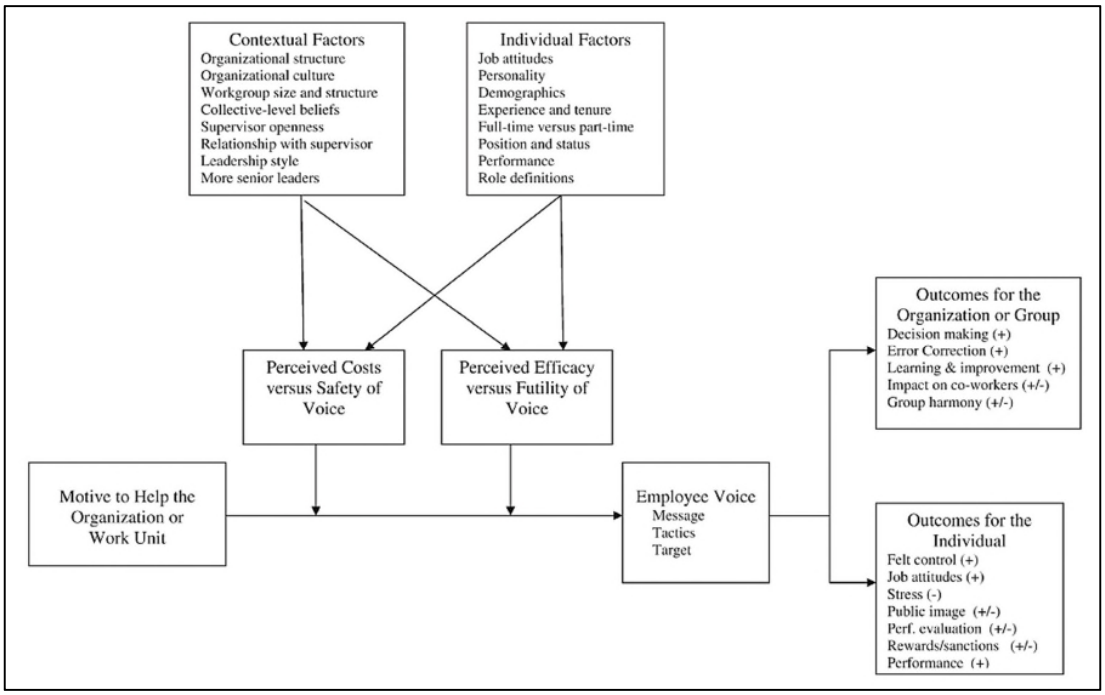
While Morrison and Milliken (2000) focused on the collective absence of voice, a climate of silence, there is merit in examining the concept more broadly to include the full continuum of beliefs about the safety and efficacy of speaking up (Morrison et

al., 2011). This would include for example those beliefs which promote voice behaviour.

The Process of Employee Voice

Voice is a prosocial form of constructive employee behaviour intended to help the organisation or work unit perform more effectively, or to make a positive difference for the collective (Morrison, 2011). Morrison's Model of Employee Voice (2011), Figure 2.2 below, helps to explain why some employees speak up while others remain silent. This section will define the elements of the employee voice construct outlined in Figure 2.2 with relevance to this study, including motives for and against, predictors of, and consequences of voice.

Figure 2.2 Morrison's Model of Employee Voice (Adapted from Morrison, 2011)



An employee deciding to voice faces a deliberate process whereby they consider both positive and negative consequences of their decision, based on two key outcome-related judgements (Ashford, Rothbard, Piderit, & Dutton, 1998; Detert & Burris, 2007; Morrison & Milliken, 2000). The first is whether speaking up is likely to be effective, referred to as the *perceived efficacy* of voice. Second, what are the possible negative outcomes or risks associated with speaking up, referred to as the *perceived safety* of voice. Therefore, voice behaviour relies on *"an expectancy like calculus"* (Morrison, 2011, p. 384) of expected success vs relative costs and benefits.

Voice is more likely as the expected risk of speaking up vs the expected benefits of doing so, decreases. Voice will also be more likely as the probability that one's efforts will be effective in fixing a problem, or bringing about improvement, increases. The opposite is true for silence, when one perceives that their speaking-up is likely to be futile, maybe because they have witnessed others who spoke up being ignored, they are more likely to stay quiet.

The process of deciding whether to voice is not entirely cognitive and emotions can also play a role. Judgements about negative repercussions can extend above calculation of risk and could be experienced as fear, which can bypass deliberate decision making (Detert & Edmondson, 2011; Kish-Gephart et al., 2009; Morrison & Rothman, 2009). Socially acquired beliefs about the risk of voice in social hierarchies, such as those that exist between and within healthcare professions, can also play a role (Detert & Edmondson, 2011).

As shown in Figure 2.2, there are a wide variety of conditions which predict employee voice behaviour these have been classified as contextual or individual, and are reviewed briefly below.

Hierarchy & Status

A prime contextual condition for voice is the formal organisational structure. In particular voice is shown to be restrained by hierarchy. Research has found that employees are more reluctant to relay negative information to individuals in higher status positions (Athanassiades, 1973; Roberts & O'Reilly, 1974).

Studies show that employees of lower status or hierarchical position feel they would be sanctioned for speaking up, that their input would not be taken seriously, or their voice would be perceived as inappropriate (Detert & Edmondson, 2011; Morrison & Milliken, 2000; Morrison & Rothman, 2009; Pinder & Harlos, 2001). Healthcare's professional hierarchy could be particularly susceptible to this restraint on voice. Specialist doctors are viewed as having the most power, intra-professionally viewed as higher status than generalist doctors, and inter-professionally nurses and other clinically affiliated professions, are seen as subordinate to doctors (Abbott, 1988; Freidson, 1974, 1988).

Team leaders and Psychological Safety

The behaviour of an employee's immediate supervisor is one of the most important predictor of voice behaviour. Supervisors are frequently the target of voice and often have power over the outcomes (Morrison, 2011). For example, Surgeons who led cardiac surgery teams, were found to have encouraged voice among team members (nurses and other doctors) by downplaying power differences and engaging

in coaching behaviour (Edmondson, 2003).

The way employees perceive their supervisor plays a significant role in effecting the frequency of voice behaviour. Supervisors and team leaders can create opportunities for voice through informal and formal voice mechanisms which influence the employee's thought process when deciding whether to speak up (Ashford, Sutcliffe, & Christianson, 2009). The more supportive and open the relationship is between employee and supervisor the more positive the employee's perception becomes that it is safe and worthwhile to speak up, creating a climate of psychological safety which promotes voice behaviour (Detert & Burris, 2007; Edmondson, 1999, 2003; Morrison, 2011)

Individual Conditions

While there are many individual level conditions that could contribute to voice behaviour, organisational tenure, work status, and position were found to relate positively. One study found that employees indicated their lack of tenure at the organisation, or inexperience, as a reason for keeping silent (Milliken et al., 2003).

Work status relates to whether an employee is full-time or part-time. Full-time employees could be more likely to voice than part timers, given they view employment relationships more in social than economic terms, making them more motivated to engage in discretionary behaviours, and because they often have higher social status then part-timers (Stamper & Van Dyne, 2001). The relevance of work status is highly relatable to healthcare environments, where it's not uncommon to have department and team rosters consisting of part-time, agency, community, as well as full-time staff.

Content, Target, and Motive of Voice

Rounding out this explanation of figure 2.2, attention must be paid to not only the possible risks and efficacy of voice, but also looking more holistically to include the *content* of what is being voiced, the *target* of that content, and the *motive* for voicing. As suggested by Brinsfield *et al.* (2009) voice and silence have been examined from varying perspectives, resulting in different conceptualizations and definitions, and thus we might attempt to distinguish three key elements to focus and clarify further research on this topic.

Content relates to trying to understand exactly what is being spoken about or kept quiet. Few studies involving voice had been specific in their definitions of voice content. One study (Milliken et al., 2003) explored issues that employees were unable to raise with their supervisor. These included concerns about the competence, or performance, of colleagues and supervisors, concerns about pay or pay equity, personal career issues, ethical or fairness issues, and harassment or abuse.

Target is important for consideration of who is on the receiving end of voice behaviour and whether, as is most often the case, that individual is the recipient of upward communication.

The concern here is understanding the direction of information flow. It is reasonable to consider an employee's decision to voice or remain silent influenced in part by what targets are available to them. Identifying the target of voice, for example, helped whistle-blowing stand out from more general concerns about inappropriate behaviours, referring to targets as *"parties who may be able to effect action"* (Near and Miceli, 1985, p. 525). Noting the direction of voice is useful and applicable to hierarchically challenged environments, like healthcare, where lower status professionals struggle to speak upwards, and lateral inter-professional communications is often key to sharing sensitive safety information.

Further, as is discussed in next section on organisational dynamics, team leaders play a significant role in encouraging upwards voice by employees, suggesting this interaction might be cyclical (Ashford et al., 2009). As explored in the latter section on psychological processes, affective states of leaders can influence employee upward voice (Liu, Song, Li, & Liao, 2017).

Motive for speaking up, or keeping quiet, is also important to consider when attempting to understanding the purpose and intent of one's voice behaviour. While the motives underlying voice are complex and varied, especially in the case of silence, they can be illusive (Milliken & Morrison, 2003). Those researchers who did describe motive for voice tended to classify it as: forcing a change (Hirschman, 1970), improving the situation at work (Withey & Cooper, 1989), improve rather than merely criticizing (Van Dyne & LePine, 1998) and influencing organisational actions (Banerjee & Somanathan, 2001).

In the context of patient safety, it's arguably the patient who has the most to lose from healthcare professionals remaining silent, and thus might play a role in some fashion, as a motivation for professionals to speak-up.

The Relevance of Voice to Patient Safety

Failures of communication were the leading root cause of serious medical errors reported to the Joint Commission in the United States of America between 1995 and 2006 (World Health Organization, 2007). During this time, communication errors were the leading cause of medication errors, delays in treatment, and wrong-site surgeries. Among Surgeons, lapses in communication were found to be a significant contributor to adverse patient consequences and inefficiency (Williams et al., 2007).

Given the high prevalence of miscommunication as a leading cause of medical error it might be assumed strong historical links exist between theory of employee voice and patient safety research, however, this does not appear to be the case.

Recent notable exceptions which integrate these literatures are: Tarrant, Leslie, Bion, & Dixon-Wood's 2017 study of speaking out about patient safety concerns in intensive care units and Martin et al.'s 2018 research on whether formal reporting channels encourage or inhibit voice. While the former explained three forms of 'speaking out' as social controls which helped prevent or address mistakes and maintain safe practice, it does so at a high level, across many wards, without linking to more detailed aspects of patient safety including the role medical errors, investigations, and second victims, might play in stimulating voice behaviour of professionals.

The later study, while finding formal channels may inhibit staff from speaking up, similarly avoids addressing these aspects of patient safety including second victims and affect.

While not specifically linked to theory of employee voice, there are several key articles from the patient safety oriented 'speaking up' literature which are useful for this discussion. First, Bleakley (2014) revisits the ancient Greek notion of parrhēsia, translated as 'truth speaking'. The parrhesiastical act of speaking one's mind in the presence of authority is an act of courage, which seeks to alter relations of power, and is more than simple assertiveness.

This combines with work by Bleakley, et al. (2013) which found miscommunications among operating theatre teams resulted from 'monological' rather than 'dialogical' climate set by the lead surgeon. Dialogical climate facilitated an exchange between professionals, whereas monological climate tended to support one-way communication. This work suggested those enacting parrhēsia might be frustrated where monologue is the dominate form of communication, however as climate improves through collaborative teamwork, it can emerge as a strength and powerful type of communication within an open team.

Next, Maxfield, et al. (2005) explored communication difficulties between healthcare professionals that could contribute to medical error. Their study of 1,700 respondents found less than one in ten raised issues with their co-workers when witnessing something concerning. Most of the respondents felt that it was neither their responsibility to call attention to concerns nor that their intervention would be effective. Of the around 10% of professionals who did raise an issue they observed better patient outcomes, were found to work harder, and were more satisfied than

their peers (Maxfield, et al., 2005).

Two further studies worth noting include, first, Edmondson (2003), who focused on implementation of new technology in operating rooms, found team leaders (surgeons) facilitate speaking up, and that ease of speaking up promotes successful implementation of new practices. Second, Weiss, Kolbe, Grote, Spahn, & Grande (2016), investigated effects of after-event review (AER) following simulated scenarios, found nurses were more likely to speak up to higher status team members after participating in a assertiveness specific AER. No voice studies to the knowledge of this researcher have focused on medical error, and what influence these traumatic events, and resulting RCA investigations, might have on healthcare professional's decision to voice or remain silent. It is surprising that no study to date has considered the role of employee voice in relation to patient safety incidents and what role the corresponding affective aftermath of such might play in influencing voice behaviour.

Despite efforts to improve communication there is evidence showing healthcare professionals who are aware of problems, remain hesitant to voice their concerns, and are either ignored, or do not speak up at all (Cosby & Croskerry, 2004; Pronovost, 2010). This is because they are afraid, want to avoid conveying unwelcome ideas, and by normative and social pressures which exist in their group (Okuyama, Wagner, & Bijnen, 2014). Hesitancy or failure to speak up could also be caused by excessive professional courtesy and disproportionate authority gradients (Okuyama, et al, 2014).

While explored in-depth in Chapter 2, historically significant healthcare scandals are highlighted again briefly. The case of Josie King (2001), the Bristol Royal Infirmary (1981-1995) and Mid Staffordshire (2005-2009), all resulted in inquiries which found that inadequate communication played a role in medical negligence. Josie King's tragic death while in the care of John's Hopkins Children's Centre highlighted that silence in healthcare has a high cost, when medical staff did not listen to Mrs. King's concerns about her daughter's deteriorating condition (Ayd, 2004). In the case of Bristol, processes of behavioural commitment by surgeons shaped interpretation, action and minimized cross-specialty communication (Kennedy, 2001; Weick & Sutcliffe, 2003). The Francis Inquiry found the Mid Staffordshire NHS Foundation Trust Board did not listen sufficiently to its patients and staff, or ensure the correction of deficiencies brought to their attention (Francis, 2013).

Given failures in communication are so commonly cited as the cause of medical error, it's not surprising to see many recommendations for improvement are based around improving communication. Research from other fields has shown that

improving communication, for example, enhancing communication of information between individuals, departments, and or organisations and the wider public, is one of five sets of core recommendations common to most disaster inquiries (Toft & Reynolds, 1997).

However, as examined in chapter 2, recommendations for improvement are difficult to implement, and hospitals rarely learn from their failures. Thus, by dedicating this research to build a deeper and more comprehensive understanding of employee voice behaviour in the context of patient safety, a model was developed (See Chapter 9: Discussion, Figure 9.3) and can be leveraged for further research and practice, to promote speaking-up in safety sensitive contexts, to prevent errors.

As a next step in reviewing the subject, section 2 of this chapter explores employee voice as a multi-dimensional construct, describing the details of each dimension.

Section Two – Organisational Dynamics and Psychological Processes

Both organisational dynamics and psychological processes are involved in voice and silence in organisations (Greenberg & Edwards, 2009). While the field of employee voice research is highly fragmented with constructs developing at different times and rates, resulting in a greater historical emphasis on voice than silence (Edwards & Greenberg, 2009). This research with its multi-dimensional approach, aims to bridge this gap by bringing together these related constructs under a single framework, in line with Morrison's (2011) call to integrate the field as: employee voice.

This study's empirical context of healthcare, specifically dealing with patient safety and medical errors, is a rich setting from which organisational and psychological conditions that influence employee voice can be observed given the highly professionalised and hierarchical nature of the work, and strongly correlated relationship between medical error and affective experience.

Climate, which is shown to influence voice behaviour is thought to be shaped by both organisational, such as the behaviour of team leaders, and psychological conditions, such as perceived power, shared beliefs, and affective experiences resulting from salient events (i.e. medical error) in the history of the group.

In exploring this topic, a review of two major professions: doctors and nurses, is chosen to explore variances in professional organisation, power dynamics, and affectivity. A goal of this review is to lay a foundation which integrates how organisational contextual conditions interact with psychological processes in affect and cognitions, to influence employee voice behaviour.

Organisational Dynamics

Organisational dynamics refers to contextual organisational and social features which weigh upon the deliberate process employees face in their decision to speak-up. Socially acquired beliefs about the risk of voice in social hierarchies, such as those that exist between and within healthcare professions are also known to influence this decision (Detert & Edmondson, 2011). Presented is a review of how employee voice is influenced by the hierarchy of prominent healthcare professions, doctors and nurses, which emerges through professional organisation, power, status, and culture.

Power dynamics exist among the healthcare professions which perpetuate cultural barriers, and create a hierarchical challenge in communication (Senot et al., 2016). Specifically, drawing on employee voice literature which emphasizes constructive challenges (Van Dyne et al., 2003), this review aims to establish that within a hierarchy of professions, both those at the top and those at the bottom, are part of an interplay which dictates employee voice behaviour. It is acknowledged that decisions to speak-up must consider both the professional speaking up, as well as the target, often vertically of higher power and status, while also considering horizontal voice within professions.

Next the role of team leaders in facilitating or inhibiting employee voice behaviour is discussed, with emphasis on doctors as leaders of multi-professional action teams (Edmondson, 2003; Weiss et al., 2016). We begin this discussion with an introduction to how two of the dominant healthcare professions, doctors and nurses, are organised to set the stage about variances in power, status, and culture, as it relates to employee voice.

Professional Organisation: Doctors and Nurses

Defining oneself as a professional seems to depend on the degree of occupational autonomy one possesses, and ability to exert control over the labour process (Freidson, 1974, 1988; Larson, 1977). Professional autonomy and control have historically depended upon possession of specialised knowledge and an ability to abide by occupational norms without direct supervision. Professional claims to autonomy and control in healthcare can become strained when working with others of varying hierarchical position and status as part of a team. Thus teamwork is found to heighten occupational status differences, rather than unify them (Finn, 2008)

Because of differences in professional norms and knowledge, doctors and nurses, interdependent groups, hold different views about patient treatment, illness, and recovery. This leads to questions about whose judgement is most legitimate. The

hierarchical position of the professionals, and the nature of their relationships on the ward, are thought to be most dominant considerations shaping the nature and outcome of routine negotiations on the hospital floor (Strauss et al., 1963).

Drawing on Apesoa-Varano & Varano's (2014) ethnographic study of a US hospital, with 110 interviews and 2,700 hours of participant observation, professionals were found to be identified by three dimensions: knowledge, occupational norms, and team work. Aspects of these dimensions are explored in the following section for both doctors and nurses.

Doctors

Doctors are traditionally viewed as having the most power, with specialists seen as higher status than generalist doctors, while nurses and other clinical professions are viewed as subordinate to doctors (Abbott, 1988; Freidson, 1970, 1988). While doctors are thought to hold a position of authority in hospitals (Wolinsky, Howard, & Brune, 1994), the nature of their medical authority has eroded somewhat, becoming tenuous over time (Rodwin, 1993, 2011). This development stems from controversies which started in the second half of the twentieth century with physicians facing criticism for lacking a commitment to common good or ethics (Rodwin, 1993). Since this time, the public has become increasingly sceptical of the professionalism of physicians, although there are examples of patients who express confidence in their personal physicians (Starr, 1982). Thus, the public still holds substantial respect for physicians, but the ideal of an ‘all mighty doctor’ (Starr, 1982) is increasingly questioned as seen in continuing demands for second medical opinions.

As found by Apesoa-Varano and Varano (2014), ‘being competent’ and being a ‘good doctor’ were often equated with professionalism by today’s doctors. The ideal of a ‘good doctor’ involved not only technical efficacy in translating abstract medical knowledge into effective interventions, but also being morally competent. This moral dimension held importance given symbolic power and reputation at stake when this moral competence is in doubt by other professionals and patients, in the hospital.

A doctor’s moral character could be thought of as part of their occupational norms which guide their personal conduct and presentation of self. The patient doctor relationship regularly involves an imbalance of knowledge, power, and vulnerability, necessitating the need for high moral & ethical standards, and external regulation and governance. This governance has traditionally been in the form of codes of ethics such as the Hippocratic Oath sworn by doctors to “Do no Harm”. Over time, and in large part due to public pressure, governance of healthcare professions has

transferred to bodies such as the UK's General Medical Council and US's American Medical Association which set forth codes of ethics for their members to abide by.

> *"It is a fundamental ethical requirement that a physician should at all times deal honestly and openly with patients. … Concern regarding legal liability which might result from following truthful disclosure should not affect the physician's honesty with a patient"*
> *(AMA Code of Medical Ethics, in, Berlinger, 2005, p. 40)*

Doctors' emotional socialisation is precariously balanced between technical skills, and medical knowledge that encompass their training. Emotional aspects of medical work are thought to be internal, private, and separate, from more external, public, cognitive knowledge and technical skills (Bosk, 1986). As such, terms "affective neutrality" (Parsons, 1951) and "detached concern" (Fox, 1979) have been used to describe doctors affectivity (Hafferty, 1988). In one example, medical students are told 'cadaver stories', often involving dark humour, as a means to deal with *"rendering whole and dead human beings into largely unidentifiable pieces of tissue and bone"* (Hafferty, 1988, p. 346). Hafferty (1988) suggests these stories are part of the process of emotional socialisation for medical students. Use of humour by doctors was also found by Iedema, Jorm, & Lum (2009) who discovered young anaesthetists used it to objectify, normalise, and distance themselves from the 'horror' of medical error, this example is discussed in greater detail in the upcoming section on second victims.

Additional normative components common to doctors include: character, manners, and virtues, specifically maintaining confidence without appearing arrogant. These occupational norms characterising physicians in Apesoa-Varano and Varano's study (2014), were thought to be a way of combatting perceptions of abuses of power (Wolinsky et al., 1994). Physicians are often reconciling the negative stereotypes of their conduct, with the characteristic control and autonomy of their high powered position, with patients and other health professionals (Apesoa-Varano & Varano, 2014).

Lastly, team work was found to be an important part of being a doctor, and professionals had to find their place *"in a web of highly interrelated groups of practitioners in the hospital"* (Apesoa-Varano and Varano, 2014, pp. 24). This is difficult for doctors who must establish rapport and gain support, build trust with other professionals in the team, while acknowledging power disparity between them. Further, doctors are far more protected from the control and reach of others who they

work alongside, and it's often up to the physician to self-regulate through exercising personal self-control, diligence, and composure to measure up to their professional standard (Gawande, 2007).

Nurses

Since the modest origins of their occupation, nurses have strived towards a professionalised status by increasing educational requirements and credentials, and standardising nursing practices (Melia, 1984, 1987; Melosh, 1989; Jacobs *et al.*, 1998). This quest for recognition has stemmed from misconceptions of nursing as unskilled work, thus emphasizing the acquisition of formalised knowledge as part of the profession, rather than, as in the case of physicians, the translating of abstract medical knowledge into effective interventions (Apesoa-Varano & Varano, 2014).

This contrasts with other work which suggests nurses employ a discourse of caring that emphasises "soft skills", invoking the image of Florence Nightingale, over biomedical skills (Nelson & Gordon, 2006). Thus, nurses hang on to an ideal of emotive caring as part of their profession, while also demonstrating their medical skills and knowledge in treating patients (Nelson and Gordon, 2006).

As it pertains to occupational norms, similarly to doctors, nurses are bound by professional codes of conduct, for example the UK's Nursing and Midwifery Council provides a code which covers standards of practice and behaviour. Apesoa-Varano and Varano (2014, p. 30) found that ethics were very important for nurses, but it meant something different than for doctors, specifically being ethical is about a selfless commitment to others, suggesting professional nurses must *"put [themselves] aside for the job. You put yourself aside for the patient"*.

These findings align with contemporary nursing ideology which supports an image of nursing work established on an uninterrupted emotionally intimate relationship with the patient (Parse, 1981; Watson, 1988). However, contrary to these traditional images of nursing work, Allen (Allen, 2004) found in her review of nursing field studies over a 10 year period, that the core nursing contribution is that of healthcare mediator. Specifically, it is their role as information broker, which is of relevance here, in consideration of organisational dynamics influencing voice behaviour.

Allen (2004) highlights the importance of nurses co-ordinating role among multi-professional team members (Kneafsey & Long, 2002). Managing information flows came in the form of passing information to other professionals, making telephone calls, and building relationships with patient's families (Kneafsey & Long, 2002). Nurses were found to hold a key role in monitoring and assessing patient

needs, which were communicated to influence the work of other team members.

Nurses skill at assessing, interpreting, and communicating relevant patient information to doctors, so that they can make a diagnosis, is another major aspect of their role as information broker (Kneafsey & Long, 2002; Porter, 1995; Wicks, 1998). Further, nurses play a key role in the categorisation, and creation of patient identities, which is involved in circulating patients, to keep patient throughput in 'good shape' (Sbaih, 2002), and prioritising care and rationing resources.

Despite how nurses manage information flows among team members, some evidence suggests that doctors will receive information from nurses, and use it to make a diagnosis, but they will do so without acknowledgment of the nursing skills involved, leaving nurses out of further diagnostic discussions (Wicks, 1998). This is a theme which continues throughout the literature, suggesting power imbalances make it difficult for nurses to directly influence medical decision making.

Coomb's (2003) study of a UK intensive care unit found that while doctors seemed to appreciate nurses' detailed knowledge of a patient's condition, they did not value this in making decisions. Further, Savage (1995) described how nurses felt as if their knowledge counted for nothing when shared with doctors.

Anspach (1993) suggests it is because of the nurses' position within the social organisation of healthcare work, and the information this makes readily available to them, that disagreements can develop with different professional groups, whose position might give them access to different information flows.

Multi-Professional Action Teams and Work Context

As suggested, professional claims of control and autonomy over one's labour tend to fit awkwardly with the notion of teams, which are hierarchically structured with professionals of varying status. The result in healthcare, is a professional hierarchy based on first, the ability to claim the most legitimate judgement, and second, the development of relationships within the hospital, leading to the dominance of certain professions in patient treatment decisions (Strauss et al., 1963).

This review draws upon Edmondson's (2003) work on speaking up in interdisciplinary action teams and Weiss et al's (2016) study of voice behaviour in multi-professional action teams. In comparing these two studies, it was understood their descriptive titles were intended to represent the same thing, as such this study refers to action teams as multi-professional rather than interdisciplinary, given the emphasis here on professions: doctors and nurses.

Adopting the term multi-professional action team for this study is an acknowledgement that healthcare professionals work in a high reliability environment,

characterised by multiple teams whose members have specialised skills, must coordinate, and improvise their actions, in intense, unpredictable situations, to solve ambiguous problems (Klein, Ziegert, Knight, & Xiao, 2006; Sundstrom, De Meuse, & Futrell, 1990; Vashdi, Bamberger, & Erez, 2013).

According to Allen (1997), the unpredictable and 'turbulent' nature (Melia, 1979) of hospital work reflects the centrality of the patient, making medical work structurally non-rationalisable (Strauss, Fagerhaugh, & Suczet, 1985). It is among this setting, work fluctuates at a highly variable pace, and where emergencies are always possible, that delivery of patient care happens (Allen, 1997). Further patient care is situated among a revolving, around the clock schedule, that considers often conflicting internal and external timetables (Zerubavel, 1979). Thus, unpredictable needs of patients, along with complex temporal structures of the hospital must be considered in team work. As discussed earlier, hospital staff come from a wide range of professional groups, each with their culture, hierarchies, and career structures, further exacerbating the challenge of co-ordination.

To ground this study in practicality and improve its generalisability, employee voice is conceptualised within the context of multi-professional action teams, given their prevalence in healthcare. This action-team context enables a greater focus on team leaders, known influencers of employee voice, as an organisational dynamic.

While many action teams, such as those in professional sports teams, or airline pilots, have similar training, other action teams like those found, for example, in hospital operating theatres are interdisciplinary in nature (Edmondson, 2003). Team composition in healthcare is temporally unstable with major changes in procedures, equipment, context and members common (Weiss et al., 2016). These multiple hierarchically organised groups, or action teams, respond in a coordinated way to unexpected events, necessitating open and free transfer of information to support real-time, reciprocal coordination of action (Edmondson, 2003).

As suggested, professional differences in training, status, and norms can negatively impact team communication such as speaking-up behaviour. Communication problems result from professional differences in specialised training, terminology, and in taken for granted assumptions by professions from certain specialties (Dougherty, 1992). It's up to the team leader to help team members create shared meaning about the scenarios they encounter, as a means to see the big picture and understand how different sources of expertise fit together (Clark & Wheelwright, 1995).

It's through these shared beliefs and team leadership behaviour that group

climate develops, either positively in the form of a favourable voice climate, which is psychologically safe enough to encourage those with lower status to speak up across hierarchical barriers, or negatively, as a climate of silence, where silence prevails, because of fear of negative sanctions from those with higher status.

Psychological Processes

Psychological processes which underlie employee voice behaviour include cognitive and emotional components (Edwards & Greenberg, 2009). Cognitively, employees face a deliberate process whereby they consider both positive and negative consequences of their decision to speak up, based on whether it is safe and whether it will be effective (Ashford et al., 1998; Detert & Burris, 2007; Morrison & Milliken, 2000).

However, the judgements made by employees in deciding whether to voice is not entirely cognitive and can be short-circuited by affective experiences, such as fear (Detert & Edmondson, 2011; Kish-Gephart et al., 2009; Morrison & Rothman, 2009).

As discussed in Chapter 2, when healthcare professionals are involved in medical errors they can potentially become second victims (Wu, 2000), who experience an affective reaction that is positively correlated with severity of error (Sirriyeh et al., 2010). Thus it's anticipated that medical error as a salient, traumatic affective experience, with long term consequences for professionals and their colleagues, will influence employee voice behaviour. Emotional contagion, an implicit *"automatic affective transfer process"* (Kelly & Barsade, 2001, p.101), helps to explain how emotions and moods of individuals spread to those nearby.

Further, there is evidence to suggest those in positions of power, like team leaders, impacts not only organisational dynamics, but exerts onto psychological processes of employees when it comes to inhibiting or encouraging voice. Edmondson (1999, 2003) found team leaders can encourage speaking up by creating a climate of psychological safety in which people feel comfortable raising problems through motivating others and removing status barriers. The affective reach of those in power is further still, with leaders' affective states shown to influence upward voice (Liu et al., 2017). The dominant affective, cognitive, and behavioural tendencies of those in positions of high power, and their openness, is thought to influence subordinates decisions to remain silent about important work issues (Morrison & Rothman, 2009).

This discussion is expanded on, at the end of this section, through an evaluation of how a team's voice climate is shaped by beliefs about safety and efficacy of speaking up, developed through social interactions, leadership behaviour

(Detert & Treviño, 2010), and salient events in the history of the group (Milliken et al., 2003).

Healthcare Professionals as Second Victims

While medical error has negative consequences for patients and their families, the emotional impact on healthcare professionals, the second victims (Wu, 2000), are well documented (Croskerry, Abbass, & Wu, 2010; R. Harrison, Lawton, & Stewart, 2014; Heyhoe et al., 2016; Iedema, Jorm, & Lum, 2009; Scott et al., 2009; Sirriyeh et al., 2010). One survey of 1,463 doctors in the UK who experienced an adverse event or near miss found they reported: stress (74%), anxiety (68%), sleep disturbance (60%), lower professional confidence (63%), and 81% became anxious about the potential for future errors (Harrison, et al. 2014).

The narrative below was shared one year after killing a patient, by an anonymous doctor in the British Medical Journal, illustrating how emotionally devastating medical error can be.

> *"As I write this, the memory still makes my hands shake. The emotions are always there. But … I can function and still be an effective doctor. I no longer need the forgiveness I craved at first. I can live with my fallibility … But now I truly understand the consequences of failure." - (Anonymous, 2000)*

The above narrative highlights emotional response to error doesn't just happen in the moment, it stays with the professional, and changes over time. This can be understood in terms of a post-event trajectory which second victims progress through, consisting of six stages: *"(1) chaos and accident response, (2) intrusive reflections, (3) restoring personal integrity, (4) enduring the inquisition, (5) obtaining emotional first aid and (6) moving on"* (Scott, et al., 2009, p. 326). The period it takes a professional to move on from the event can differ, and for some the error may stay with them forever.

Once a professional reaches the moving on phase there are three potential paths: dropping out, surviving, or thriving (Scott, et al., 2009). Those who 'survive' their post-event recovery may get back to performing at expected levels but will remain disturbed by the error, while those who 'drop out' change roles, for example away from clinical duties, or they leave the organisation, and/or profession entirely.

What's not so well understood is why some professionals go on to 'thrive' in recovery from error, and experience increased performance through improved practices (Scott, et al., 2009). Bewtra (2002), a Pathologist who admitted her

"shameful error" (Bewtra, 2002, p. 22), arguably went on to 'thrive', by making amends for her mistake through successfully researching atypical medical presentations, and educating her peers (Bewtra, 2002). This example highlights that experiencing emotions, like shame, can potentially lead to increased performance via positive improvements in practice, which could, arguably, help establish conditions for voice.

As pointed out by Barsade, Brief and Spataro (2003), there has been little work on the positive effect of emotions in organisations, and especially, combined with a lack of consideration of possible positive affective outcomes of medical error (Sirriyeh et al., 2010). This study, with its intent to place traumatic affective experience as a catalyst to employee voice behaviour, can redress this gap by considering the possible positive affective outcomes of these negative traumatic events.

Generally, feelings of self-doubt, fear, anxiety, shame, and guilt are reported following medical error (Sirriyeh et al., 2010). While the extent to which the impact of medical error varies as a function of professional group, and clinical setting is not yet clear (Sirriyeh et al., 2010), with a greater proportion of studies focused on doctors, and trainees, compared to nurses, differences by occupational groups have begun to emerge.

As found by Sirriyeh et al (2010), medical errors were found to have an influence over the way nurses felt about themselves and how they work, stemming from their reflective nature in such situations. Nurses, consistently felt a personal responsibility for error, and demonstrated a commitment to reporting incidents regardless of whether they would be blamed. Doctors were consistently found to display an increased focus on the tasks necessary to manage clinical outcome of the error and professional repercussions.

One study found that specialist doctors, a group of young anaesthetists, dealt with medical error on a personal level, which enabled them to become alert to threats to patient safety at a collective level, by negotiating the affect through shared narratives (Iedema et al., 2009). Talking with their peers allowed the anaesthetists to objectify, normalize, and distance the 'horror' of medical error by associating it with humour, expressing it as a metaphor, and forcing closure on it by portraying it as a fact of everyday life, an inevitable part of professional life and identity.

While it's positive to see some professionals have access to supports, in the form of peers, enabling them to cope with the emotional impact of adverse events and generate vigilance against threats, however it is frequently reported that support following error is lacking (Sirriyeh, et al, 2010).

This lack of support in the workplace leads to limited self and organisational

learning (Sirriyeh, et al, 2010). Negative attitudes towards error in the culture of medicine, threat of professional loss, and lack of available institutional support were all noted as barriers that prevent professionals from receiving necessary support (Sirriyeh, et al, 2010). Harrison, et al.'s (2014) survey of UK doctors found only 5.5% reported having a formal mentor, 87% said they would contact a mentor following medical error if they had one and 83% had supported a colleague affected by an adverse event. Most of the doctors (67%) surveyed did not believe their healthcare organisations adequately supported doctors in addressing the stress related to adverse events.

Power and Voice Behaviour

In the turbulent, and unpredictable, hospital work environment, upwards communication from employees about potential problems and opportunities is critical. Those of higher status and power, the leaders of multi-professional teams, need information from team members, often of lower status than themselves, to respond appropriately in a high-reliability environment, and correct problems before they escalate. Unfortunately, studies show that employees sharing concerns and suggestions with those in positions of power are often disinclined from doing so, resulting in silence (Milliken et al., 2003; Pinder & Harlos, 2001).

As proposed by Morrison and Rothman (2009) silence results from a reluctance by those in positions of relative low power to convey information to a person with relatively high power, suggesting a fuller understanding of employee voice behaviour can be gained by identifying and considering the effects of power on employee emotions (and conversely the effect of emotions on power), cognitions, behaviour, and social interactions. The aim of incorporating this understanding of power is to bridge past works which have looked in isolation at either the actions of employees who keep silent (Glauser, 1984), or the attitudes, and behaviours, of managers and supervisors (Morrison & Milliken, 2000), to understand the interplay between them.

While power is traditionally defined as the ability to influence others (Keltner, Gruenfeld, & Anderson, 2003; Salancik & Pfeffer, 1977), rooted in the assumed and actual resources and punishments that the power-holder can deliver to others (Emerson, 1962; French & Raven, 1959), the emphasis for this study is on formal power resulting from hierarchical position. Legitimate authority to allocate desirable and undesirable outcomes to others, and to control and use organisational resources are hallmarks of formal power which stems from one's position in a hierarchy (Astley & Sachdeva, 1984; French & Raven, 1959).

Social relationships and social structure are key to understanding power (French & Raven, 1959), as such individuals of high hierarchical position are not 'powerful' in an absolute sense, but acknowledge that they have power over others based on the interdependencies between them (Emerson, 1962, Salancik & Pfeffer, 1977).

While power is a social construct, it has strong effects on those who possess it, as a result it's useful to understand its conceptualisation as a psychological state (Galinsky, Gruenfeld, & Magee, 2003). Psychologists argue, that within a social context, having power generates a psychological state of powerfulness associated with a variety of predictable affective, cognitive, and behavioural outcomes (Keltner et al., 2003). Thus, those who feel powerful have been found to feel differently, to process information differently, and to behave differently than those who do not feel powerful (Keltner et al., 2003). The opposite holds true for those who do not have much power in a given social context.

Thus, an attempt can be made to describe the interaction between high and low power individuals. As explained by Morrison and Rothman (2009), those who are powerful are less focused on risks and sanctions, and more focused on rewards, because they tend to exist in environments of abundant rewards (Keltner, et al., 2003). Less powerful individuals are more likely to be cautious because of their limited access to material and social resources (Domhoff, 1998). Further, those with high power feel they have latitude in their actions, and can behave without interference, stemming from their independence from others (Hecht & LaFrance, 1998). Whereas the evaluations and constraints of others are more keenly felt by less powerful individuals (Fiske, 1993; Steele & Aronson, 1995). Individuals in high-power positions perceive themselves as being more competent than do people in low-power positions, and it's been found, when things go wrong, these individuals are less likely to attribute responsibility to themselves (Lee & Tiedens, 2001).

Thus given their state of psychological power, high power individuals do not often appear open to input from subordinates. This can be explained by research which has shown that individuals who feel highly powerful experience more positive emotions than negative emotions (Berdahl & Martorana, 2006), and are shown to experience more positive emotions than those who feel less powerful (Berdahl & Martorana, 2006), making them less attentive to risks and threats, and more focused on rewards and opportunities. As suggested by Morrison and Rothman (2009, p. 118) those individuals with high power can be over-confident and will be likely to feel that *"all is well"*, and *"will be disinclined to see value in, to seek out, or to listen to negative*

feedback. That is, they will be unlikely to convey the openness that subordinates need to feel comfortable voicing their concerns". So how is it that subordinates, those in lower positions of power, respond to these behaviours associated with individuals possessing higher power?

Subordinates experience a sense of futility when it comes to voicing their concerns if their supervisors are unsupportive and unapproachable. This results from their low position of power, which biases them towards seeing the situation as uncontrollable and threatening, making them more likely to experience negative emotional states such as fear and anxiety (Keltner et al., 2003). As such, less powerful individuals observing their superiors to judge whether speaking up is worthwhile, will be inclined to underestimate the likelihood that speaking up will be effective, because they overemphasise the potential risks, resulting in feelings that voice is futile (Anderson & Galinsky, 2006; Athanassiades, 1973). Further, the negative emotions they can experience, like sadness, tend to be associated with feelings of helplessness (Keltner et al., 2003). As such both parties are involved in an interplay with influences voice behaviour.

Psychological Safety and Group Voice Climate

As proposed by Schneider, Ehrhart, & Macey (2013), organisational climate refers to the shared perceptions of, and the meaning attached to the procedures, practices, and policies employees experience, and the behaviours they witness being rewarded, supported, and expected (Ostroff, Kinicki, & Tamkins, 2003; Schneider, Ehrhart, & Macey, 2011; Benjamin Schneider & Reichers, 1983).

Group voice climate has been found to be shaped by shared beliefs about safety and efficacy developed through 1) social interactions, 2) leadership behaviour (Detert & Treviño, 2010), and 3) by vicarious learning and salient events (such as medical errors) in the history of the group (Milliken et al., 2003).

As previously mentioned, employees considering whether to voice consider two dimensions, which make up group voice climate, first, whether speaking up is safe (i.e. group voice safety), and second, whether it will be effective (i.e. group voice efficacy).

Psychological Safety, introduced at a team level by Edmondson (1999, p. 354), is *"a shared belief that the team is safe for interpersonal risk taking"* which suggests *"neither a careless sense of permissiveness, nor an unrelentingly positive affect but, rather, a sense of confidence that the team will not embarrass, reject, or punish someone for speaking up. This confidence stems from mutual respect and trust among team members.".* This belief is thought to be tacit by team members and

is included here as synonymous with the idea of group voice climate.

As described by Edmondson (1999), a group climate in which people are comfortable being themselves and characterised by mutual respect and interpersonal trust is said to be psychologically safe. Further, to be considered psychologically safe at a group level, team members must hold similar perceptions, rather than only individual members. These beliefs are thought to converge in a team because team members are implicated by the same set of shared influences, and because these perceptions develop out of salient shared experiences. Team leaders who downplayed power differences and who were perceived as open were found to create enhanced feelings of psychological safety (Detert & Burris, 2007; Edmondson, 2003).

Building on this definition, we can revisit employee voice as a multi-dimensional construct discussed earlier in this chapter, to propose that teams characterised as psychologically safe fit into Morrison et al's (2011) definition of a favourable voice climate, while those teams which are psychologically unsafe are more likely to fit Morrison & Milliken's (2000) definition of a climate of silence. As such this review identifies two very different climates, a climate of silence, where employees perceive that speaking up is futile and/or dangerous, and a favourable voice climate in which employees perceive it is safe and worthwhile to speak up.

Literature Review Conclusion

This concludes section I of the thesis, providing a transition to the empirical part of the study, by summarising the literature, reviewing the gaps identified, and highlighting why these gaps are important and how they will be studied in this thesis.

Further, the expected contribution of this thesis, an emerging model that describes the role of second victims in the establishment of conditions leading to the enactment of voice is introduced.

Chapter 2 provided a state of the art review of the patient safety movement. This includes discussion of key international reports which highlight both human and system factors implicit in error. Next the rise, and proliferation, of root cause analysis (RCA) as an investigative technique for learning from medical error was described. An implementation gap in learning from error using RCA was identified, chief causal factors were highlighted through examination of historical cases as 1) hierarchical challenge and 2) second victims phenomenon. Further, current paradigms in patient safety, described in the literature as safety-I and safety-II were explored, and a recent successful example which integrates both was reviewed.

The patient safety movement arose in the late 1990s in response to key international reports that identified the scale of patient harm in hospitals, often cited

as 10% of admissions. As an ‘anxiety reassurance’ tool, western countries adopted RCA to improve safety and respond to an increasingly concerned public. Unfortunately, despite efforts at improvement using RCA and other tools, rates of harm have remained stagnant.

This review identifies two key challenges that perpetuate this ‘implementation gap’ in learning from error, the hierarchical challenge between professionals of varying status and power, and the second victim phenomena. Using historical examples, evidence of hierarchical challenge surfaced to include futility of voice by both staff and patients, and identification of cultures that did not permit individuals of lower status to challenge higher-ups. Second victims were also identified, who, in the case of Betsy Lehman’s overdose felt blamed and shamed, leaving the organisation.

The occurrence of a serious medical error seems linked to professionals becoming a ‘second victim’, particularly given the positive relationship between severity of error and degree of affective impact. Thus, second victims are potentially inseparable from the process of learning from medical error. Much is known about what negative impacts these experiences can have on professionals, where they might ‘survive’ an experience, or ‘drop out’ due to shame and guilt, however, a gap exists in understanding what positively valenced outcomes might emerge from these individuals, particularly those that go on to ‘thrive’.

As such a gap exists to explore what role second victims might play in the enactment of positive practices, particularly those which may attenuate the hierarchical barriers between professions – lessening the hierarchical challenge. Arguably, those individuals involved in the most severe errors will go on to experience the strongest affective impact, as either negatively and/or positively valenced changes to both their affective state and practice. This gap is particularly relevant given the seeming inseparability between medical errors and emergence of second victims among healthcare professionals. Further, attempts at improvement, in line with a safety-I ‘find and fix’ approach have largely failed, a new approach is warranted to leverage and explore existing organisational resources, such as second victims, in light of an incremental shift towards safety-II. An approach to patient safety which builds upon safety-I, while making consideration for positive practices that emerge from second victims, is warranted and will help bridge the safety-I & II paradigms.

The theory of employee voice was introduced in chapter 3 as a sensitising concept and framework for the researcher to explore the identified gap in patient safety. Specifically the relevance of employee voices as an important structuring concept for this thesis arose following identification of the hierarchical challenge as a

chief barrier to the prevention of medical error. This theoretical foundation provides a lens from which the nuances of hierarchical interactions between healthcare professionals can be rationalised for analysis.

Specifically, organisational and psychological conditions that drive voice behaviour are highlighted to better understand how these challenges might be overcome. The historical development of employee voice was described, including its origins and applications from other safety sensitive fields including aviation, military, and aerospace.

Employee voice is as a multi-dimensional construct whereby silence and voice are not thought to be opposites, meaning silence is not merely the absence of voice, and that consideration for an individual's motive is a key feature that differentiates these behaviours.

Organisational factors relevant to this context and thought to weigh upon employee voice behaviour including dynamics which exist between medical professionals, specifically doctors and nurses, their differing professional organisation, and consideration of their work context in multi-professional action teams.

Psychological processes in this context that influence employee voice include consideration of negative affective experiences by second victims of medical error, power dynamics between professions, and the influencing conditions of a psychologically safe group climate.

Incorporating the gaps identified in the patient safety literature and building upon theory of employee voice as a foundation, this thesis will contribute by presenting an emerging model. This model describes how the practice changes of second victims in this study help overcome hierarchy through establishing the conditions leading to the enactment of voice among their teams. Furthermore, conditions that lead to silence, a chief cause of medical error, are identified in the model, and linkage between medical error and 'second victims' described.

In the next section, Chapter 4 Research Strategy: Methods, Design, and Data, an overarching research design is described for the study. In order to study the gap identified, empirical cases of medical error were selected, and healthcare professionals involved in error identified and interviewed. Using qualitative research methods involving cross-case analysis, the experiences of 50 healthcare professionals across three cases were analysed using an inductive coding method. The research design described next necessitated the identification of breakdowns in practice (i.e medical error) and application of a methodological approach to assess

the affective experiences of second victims. An overview of data sources for the study is presented and explanation is provided for the analysis of data and coding strategy adopted.

Chapter 4: Research Strategy: Methods, Design, and Data

Overarching Research Design

The goal of this research is to make a theoretical contribution that is of practical relevance to healthcare professionals. This study addresses the implementation gap in patient safety which results from the hierarchical challenge and second victim phenomenon. Employee voice, driven by both organisational and psychological elements, was introduced in Chapter 3 as a sensitising concept, to explore the hierarchical challenge. The affective experience of medical error, while known for causing negative impacts in second victims, has the potential to spur positively valenced changes in practice, such as encouraging speaking-up.

Consideration of both organisational dynamics and psychological processes inform the design of this study, necessitating methodological tools to evidence these contingent factors. A practice based approach, which targets breakdowns in organisational practices (i.e. when medical errors occur), is adopted, to explore the hierarchical challenge; while a methodological approach for classifying affective experiences in second victims, linked to possible changes in practice, is also incorporated into the overall design.

These two design elements, practice breakdowns and affective experiences, converge in the analysis of data, setting the stage for development of theory which fills theoretical gaps addressing barriers in collaboration and communication between professionals of varying hierarchical position (Senot et al., 2016), and the role traumatic affective experiences have on these interactions, including consideration for potential positive practice changes (Sirriyeh et al. 2010).

An inductive coding method (Pratt, 2009) is used to analyse the study's data, creating a foundation of first order codes and second order categories which are stored in a NVIVO database. From this structured data-set advanced queries were run and analysis conducted. In section II of this thesis, the findings are written up in chapters 5, 6, 7, and 8. Discussion of these findings is found in chapter 9.

Research Question

As identified at the end of the literature review, the key gap identified centres around second victims of medical error. Specifically, little is known about what positive implications might exist for these professionals, and what positively valenced practices might emerge as they recover.

A strong link seems to exist between serious medical errors and professionals becoming a ‘second victim’, particularly given the positive relationship between severity of error and degree of affective impact.

This study addresses the implementation gap in patient safety, which results from the hierarchical challenge and second victim phenomenon. A gap in knowledge exists to explore what role second victims might play in the enactment of positive practices, particularly those which may attenuate the hierarchical barriers between professions. This thesis seeks to answer the following research question:

- How can second victims moderate the hierarchical challenge through the enactment of positive practices, which establish the conditions for voice, and improve patient safety?

Research Methods

Researching the Hierarchical Challenge through Breakdowns in Practice

This methodological design adopts a practice-based approach, which targets breakdowns in professional practice to explore the hierarchical challenge between healthcare professions, namely doctors and nurses.

This design enables access to healthcare professionals' 'logic of practice', by 'zooming in' on breakdowns in practice, specifically medical errors, to view the relational whole of the professionals, colleagues, and tools implicated when things don't go as planned (Nicolini, 2013; Sandberg & Tsoukas, 2011). This approach will allow the researcher to evidence all practices that arise from these breakdowns, with a specific focus on those which influence employee voice behaviour (i.e. setting expectations for voice).

Breakdowns occur when things don't go as planned and one's flow of practice is temporarily halted and "the relational whole of sociomaterial practice is momentarily brought into view" (Sandberg & Tsoukas, 2011, p. 344). Breakdowns allow professionals to articulate the significance of taken for granted distinctions which is impossible while immersed in a state of "absorbed coping" (Dreyfus, 1995, p. 69), our primary mode of engagement with the world. In this state we spontaneously respond to developing situations at hand, without demonstrating awareness of involvement in it.

This design necessitates appropriate methodological choices which 1) search for and focus on breakdowns in professional practice and 2) evaluate those breakdowns through an interview method known as critical incident analysis.

Given the study's empirical context, it's pragmatic to search for breakdowns where professionals' expectations have been thwarted. That is, when a practice is disrupted because of unintended consequences or unmet standards of excellence (Sandberg & Tsoukas, 2011), the inner workings of how professionals respond, their practice, become observable. These breakdowns might also be found through an awareness of differences in practice between professionals directly involved in error, who are potentially second victims, in contrast to departmental colleagues on the periphery.

Critical incident analysis (Chell, 2004; Kemppainen, 2000) is the interview method selected for this study as a means to access professionals' logic of practice'. This approach enables the researcher to evaluate the professional's frame of reference, thought processes, and feelings about a preselected medical error of significance for them (Chell, 2004). Drawing on work from the military field involving

friendly fire, it's possible to identify the "practical drift" (Snook, 2002) that occurs during such incidents. This "practical drift" resulted when local practices drifted, and no longer conformed to formal procedures (Snook, 2002).

This approach requires awareness on behalf of the researcher of the potential for causing 'second-order' breakdowns through involvement in the research process by *"merely asking detailed and concrete questions about what practitioners do and how they accomplish their work temporarily disrupts practitioners' absorbed coping and throws them into a mode of deliberation."* (Sandberg & Tsoukas, 2011, p. 350). Thus, the research demands a degree of reflexivity on behalf of the researcher, particularly given his background in hospital risk management.

Abductive Case Research

Serving the goal of this research to develop theoretical contributions of practical relevance to healthcare professionals, this study aims to understand how groups of different healthcare professionals respond to medical errors, RCA investigations, and recommendations for practice change.

A pilot study was undertaken in a pathology department which had experienced a trend of adverse events related to systematic delays. A draft interview guide (See final guide in Appendix, A.5 Interview Guide) was tested during this pilot phase. This department was chosen for pragmatic reasons, enabling early access to the NHS trust, setting context for the main PhD study, and allowing for the development of relationships with key stakeholders. While useful for the reasons identified above, the pilot study is not included in the findings of this PhD. Further justification of this decision is explained in the introduction to empirical findings section of this PhD.

Following the pilot, three cases were selected which connect directly to achieving the study aims, each revolves around a serious medical error where root cause analysis (RCA) investigation was completed, and recommendations for improvement were implemented or in progress. The rationale behind case selection is discussed later in this section.

This PhD is based on case research, a scientific method (Ketokivi & Choi, 2014), which uses case studies as its unit of analysis. Three cases, which contain different clinical and professional contexts, from one organisation are compared, using cross-case analysis (Miles & Huberman, 1994).

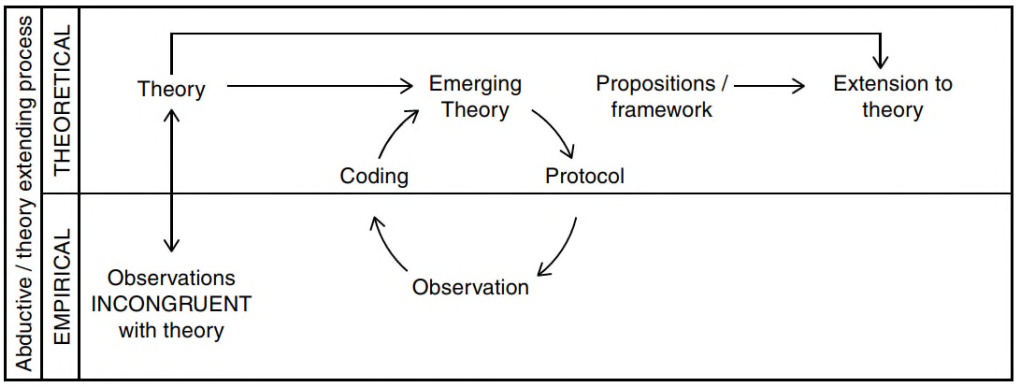
As per Meredith (1998), the strengths of case research are: 1) the phenomenon is studied in its natural setting allowing the observing and understanding of actual practice, and actors, in their native environment, leading to development of

relevant, meaningful theory; and 2) the case method supports exploratory investigations, where the variables are not all known and phenomenon not understood. This researcher tested the theoretical framework and interview guide in a pilot case, which helped inform an iterative process of research design for subsequent cases and theory development.

This abductive case research design, see figure 4.1, supports theory elaboration whereby the goal is to refine and extend existing theory related to second victims and employee voice, in the context of professionals and patient safety, where application has been limited. This process is iterative with analysis going from theoretical, to empirical, and back again, leading to new propositions and extension to existing theory (Cunliffe & Eriksen, 2011; Voss et al., 2016).

An abductive approach is useful to develop an understanding of phenomena found in practice for which theory needs refining. For example, exploring what positively valenced practice changes, such as speaking-up, might result from negative affective experiences like medical error, refines our understanding of second victims and employee voice. Ultimately, this abductive approach enables an elaboration of employee voice, an organisational theory, in a context where it's had limited exposure, leading to development of refined and more practically relevant theory.

Figure 4.1 Abductive Process in Case Research (Adapted from Voss et al., 2016)



Case Rationale

As mentioned, a pilot study in a pathology department was selected to test a draft interview guide. Following refinement of study protocol, three embedded cases (Yin, 1994) were selected in different clinical settings throughout the single organisation. A multiple case design was selected to augment external validity, limit observer bias, and to manage the risk of misjudging a single event in one specific

organisational context, by spreading the analysis across the organisation (Voss et al., 2016).

Following the works of Eisenhardt, (1989) and Yin, (1994) cases were selected for study according to specific selection criteria. Case selection was based on the principle of replication logic whereby each case was selected so that it either predicts similar results, or produces contrary results, but for predictable reasons (Voss, et al, 2016). The sampling criteria for case selection can be seen in Table 4.1 Case Sampling Criteria Controls.

Defining case selection controls allowed particular factors to be 'held constant' while others are left free to vary as they would naturally (Meredith, 1998). The main overriding factors held constant are that each case includes healthcare professionals who are impacted by medical error, a department where RCA investigation has occurred, and recommendations for practice change are implemented or in progress. Further, the medical error must be relatively recent (within 3 years of the date of the data collection), and more than one type of healthcare profession represented (i.e. both Doctors and Nurses).

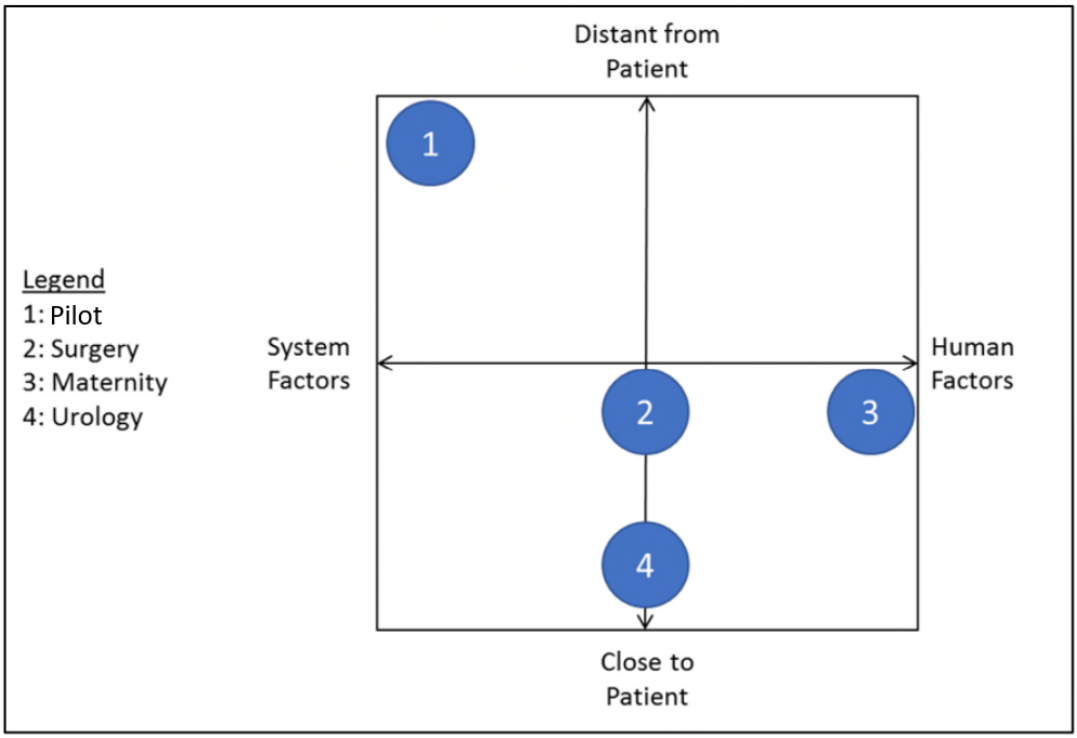
While several factors vary naturally across the cases including the types of healthcare professionals involved, and clinical settings (i.e. inpatient ward vs surgical theatre), the variable factors controlled for sampling are the proximity of the patient to the professionals in the department, and whether the error was primarily found to be the result of human or system factors. The former factor is relevant to professional organisation, a topic discussed in Chapter 2, given certain professions studied, such as Laboratory Pathologists, have less patient contact in comparison to, for example, Nurses on a busy inpatient ward, it's anticipated their reaction to such an event might vary.

System factors vs human factors as a variable factor, are an acknowledgment of the importance of lessons drawn from other disciplines, like psychology of error, and industries such as aviation, in learning from errors. Leape (1994) and Reason's (1993) discussion of medical errors, as precipitated by a wide range of factors beyond the control of an individual, at a systems level, was novel at the time of their publication, influencing future safety investigations. The introduction of these concepts led to changes in investigations, such as the Bristol Royal Infirmary (BRI), which adopted a systems approach, finding poor performance as the result of mal-functioning systems rather than the result of any individuals' conduct (Kennedy, 2001).

Table 4.1 Case Sampling Criteria Controls

Constant Factors	Variable Factors
1) Serious Untoward Incident / Never Event having occurred	1) Distance from patient
2) RCA Investigation with recommendations to improve practice	2) Root Cause: System Factors vs Human Factors
3) Incident having occurred recently	
4) More than one group of professionals represented	

Figure 4.2 Case Selection Matrix



The application of the selection criteria to the NHS trust studied in this PhD is shown in Figure 4.2 case selection matrix. The rationale for selecting each of the study's three main cases are described below in the following sub-sections. In-depth descriptions of these cases are found in Section II Empirical Findings.

Surgery Case Rationale

Surgeons work in very close proximity to their patients, not only in the operating theatre, but also when consulting before and after surgery. Such was the situation in this case, where the never event, a retained surgical swab, was identified at the patient's follow-up appointment with lead surgeon. Further, the professionals involved represented an ideal composition to develop understanding of barriers associated with the hierarchical challenge, which are thought to be worsened by power imbalances, which exist between specialist doctors and nurses. While human factors played a role in the error, where some nurses felt silenced, and others spoke up and were ignored, there was a degree of system related gaps, which also contributed. The policy on swab counts was not followed and there was a general lack of awareness of the limitations of fluoroscopy.

Maternity Case Rationale

This incident is primarily the result of human errors. First, the coordinator assigned a midwife to the patient, who was not experienced in dealing with high-risk mothers. Second, the obstetrician missed an opportunity for emergency caesarean delivery by incorrectly deciding to review the patient after four hours, rather than one. While the absence of protective system factors, such as a midwife shortage, and visible information about the appropriate skillset of available midwives, played a lesser role, it was largely the decisions made by two healthcare professionals which contributed to delivery of a still-born baby. Obstetricians work in very close proximity to their patients, building a relationship with them from early stages of pregnancy until delivery. Midwives operate in a busy hospital maternity unit, thus are also very close in proximity to their patients. As such, it makes for an interesting case to understand what changes might occur in these individuals given their close proximity to their patients.

Ward X & Urology Case Rationale

Healthcare professionals on ward X work in very close proximity to their patients. These patients are often in precarious health, recovering from procedures and undergoing follow-up testing to determine fitness for discharge. The busy nurses are assigned to a bay of patients and remain with those patients for the duration of their shift, while doctors, often urologists, and junior doctors on educational rotations, see patients throughout the ward, evaluating them, and ordering additional tests. This case results from a blend of human and system factors. The former with regards to one nurse, CS412, and her lack of knowledge around blood results, and assertiveness with doctors; while the later regarding absence of protective factors:

standard operating procedures in the event blood results are phoned through to the ward, and mechanisms for ensuring doctors are notified of tests they order. The interplay of these professional groups, combination of human and system root causes, on a busy inpatient ward, make for an interesting setting to evaluate response to the death of a patient.

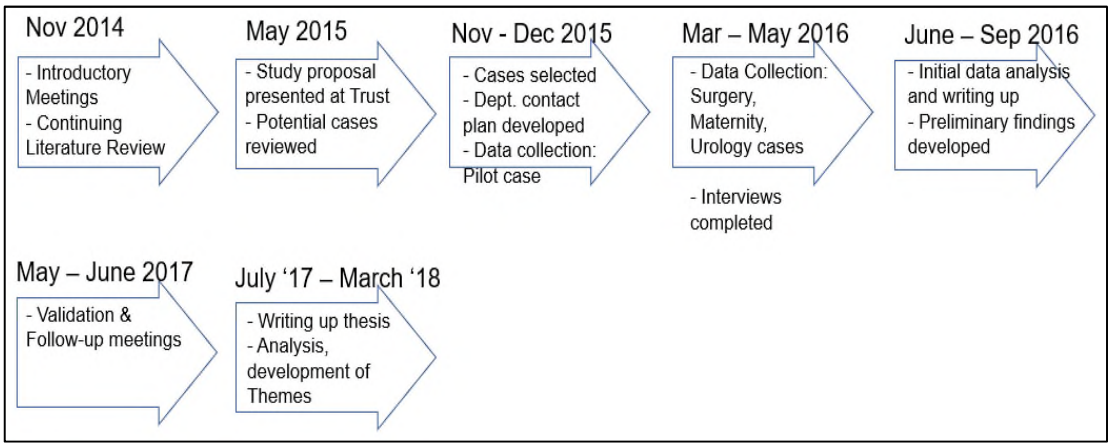
Data Collection Procedures and Practicality

This section aims to provide clarity on the data collections procedure and practicalities relating to it. Given the identified gap in patient safety on what positive outcomes might emerge through second victims, this researcher sought cases (and a pilot case) where healthcare professionals were involved in medical error. Given the linkage between error severity and potential affective impact, cases of the highest severity, either a never event, or involving a patient expiring were selected and the case sampling rationale discussed previously was applied.

This section begins by describing the researchers journey, next provides an overview of all data sources collected including meeting observations, interviews, and documentation review. Ways in which the researcher was reflexive and applied critical analysis to the interviews and materials collected is discussed. Following collection of data and initial analysis, validation meetings were held, these are discussed briefly before an overview of the cross-case analysis methodology is provided.

A visual representation of key events during the researcher's journey to collect data, analyse, and later write-up the thesis is shown in figure 4.3. A complete chronological list of all visits to the Trust for conducting research interviews and observations are listed below in table 4.2 Interview & Meeting schedule.

Figure 4.3 Researcher's Journey



In November 2014 the researcher was introduced to Dr. C, his sponsor at the English NHS Trust where the PhD research was conducted. Dr. C was the Deputy

Medical Director and Director of Strategy at the Trust. An initial meeting was held at Warwick Medical School with Dr. C to discuss the project at a conceptual level. In January 2015 the researcher was invited by Dr. C to meet with senior Medical Safety and Risk Management personnel at the Trust, to propose the research study. Following this meeting applications for Research Ethics were submitted to both University of Warwick Biomedical and Scientific Research Ethics Committee (BSREC) and the Trust research department. In March 2015 a letter of access was obtained from the NHS, as well as an honorary research contract signed with the Trust in July 2015, and in August 2015, the researcher's PhD study ethics were approved by BSREC (Reference # REGO-2015-1642).

Beginning in September 2015 the researcher was an observer on the Quality & Risk Committee for four consecutive months. This opportunity allowed for the gathering of contextual information at the Trust by observing exchanges of information and reviewing numerous Trust documents and policies. Of specific interest was how departmental leaders (Associate Medical Directors) attended to provide an update and overview of their directorates quality and safety improvements. These leaders were held accountable at the committee, which owned responsibility for monitoring the implementation of service improvements stemming from safety investigations across the trust. Implementation of Duty of Candour in the Trust was also taking place during this time, with auditing and monitoring programmes taking place on a monthly basis. As mentioned earlier, after attending four sessions the committee was disbanded due to a change in leadership at the Trust.

The pilot study was initiated in November 2015, with an introductory email from Dr. C to leadership of the pathology department introducing the researcher and his study. Laboratory tours and Interviews were scheduled in December 2015. It should be noted that one senior member of Pathology leadership cancelled all interviews one week before they were scheduled. He felt that this trend of medical errors had already been investigated extensively by the Trust and there was nothing more to be learned. The researcher, with the help of Dr. C, was able to schedule an hour-long meeting with this individual to listen to his concerns. After addressing his concerns by explaining the purpose of the confidential PhD research, and how this was not another governance investigation into his department, access was granted and interviews continued the following week.

Following completion of this pilot case in December 2015, three cases were selected for the PhD study based on the rationale described in this chapter. The researcher discussed with Dr. C that he would pursue the data collection for

remaining case studies in parallel, rather than sequentially. In February 2016, Dr. C sent emails to the heads of the remaining departments: Surgery, Maternity, and Urology and Ward X. The process followed was similar to that of the pilot case, with an introductory meeting between the researcher and departmental leadership, a site tour, and contextual discussions, before scheduling participants for interviews.

The scheduling of participants was usually completed with the aid of assistants and receptionists within each department. Many phone calls and emails were exchanged to maintain an interview schedule, this was particularly difficult for extremely busy individuals such as Surgeons. One tactic the researcher chose was to arrive early in the morning and wait in a spare office, or the manager's office, with an interview sign-up sheet on the door, and meet and recruit participants as they walked by, or took a break. The interview phase was completed in May 2016 with a total of 50 interviews completed.

Table 4.2 Interview & Meeting schedules

Date	Department(s)/Position(s)	Purpose	Hours spent at hospital
November 6th 2014	Strategy & Transformation	Introductory meeting to discuss research study.	1
January 16th, 2015	Director of Medical Safety and Risk Management	Introductory meeting to provide overview of proposed research study and discuss possible cases for study.	1
May 7th, 2015	Trust X Research, Warwick Business School, Warwick Medical School, ,CLAHRC-WM faculty.	CLAHRC-WM Research Showcase. Presented proposed research study and received feedback	2

Date	Department(s)/Position(s)	Purpose	Hours spent at hospital
May 20th, 2015	Risk Management, Legal, and Investigations	Discussed possible RCA cases for study.	1
May 20th, 2015	Strategy & Transformation	Discussed Honorary Research Fellow research contract.	1
November 13th, 2015	Strategy & Transformation and Risk Management, Legal and Investigations.	Discussed cases provided by Trust for PhD research and developed plan to contact departments	1
November 20th, 2015	Pathology (pilot study)	Lab tour and work observation	2
December 10th, 2015	Pathology (pilot study)	Meeting with Lab Senior Leadership	1
December 15th, 2015	Pathology (pilot study)	Interviews and Observations	8 (full day)
December 16th, 2015	Pathology (pilot study)	Interviews and Observations	8 (full day)
February 22nd, 2016	Strategy & Transformation	Research Planning	1
March 7th, 2016	Operations Lead, Surgery Department	Site tour, preliminary case discussion	1

Date	Department(s)/Position(s)	Purpose	Hours spent at hospital
March 16th, 2016	Lead Investigator, Surgery Department	preliminary case discussion and interview	1
March 18th, 2016	Clinical Director, Obstetrics	Site tour, preliminary case discussion	1
April 7th, 2016	Surgery	Interviews	8 (full day)
April 8th, 2016	Surgery	Interviews	8 (full day)
April 11th, 2016	Clinical Director, Urology	Preliminary case discussion	1
April 14th, 2016	Obstetrics	Interviews	8 (full day)
April 18th, 2016	Women & Children's Services	Site tour, preliminary case discussion	1
April 20th, 2016	Consultant Clinical Scientist, Head of biochemistry, immunology and toxicology	Interview	1
April 21st, 2016	Women & Children's Services	Interviews	2
April 25th, 2016	Urology	Interview	1
April 26st, 2016	Urology	Group Interview	2
April 27th, 2016	Operating Theatre	Interviews	8 (full day)

Date	Department(s)/Position(s)	Purpose	Hours spent at hospital
May 5th, 2016	Urology, Inpatient Ward X	Site tour, preliminary case discussion, interviews	8 (full day)
May 6th, 2016	Urology, Inpatient Ward X	Site tour, preliminary case discussion, interviews	4
May 17th, 2016	Surgery	Interview	1
May 24th, 2016	Obstetrics	Interview	1
		TOTAL	**86 hours**

Overview of Data Sources

The data for this study, as outlined in Table 4.3, was found in three primary data sources: 50 interviews, 104 hours of observations, and 35 document reviews. As Yin has argued (Eisenhardt & Graebner, 2007), case studies are rich, empirical descriptions of particular instances of a phenomenon that are typically based on a variety of data sources.

Table 4.3 Overview of Data sources

Cases / Committees / Meetings	Interviews (~1 hour each)	Observations* *includes time spent in department interviewing	Documentation Review (# documents)
Pilot	10 interviews	19 hours	2
Surgery	15 interviews	28 hours	6
Maternity	13 interviews	14 hours	5

Urology	12 interviews	17 hours	7
Quality and Risk Committee	-	8 hours	15
General	-	8 hours	-
Validation & Follow-up Meetings	-	10 hours	-
Totals	50 interviews	104 hours	35 documents

Reflexivity and Critical Analysis of Data Sources

Given this researchers previous professional experience in hospital risk management, he was aware of the need for additional critical thinking about the data collected during this study. Further, the notions he held about the political nature of medical error investigations, particularly those using RCA was reinforced by the literature in this area, see Peerally et al., (2016) for a recent review. RCA is vulnerable to political hijacking and RCA reports are written to satisfy certain audiences in the organisation who hold power (Carroll, et al., 2002). This required an awareness of behalf of the researcher to compile his analysis based on multiple data sources, for example the RCA investigative document itself, interviews with the RCA investigators, and triangulating those with what was said by healthcare professionals directly involved in errors, and their managers.

This researcher's professional background in this field may have made it more difficult to be reflexive, however he understood the importance of leaving behind preconceived notions and biases on entering the field. He made an active effort to mentally leave behind his role as a manager and become a researcher. Being reflex is said to involve *"interpretation of interpretation and the launching of a critical self-exploration of one's own interpretations…a consideration of the perceptual, cognitive, theoretical, linguistic, (inter)textual, political and cultural circumstances that form the backdrop to – as well as impregnate- the interpretations"* (Alvesson & Skoldberg, 2009).

To that end, this researcher attempted to situate himself contextually and frame the inquiry along several lines including: inquiry focus context, location context, the broader context, and most difficult, the relationship context (Patton, 2015). In consideration of why the study was being done it was useful to remember how important this work was to the researcher himself and broader safety

community, having been confronted with many instances of safety failures in his career, four years of his life had been set aside to study the problem.

Because patient safety is located within the well tread medical and nursing academic literature, there was a degree of reflection on what is known about professional organisation, hierarchical challenges, and second victims today, in light of this researcher's personal experience with, and knowledge of these subjects. Writing the literature review for this thesis helped to provide focus about the specific nature of this inquiry, and the context in which it is situated.

Consideration for the study's location was important, this researcher was entering hospitals were professionals worked and asked them about highly sensitive events of significance, which had career defining implications for some of them. Furthermore, this study was completed in the UK, a country where this researcher had no previous experience, making him not only an outsider as a researcher, but also a foreigner. The location may have helped reflexivity because he was less comfortable and more self-conscious in this setting.

While the broader context was important, the study was focused at a micro-level, the front line professionals, as such details of the broader context were largely left untouched. However, there were issues of context that did arise such as a recent high profile and publicised case of medical error, and large scale organisational changes occurring at the trust due to financial difficulty. It was important that this researcher present himself not as another 'investigator' but as a researcher whose work was confidential and intended to improve and advance the field of patient safety more generally.

Most importantly, this researcher was attentive of the need to be reflexive when it came to his relationship with participants in the study, given they were healthcare professionals and he was a former hospital risk manager. This required mindfulness of his professional voice as a risk manager, wondering whether participants would hold back or reveal more based on this identity. It became apparent individuals were trusting and candid in their responses; this was particularly evident where some participants began to cry or curse about their experiences. In thinking about these responses, this researcher felt perhaps his familiarity with, and experience in hospital policies on confidentiality and sensitivity may have enhanced the data collected because individuals seemed confident their responses would remain confidential.

In consideration of these contextual lenses, being reflexive allowed the researcher to be more open and prepared for challenges that arose during the field

work, and contributed to the overall success of the thesis.

In concluding this commentary on reflexivity, it is important to consider that certain limitations may exist in the data set. Specifically, these limitations relate first to the politically 'produced' nature of RCA documentation. Second, how a minority of interviewees, primarily those in the maternity department, might have been attempting to present themselves in the best light, to protect themselves from a blame culture. As such, the findings presented should be read in consideration of the reflexive commentary and limitations mentioned.

Data Collection: Interviews, Observations, and Documentation Review

Interviews

Each case represents a department which had recently experienced a medical error and root cause analysis investigation. Employees from these departments were invited to participate in this study and interviewed using a semi-structured, critical incident technique (Kemppainen, 2000). Interviews were chosen as a method for this study because of their ability to make accessible an individual's lived experience by acting as a pipeline for transmitting knowledge to the researcher (Rapley, 2001).

Employees were broadly divided into professional categories: doctors, nurses, management, assistants, and scientists. Whether the participants' role was front-line, management, or they were a hybrid-manager was noted. Further, which case participants belonged: Surgery, Maternity, or Urology & Ward X, was also included. A data classification table was created based on these categories and imported to the NVIVO database, to enable effective queries to be run during the analysis phase.

These employee groupings were selected due to their roles and responsibilities in their respective departments for the implementation of recommendations following RCA. For example, if the recommendations for improvement pertain to the maternity ward, the participants include members of the directorate management team including Head of Midwifery, and Obstetrics Clinical Lead, to ensure both Midwife and Obstetrician management is represented. Front-line staff would include Consultant Obstetricians and Midwifes who work directly on the ward.

A critical incident technique (Kemppainen, 2000) which analysed three-components was used in each interview: 1) the event and circumstances, 2) the process, and 3) outcomes and consequences. A copy of the interview guide can be found in the Appendix of this thesis, in table A.5 Interview Guide. This technique allowed the researcher to look at specific incidents and activities which participants

perceive as significant, it is known as a useful technique for exploring events which individuals may experience as difficult (Kemppainen, 2000)

Interviews with employees lasted roughly an hour each and took place in a room near the employee's department. Interviews were audio recorded using an iPad and written consent was obtained for each. Each case had between 10 – 15 participant interviews. A complete anonymized list of the 50 study participants can be found in Table 4.4 Overview of Study Participants. Interviews were transcribed by MB Secretarial Services, Sheffield, UK. Follow-up emails and telephone calls were made with several participants, namely Ward Matrons and Clinical Directors, to clarify findings.

Table 4.4 Overview of Study Participants

CASE	Participant ID	Title	Profession	Classification
Pilot	CS101	Head Biomedical Scientist	Scientist	Management
Pilot	CS102	Biomedical Scientist, Advanced Specimen Dissector and Dissector Manager	Scientist	Management
Pilot	CS103	Clinical Director Laboratory Medicine, Associate Medical Director for Division of Clinical Support Services	Doctor	Management
Pilot	CS104	Medical Lab Assistant	Assistant	Front Line
Pilot	CS105	Consultant Histopathologist	Doctor	Front Line
Pilot	CS106	Biomedical Scientist	Scientist	Front Line
Pilot	CS107	Biomedical Scientist	Scientist	Front Line
Pilot	CS108	Biomedical Scientist	Scientist	Front Line
Pilot	CS109	Consultant Histopathologist	Doctor	Front Line

CASE	Participant ID	Title	Profession	Classification
Pilot	CS110	Consultant Histopathologist, Clinical Lead	Doctor	Front Line
Surgery	CS201	Consultant Anaesthetist	Doctor	Front Line
Surgery	CS202	Sister 6	Nurse	Front Line
Surgery	CS203	Senior Sister 7	Nurse	Management
Surgery	CS204	Senior Staff nurse, theatre practitioner	Nurse	Front Line
Surgery	CS205	Theatre Matron	Nurse	Management
Surgery	CS206	Healthcare assistant in Theatre	Assistant	Front Line
Surgery	CS207	Senior Sister 7	Nurse	Front Line
Surgery	CS208	General Manager for Theatres	Manager	Management
Surgery	CS209	Operating Department Practitioner	ODP	Front Line
Surgery	CS210	Sister 6	Nurse	Front Line
Surgery	CS211	Locum Consultant, Senior Microvascular Fellow	Doctor	Front Line
Surgery	CS212	Consultant Radiologist	Doctor	Front Line

CASE	Participant ID	Title	Profession	Classification
Surgery	CS213	Consultant on call plastic Surgeon	Doctor	Front Line
Surgery	CS214	Consultant Associate Specialist Breast Surgery	Doctor	Front Line
Surgery	CS215	Consultant Surgeon, Clinical Director of General Surgery & Gastroenterology	Doctor	Management
Maternity	CS301	Consultant Anaesthetist Spec. Obstetrics	Doctor	Front Line
Maternity	CS302	Consultant Obstetrics	Doctor	Front Line
Maternity	CS303	Consultant Obstetrics and Clinical Director Obstetrics	Doctor	Management
Maternity	CS304	Assoc. Head of Women's Services for Nursing and Midwifery	Nurse	Management
Maternity	CS305	Head of Midwifery, Governance and Quality Clinical Dean	Nurse	Management

CASE	Participant ID	Title	Profession	Classification
Maternity	CS306	Matron of Clinical Quality and Safety for Obstetrics	Nurse	Management
Maternity	CS307	Clinical Midwifery Manager Delivery Suite (was Co-ordinator)	Nurse	Management
Maternity	CS308	Midwife Band 5	Nurse	Front Line
Maternity	CS309	Midwife Ward Manager	Nurse	Management
Maternity	CS310	Lead Midwife for Quality & Governance, Woman & Children's Services	Nurse	Management
Maternity	CS311	Midwife Band 6	Nurse	Front Line
Maternity	CS312	Midwife Band 5	Nurse	Front Line
Maternity	CS313	Consultant Obstetrics, labour ward lead	Doctor	Front Line
Urology	CS401	Consultant Urologist, Clinical Director Urology	Doctor	Management
Urology	CS402	Consultant Clinical Scientist, Head of department (biochemistry,	Scientist	Front Line

CASE	Participant ID	Title	Profession	Classification
		immunology and toxicology)		
Urology	CS403	Senior Sister 7	Nurse	Management
Urology	CS404	Consultant Urologist, Education Lead	Doctor	Front Line
Urology	CS405	Consultant Urologist	Doctor	Front Line
Urology	CS406	Consultant Urologist	Doctor	Front Line
Urology	CS407	Consultant Urologist	Doctor	Front Line
Urology	CS408	Healthcare Assistant Band 2	Assistant	Front Line
Urology	CS409	Band 5 Staff Nurse	Nurse	Front Line
Urology	CS410	Band 5 Staff Nurse	Nurse	Front Line
Urology	CS411	Matron, Urology, Thoracic, and Vascular	Manager	Management
Urology	CS412	Band 5 Staff Nurse	Nurse	Front Line

Meeting Observations

Meetings related to patient safety were observed and detailed notes about the meetings, issues discussed, exchange of ideas, and contextual information were recorded. Initially the researcher attended the Quality and Risk Committee before it was disbanded due to changes in Trust leadership, rolling the accountability of this committee up to the executive level (See Table 4.5 Quality and Risk Committee Observations). The emphasis was on understanding how the recommendations for improvement stemming from RCA investigations were discussed, and service

improvements set in motion and monitored. The researcher maintained a field journal during all observations and interviews.

As shown in Table 4.3 over 100 hours were spent on-site at the hospital. Almost half of this time was spent carrying out interviews, the remainder was in direct observations of committees, meetings, and observing staff carry out managerial or clerical functions. Further, during down-time between interviews there were opportunities to log into the NHS computer system to read Trust emails and bulletins, read wall-boards, and have informal chats with staff members in their offices or in the hallways.

Table 4.5 Quality and Risk Committee Observations

Date	Department	Hours
September 18th, 2015	Quality and Risk Committee	2
October 16th, 2015	Quality and Risk Committee	2
November 20th, 2015	Quality and Risk Committee	2
December 18th, 2015	Quality and Risk Committee	2
	TOTAL	**8**

Document Reviews

Documentation created by the Trust resulting from the RCA process was reviewed for each case, this includes investigative documents, meeting minutes, sequence of events, incident reports, reports of recommendation, and policies. These documents are listed in Table 4.6 Documents Reviewed by Case. Of particular focus were the Serious Untoward Incident Reports which correspond to each case where RCA investigations were carried out. These reports, 23 pages on average, contain a highly detailed sequence of events leading to the medical error, findings of the investigation (i.e. root causes), and recommendations for improvement. These reports allowed the researcher to acquire context for each department and incident prior to observing and interviewing staff. By understanding these reports, the researcher was able to follow interview responses more accurately, ask more detailed

questions, and validate whether the stated recommendations had been implemented.

Table 4.6 Documents Reviewed by Case

	Reports (*bolded), Minutes, Other	**Policies**
Quality & Risk Committee	Agendas, Meeting Minutes, Care Quality Commission (CQC) Report into Trust X, Committee Terms of Reference, Risk Management Strategy, Trust Risk Profile, Directorate Quality & Safety Reports, Safety Situation Reports, and SIRIUS Reports.	Complaints and Concerns Policy and Procedure, Incident Reporting and Management Policy and Procedure, Learning Development Policy, Risk Management Policy and Procedure, Serious Untoward Incident Policy and Procedure v3.0, and Root Cause Analysis Tool.
Pilot Case	**Serious Untoward Incident Report into Delays in Histopathology Reporting in 2013,** Pathology Quality & Governance Reports.	
Surgery Case	**Serious Untoward Incident Report of Mrs X,** Theatres Quality & Governance Reports, Surgery Risk Profile.	SUI at a Glance Report, Accounting for Swabs, Packs, Sharps and Instruments During

	Reports (*bolded), Minutes, Other	Policies
		Sterile Procedures Policy, and WHO Safer Surgery Checklist.
Maternity Case	**Serious Untoward Incident Report into the care of Ms X,** Obstetrical and Gynaecology Risk Management Strategy, Obstetrics and Gynaecology Quality & Governance Reports, and Women and Children's Risk Profile.	SUI at a Glance Report.
Urology Case	**Serious Untoward Incident Report into the care of Mr X,** Urology Quality & Governance Reports.	SUI at a Glance Report, Standard Operating Procedure for Taking Blood Results Over the Phone, Normal Blood Results (laminated card), AS Telephoning Results and Abnormal Phone Limits Policy, and Ward x learning sheet.

Validation Follow-up Meetings

A series of follow-up meetings and group presentations were scheduled with participating departments to present, ask for feedback, and validate initial study

findings (see Appendix, tables A.1 to A.4 Impact Summaries for preliminary findings). Although the Pathology department from the pilot study was invited to participate in follow-up meetings they did not respond. The validation meeting schedule is summarized below in Table 4.7 Validation Follow-up Meetings.

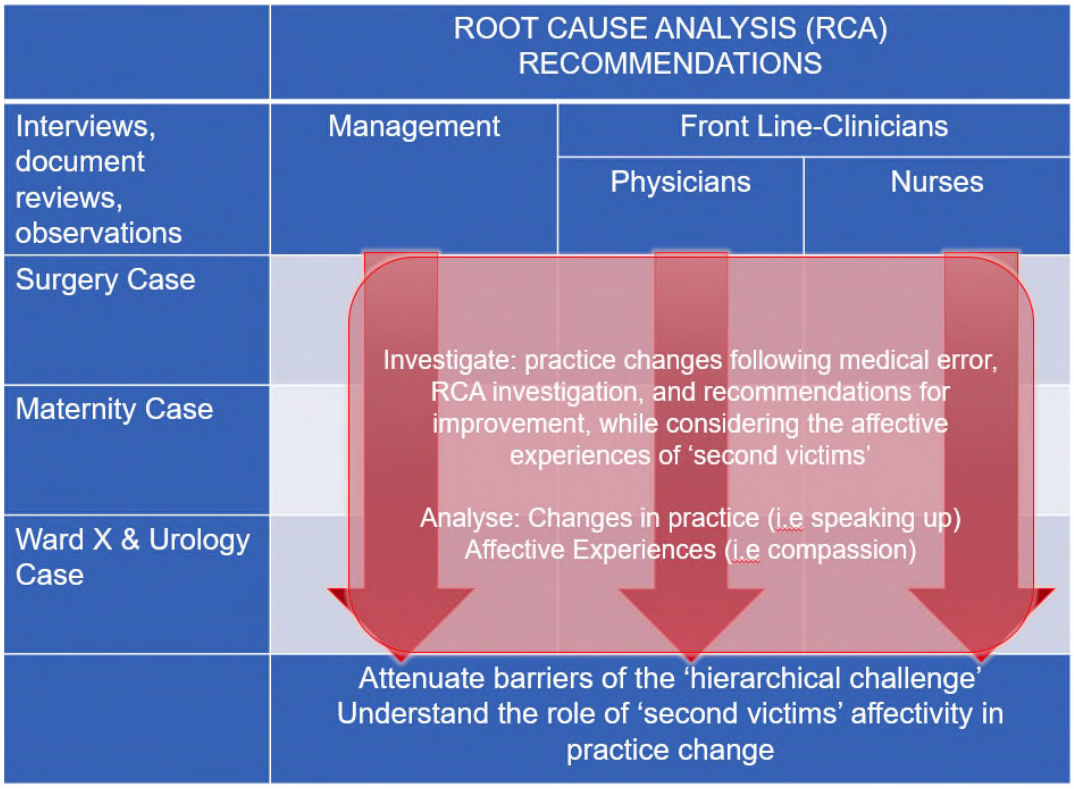
Table 4.7 Validation Follow-up Meetings

Date	Department(s)/Position(s)	Purpose	Hours
May 11th 2017	Surgery: Theatres Management Team Maternity: Clinical Director, Obstetrics	Validation and Follow-up	2
May 16th 2017	Maternity: Maternity Department (senior midwives)	Validation and Follow-up	2
June 6th, 2017	Urology: Senior Urologists Ward X Senior Sister	Validation and Follow-up	2
June 10th, 2017	Surgery: Study Day, Surgical Department	Validation and Follow-up	2
June 16th, 2017	Maternity: Forward Together, Maternity Department	Validation and Follow-up	2
		TOTAL	**10**

Overview of Cross-Case Analysis Methodology

Table 4.8 provides an overview of the methodological framework set-out for this study involving cross-case analysis.

Table 4.8 Overview of Cross-Case Analysis Methodology



Data Analysis

This study's data sources: transcribed interviews, meeting observations, and documentation reviews, were compiled into a qualitative database using NVIVO software, and analysed using an inductive coding method (Pratt, 2009). While the main focus of interest in coding was to understand what practice changes professionals made, and whether they were affectively impacted by medical error, a large number of contextual codes were also created.

From this coding process, 198 initial, first order codes were generated (see table A.6 First Order Codes in the Appendix, for a complete breakdown of all categories by individual level codes).

Each code was reviewed for how they might be related to larger, more inclusive concepts resulting in the collapsing of 198 first order codes into 6 second order categories shown below (See Table 4.9 Coding Categories). In Table 4.9, sources refer to the number of data sources coded (i.e. participants, observations, documents), while reference refers to the number of times a citation was coded, in

each category.

Table 4.10 Sub-Codes within Category: Practical Response, and Table 4.11 Sub-Codes within Category: Affective Response included coded data from across all cases, and list all the sub-codes assigned to these categories.

Table 4.9 Coding Categories

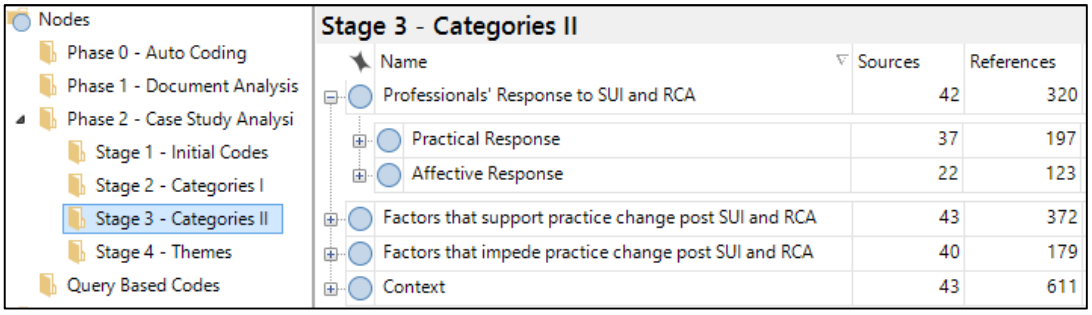


Table 4.10 Sub-Codes within Category: Practical Response (all cases)

Name	Sources	References
Professionals' Response to SUI and RCA	42	320
Practical Response	37	197
Setting expectations for voice	15	60
More assertive to escalate and challenge hierarchy	20	56
Management engendering voice among staff	11	27
Defensive behaviours	8	21
Closer adherence to policy and SOP	14	33

Table 4.11 Sub-Codes within Category: Affective Response (all cases)

Name	Sources	References
Professionals' Response to SUI and RCA	42	320
Practical Response	37	197
Affective Response	22	123
Stigmatising (Context)	2	6
Shame	7	22
Involving the Soul (Context)	2	4
Guilt	2	9
Crying (Context)	3	4
Compassion	17	39
Anger	16	39

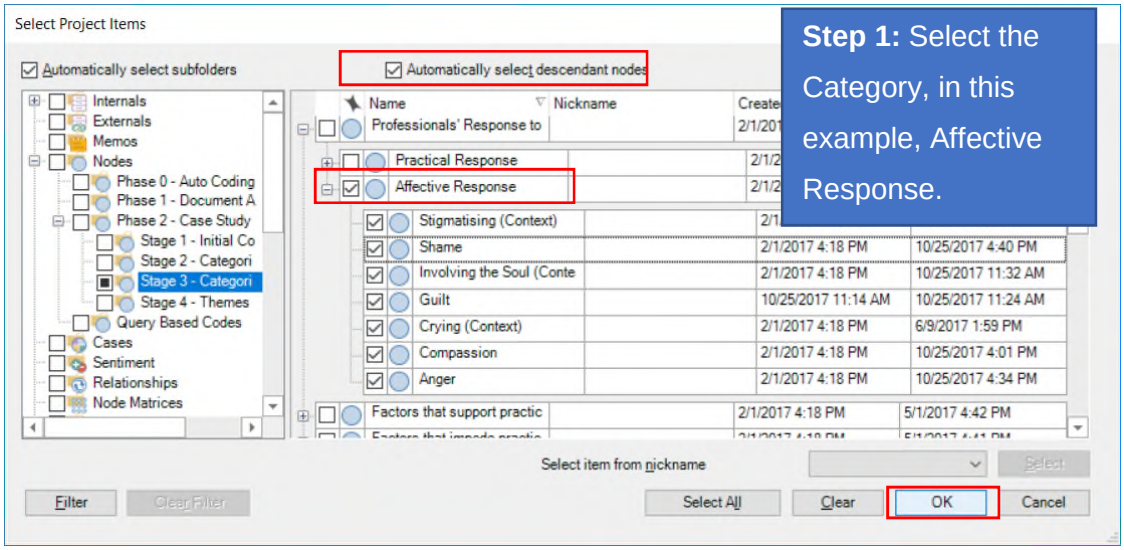
Once all first order codes had been categorized into second order concepts, the process of initial coding was completed.

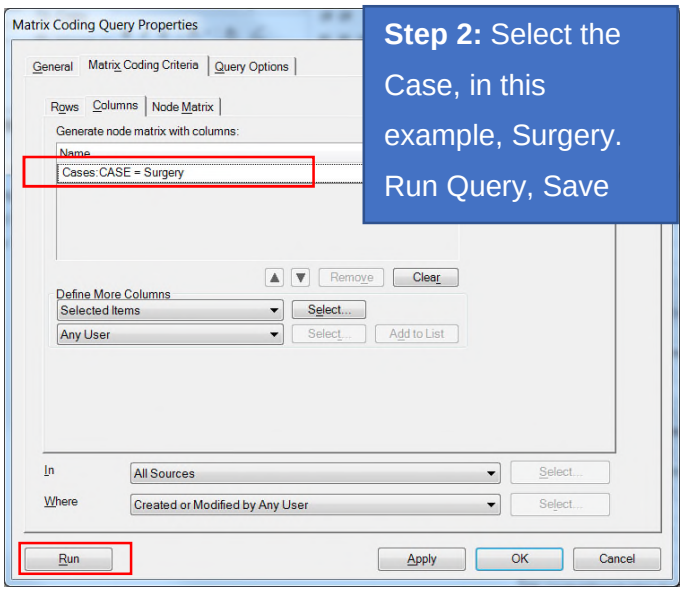
Running Matrix Queries

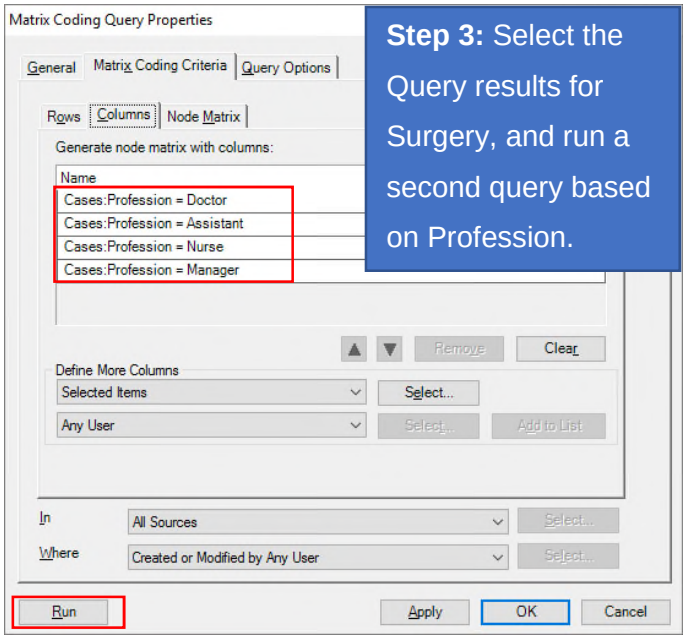
The NVIVO database could now be queried to provide answers about the items of interest, namely practice changes and affective experience following medical error.

To analyse the categories within the specific context of each case, a multidimensional query known as a matrix was run. Each matrix looked at how the practical and affective responses of professionals (doctors, nurses, assistants, and managers) varied by case (Surgery, Maternity, Urology). An example of how each matrix query was run using NVIVO is shown on the next page in Figure 4.4.

Figure 4.4 Running a Matrix Query







The matrix query output for affective responses found in surgery case is below in table 4.12. This specific table will be discussed in-depth in chapter 6, which describes the findings for the surgery case.

Table 4.12 Matrix Query Example: Surgery Case Affective Response by Profession

Surgery Case	Coding Reference			
Affective Response	**Doctor (n=5)**	**Assistant (n=2)**	**Nurse (n=4)**	**Manager (n=1)**
Compassion	9	3	9	1
Anger	7	3	4	1
Shame	7		3	

Conditional formatting, shown as shaded bars in the query output table, graphically represent the number of references assigned to each individual sub-code. Within NVIVO these tables are interactive allowing the researcher to click on each reference cell, bringing up the quotes coded to each.

This data analysis process was repeated for all of cases: Surgery, Maternity, and Urology. In total 6 matrix queries were run, including practical and affective responses for each case. The output of these queries established a foundation for the researcher to complete data analysis, and write-up professionals' practical and affective responses for each case. Given the data set was coded to 198 codes, the researcher utilized a degree of pragmatism with regards to focusing specifically on practical and affective responses. However, when it was warranted, extra queries were created, and run to explore additional related areas of the data set. For example, analysing contextual information pertaining to quality and safety investigations helped evidence a blame culture in Maternity.

Classifying Affective Experiences in Second Victims

It's well documented that medical error impacts upon the psychological well-being of healthcare professionals, eliciting a variety of affective responses (Scott et al., 2009; Sirriyeh et al., 2010; Wu, 2000; Wu & Steckelberg, 2012). Therefore, this study incorporates a methodological design influenced by Lazarus's core relational themes (Lazarus, 1991; Lazarus, 1993) for the classification and appraisal of affective experiences, given the likelihood of their discovery in this study's findings, and relevance for influencing changes in the practices of professionals following medical error (Sirriyeh et al., 2010). Evidence of a similar methodological approach can be found in Huy, Corley, & Kraatz's (2014) study that identified emotional reactions, aggregated as positive or negative, as facilitators and amplifiers in the implementation of change initiatives.

For clarity, the goal of this design is to enhance our understanding of the role of affect following medical error. Affect is an umbrella term, defined broadly as a "subjective feeling state" (Ashforth & Humphrey, 1995, p.99), which ranges from intense emotions to diffuse moods (Elfenbein, 2007).

An emotional state is a *"transient reaction to specific encounters with the environment, one that comes and goes depending on particular conditions" and are "generated and controlled by the personal implications for well-being conveyed by relationships (social) with the environment"* (Lazarus, 1991, p. 47).

Researching affect is challenging, primarily because many of the variables that analysis depends upon are non-observable. However, as urged by Lazarus (1991, p.44), emphasis added, to *"speak of an emotion is to make a **theoretical judgement** about a highly complicated hypothetical construct, an organized configuration consisting of many variables and processes".* Thus, to form an understanding, this researcher must make judgements by applying a combination of rational and empirical analysis as outlined next.

In consideration of this study's empirical setting, and data collection methods which include: observations, in-depth interviews, and documentation review, the design considers what *observable* variables relevant to affective experiences might be present. Lazarus (1991, p.43) defines these source variables as: actions, what people say, and environmental events and context, for detail see Table 4.13. Physiological reactions, such as autonomic nervous system activity, are not included in this design given the degree of participant intrusiveness, lack of scientific instruments, and ethical and scientific guidance.

Table 4.13 Observable Variables Relevant to Emotion (Lazarus, 1991, p. 43)

***"Actions**: such as body postures, facial expressions, weeping, avoidance, or attacking. Acknowledging some actions might be performed to create a social effect, whereas others are involuntary. Suggesting actions are motivated, or expressive, or that they indicate or result from an emotional process requires interpretation by the researcher."*
***"What people say:** are a valuable resource of information about emotion because they sometimes tell us what we cannot evidence from other sources. Examples include explaining the*

conditions which generate an experienced emotion, or the beliefs that underlie a reaction. While individuals can distort their meaning, by choosing to present themselves in a light, these reports will be treated as observables and interpreted in the context of other available data."
"Environmental events and context: *relate to the physical, social, and cultural events under which an emotion occurs and require interpretative inference and theory." The appropriateness of this source variable relates to the common experiences of medical error which all study participants have experienced. Thus, if an individual was angered by an event, we can collate the reactions and viewpoints of all participants who experienced the same event to interpret the appropriate classification.*

Based upon the observable variables outlined above, the design aims to evaluate the person-environment relationship, an idea that affect cannot be understood from only the standpoint of the environment or the person as separate units. The concept which defines these relationships is known as core relational themes, which define the key relational benefit or harm of each emotional category, negative and positive, and each specific emotion within each category (Lazarus, 1991, 1993; Lazarus & Cohen-Charash, 2001)

Whether an affective experience is thought to be positive or negative reflects whether something of relevance has occurred to an individual's well-being. This is called the motivation principle which states *"the things people care about – that is, their goal commitments – define what is harmful and beneficial for them, and therefore what is apt to generate positive and negative emotions in their encounters with the environment"* (Lazarus, 1991, p. 433). For example, a physician harming a patient in the case of medical error, would be goal incongruent with the Hippocratic Oath to "Do no Harm", and likely elicit a negative affective state.

The core relational themes (Figure 4.5) depend upon the idea there is a central relational harm or benefit which underlies each specific kind of emotion. Thus, positive and negative emotions are *"in a sense, opposite sides of the same coin"* (Lazarus, 1991, p. 124).

Figure 4.5 The Core-Relational Themes (Lazarus, 1991; Lazarus & Cohen-Charash, 2001)

Anger	A demeaning offense against me and mine.
Anxiety	Facing uncertain, existential threat.
Fright	An immediate, concrete, and overwhelming physical danger.
Guilt	Having trangressed a moral imperative.
Shame	Failing to live up to an ego-ideal.
Sadness	Having experienced an irrevocable loss.
Envy	Wanting what someone else has and feeling deprived of it but justified in having it.
Jealousy	Resenting a third party for loss or threat to another's affection or favor.
Happiness	Making reasonable progress toward the realization of a goal.
Pride	Enhancement of our ego-identity by taking credit for a valued object or achievement, either our own or that of someone or group with whom we identify.
Relief	A distressing goal-incongruent condition that has changed for the better or gone away.
Hope	Fearing the worst but yearning for better, and believing the improvement is possible.
Love	Desiring or participating in affection, usually but not necessarily reciprocated.
Gratitude	Appreciation for an altruistic gift that provides personal benefit.
Compassion	Moved by another's suffering and wanting to help.

Evaluating the medical second victims literature (Scott et al., 2009; Sirriyeh et al., 2010; Wu, 2000; Wu & Steckelberg, 2012) has identified the following affective states: anger, shame, guilt, fear, panic, shock, humiliation, anxiety, depression, frustration, sadness, grief, and remorse.

Several of these categories were compared with core relational themes, to understand how they could be reliably categorized and appraised by Lazarus (1991; 1993) & Lazarus & Cohen-Charash (2001). See Table 4.14 Anger, Table 4.15 Compassion, Table 4.16 Guilt, and Table 4.17 Shame, for appraisal components by affective experience. By thusly preparing the design ensures the researcher is prepared for analysis of data, so that reliable and valid categorisations of affective states can be made, based upon observable variables.

Following data collection and analysis (refer to table 4.11 discussed earlier), several categorisations of affective experience were found, primarily relating to anger, compassion, guilt, and shame. During follow-up and validation meetings with participating departments, preliminary findings (see Tables A.1 to A.4 Impact Summaries in appendix to this thesis) were fed back to participants and consensus reached that affective experiences had been captured in a reliable way.

Table 4.14 <u>Appraisal for Anger</u> (Lazarus & Cohen-Charash, 2001; Lazarus, 1991, p. 226)

Category	Primary Appraisal Component	Secondary Appraisal Component	Example from Study Data
Anger – "a demeaning offense against me and mine"	"If there is goal incongruence, then only negative emotions are possible, including anger. If the type of involvement is to preserve or enhance the self- or social-esteem aspect of one's self, then emotion possibilities include anger, anxiety and pride."	"If there is blame, which derives from the knowledge that someone is accountable for the harmful actions, and they could have been controlled, then anger occurs."	Context: Nurses CS202 and CS204 speaking-up to a Surgeon about a retained swab in the patient. They attribute blame to the Surgeon. *"I insisted that we were using the wrong x-ray device, but I was told "No, no, it's alright," and I said "No, it's not!"* – Nurse 204 *"You know, I'm sure we should be doing a plain x-ray. I don't know why they've brought that," and the surgeon said "No, it's alright. It's alright, it'll be fine. We'll see it."* – Nurse 202

Table 4.15 <u>Appraisal for Compassion</u> (Lazarus & Cohen-Charash, 2001; Lazarus, 1991, p.290)

Category	Primary Appraisal Component	Secondary Appraisal Component	Example from Study Data
Compassion – *"an altruistic concern for another's suffering and the desire to alleviate it"*	*"If there is a goal relevance, either because of enlightened self-interest, altruism, or a moral value that threatens us with guilt, then any emotion is possible, including compassion.* *If there is a goal incongruence in regard to another person's plight, then the emotion possibilities are limited to anger, anxiety, guilt, shame, disgust, and compassion"*	*"if there is self-directed blame, then the probability of guilt is increased; if blame is directed at the victim, then the probability of anger is increased; if there is no blame, then compassion is likely."*	*"in my clinical practice I'm probably more focused on patients' experiences than I used to be… it was probably that conversation with the patient and the relative to actually say I've got an obligation to do that."* -CS201 Consultant Anaesthetist, Lead Investigator *"you come into the profession because you want to look after people and you care about people, you want to do your best"* -CS311 Midwife *"once an event has happened, our very first thought is for the patient and it is for the family*" - CS301 Consultant Anaesthetist Spec. Obstetrics, Lead Investigator

Table 4.16 <u>Appraisal for Guilt</u> (Lazarus & Cohen-Charash, 2001; Lazarus, 1991, p. 242)

Category	Primary Appraisal Component	Secondary Appraisal Component	Example from Study Data
Guilt – having transgressed a moral imperative. *"Guilt is when we believe we have acted in a morally deficient way, all the more so if in so doing we have wronged or harmed an innocent other."*	*"If there is goal relevance, then any emotion is possible, including guilt.* *If there is goal incongruence, then only negative emotions are possible, including guilt.* *If the type of involvement is to manage a moral transgression, then emotion possibilities narrow to anger, anxiety, guilt, and disgust"*	*"If blame is to oneself, then emotion possibilities narrow to guilt."*	*"it is called a root cause analysis, I felt like the root of the problem and it just is soul destroying…It really was tough to know that you were partly responsible for somebody's death. [crying]. It's very tough"-* Staff Nurse CS412 *"I just took it very personally … I actually had this chance to make a difference because I'd seen her (patient). I had examined her myself, so there was no question of relying on someone else's findings … I've always thought… I mean I think I'm a good clinician" –* Doctor S (CS302 Consultant Obstetrician)

Table 4.17 <u>Appraisal for Shame</u> (Lazarus & Cohen-Charash, 2001; Lazarus, 1991, p.243)

Category	Primary Appraisal Component	Secondary Appraisal Component	Example from Study Data
Shame – "*failure to live up to an ideal.* *failure to conform to our idealized identity."*	*"If there is goal relevance, then any emotion is possible, including shame.* *If there is goal incongruence, only negative emotions are possible, including shame.* *If the type of involvement is to manage a failure to live up to an ideal, then the possible emotions narrow to anger, anxiety, shame, and disgust"*	*"If blame is to oneself, then the possible emotions narrow to shame."*	*"the coroner, was reviewing my practice and potentially I hadn't actually… I don't know how to put it. Potentially I had sort of not been up to the mark."* – Doctor S (CS302 Consultant Obstetrician) *"We were always very focused on achieving the best results for our patients and that's why we were all very disappointed or upset by this incident … it was such a bitter pill to swallow that this had happened. If it had happened elsewhere I wouldn't be necessarily as disappointed or as surprised, but the fact that it happened here was a very personal, negative experience"* –CS211 Locum Consultant, Senior Microvascular Fellow

Analysis and Writing-up

As shown in the researcher's journey, figure 4.3, writing the thesis began in the summer of 2016. While work on the literature review had started prior to November 2014, during the PhD proposal phase, it evolved over the course of the research journey. It became clear through preliminary analysis of findings, that codes related to voice were beginning to emerge. This necessitated the inclusion of employee voice literature to frame the study, in addition to the patient safety literature which highlighted the hierarchical challenge and second victims. Further, as codes relating to affective experience were found, the researcher spent several months researching how to best interpret and make sense of this data, eventually deciding on the core-relational themes as most suitable for analysing the type of qualitative data collected.

Throughout the writing-up process there was continuous analysis, involving writing many drafts of findings from each case, the presentation of themes in various ways, and regular feedback from supervisors. This ongoing analysis and regular feedback informed the writing up process. Findings were continuously questioned, contextual information was stripped down, reducing the total number of codes, to enable a clear focus for writing-up. The focal point of the thesis became narrower, shaped by literature and analysis of findings to: understand the role second victims of medical error play in moderating the hierarchical challenge, encouraging the enactment of employee voice.

Upon completion of case findings chapters, the researcher embarked on the discussion chapter where findings were compared across cases and literature was re-integrated to help explain what was discovered. In writing the conclusion for the thesis, the researcher reflected upon his experiences conducting the research, discussed transferability, limitations, and ideas for future research.

Conclusion

This chapter has explained the overarching research design for this PhD study. Drawing upon methodological elements including a focus on breakdowns in practice, and classification of affective experiences, this design supports the study's aims to understand practice change, focusing on employee voice, and affective experience, following medical error.

Given the gap in what's known about second victims, an abductive case research design was chosen that involved an iterative process of reviewing theory before entering the field, collecting data from a pilot study, and re-visiting theory in consideration of what was been collected, to influence further data collection and analysis.

A rationale was provided for case selection based upon the principle of replication logic. Case selection controls were put in place which enforced constant factors as well as variable factors to determine which cases were chosen for the study. A series of interviews, observations, and documentation reviews were conducted for each case.

The researcher's experience of conducting the research was detailed, beginning with a pilot case study and finishing with conducting validation and follow-up meetings. The core-relational themes were introduced as a means to evaluate the affective experience of second victims.

The process of data analysis using NVIVO, involved inductive coding of all data into first order codes and second order categories, and running matrix queries. Examples of query output were provided. The NVIVO database, and specifically these query output provided a foundation for the researcher to analyse and write-up findings for each case, which are presented in full beginning in section II of this thesis.

SECTION II: Empirical Findings

Introduction to Empirical Findings Section

Section II, of this thesis includes chapters 5,6,7, and 8, providing the empirical findings for the study. An overview of cases is found in chapter 5, first presenting a pictorial trajectory of cases by degree of voice and affect, before summarized case descriptions and highlights are presented. Next full descriptions for each of the cases are provided. This includes an overview of each department, professional groups involved, the sequence of events for the incident, findings from each root cause analysis investigation, and recommendations for improvement, and whether they were found to be implemented.

While the pilot study completed in a pathology department allowed the researcher to test the interview schedule and decide on the selection of three cases, it has not been included in the findings. The reason is that due to the large distance between patients and professionals in that department, and the medical errors resulting primarily from system, rather than human factors, no specific individual was responsible, as a result there was a complete absence of affectivity and no second victims were found. Thus, while the pilot study was useful for establishing context, particularly regarding the inner workings of a pathology lab which was important for the urology and ward x case, it lacked key features for theoretical development, namely second victims and affective experiences. Further, pathology did not participate in validation and follow-up meetings.

Next, Chapter 6 deals with surgery, chapter 7 focuses on maternity, while chapter 8 covers urology and ward x. In all cases the findings emphasise the practical and affective response of professionals in relation to the incident, process of investigation, and formal recommendations. The immediate aftermath of the incidents is discussed, often involving affective experience, before both emergent and recommended practice changes are highlighted. A voice summary, ranging from climates of silence and futility, to those which encourage voice, is described for each case. Evidence is provided for second victims as facilitators, establishing the conditions for voice, either through direct involvement or emotional contagion of colleagues.

Finally, a conclusion to the empirical section is found at the end of chapter 8, identifying thematic elements which are addressed in chapter 9: discussion.

Chapter 5: Overview of Cases

Introduction

Chapter 5 serves as an introduction and overview, to chapters, 6, 7, and 8, which present the findings of three in-depth case studies at a single NHS trust. Each case involves a serious medical error, where root cause analysis investigation has been carried out, and recommendations made for service improvement. Each case's findings are presented individually, before thematic similarities and differences, across cases, are discussed in Chapter 9: Discussion.

Each of the three case studies contains 10 sections, spread over 2 chapters:

Chapter 5 – overview of all cases

1) an overview of each department involved,
2) a description of the incident,
3) the findings of the investigations, and
4) evidence of recommendations implemented.

Chapter 6 – surgery, 7 – maternity, 8 - urology and ward x

5) Next, how professionals responded, in the form of practice changes and affective experiences, are examined in coding references,
6) Conditions for silence,
7) Second victims and affective experiences,
8) Conditions for and enactment of voice,
9) Voice and silence summary, and
10) Follow-up.

In Chapters 6, 7, and 8, coding reference tables, queried from the NVIVO database, are used to provide support for findings. Specific attention is paid to understanding how professionals respond to the 'hierarchical challenge', whether conditions support or discourage employee voice, and exploring the role second victims and affective experience, might play in influencing healthcare teams and practice changes.

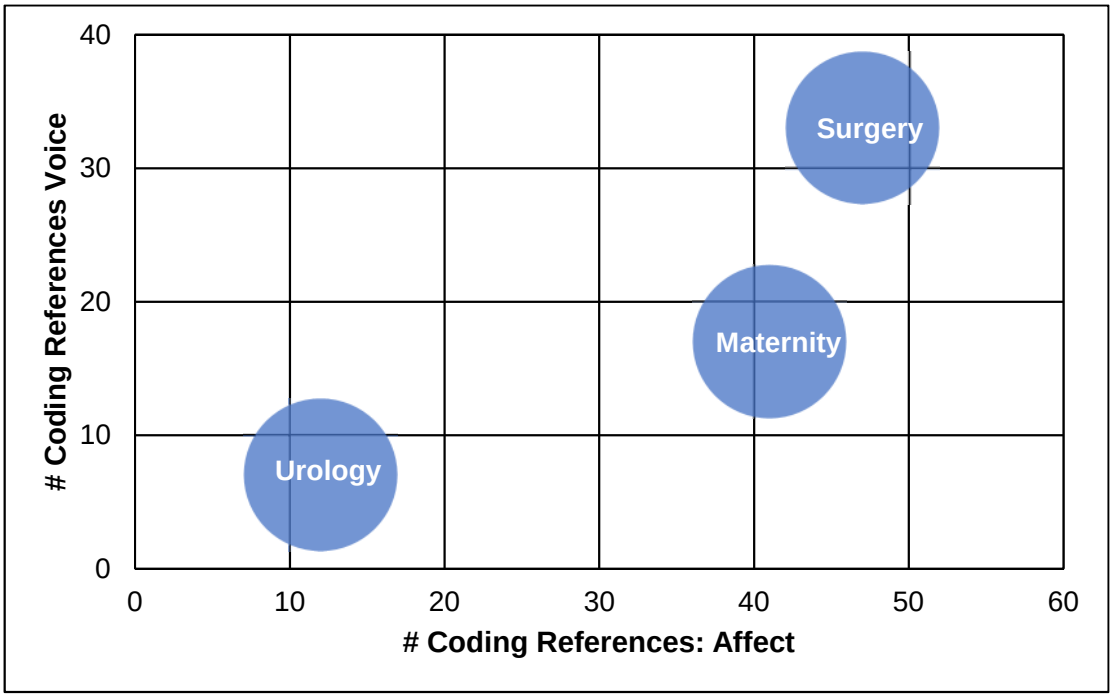
Representation of Cases by Voice and Affect

Figure 5.1 is a representation of cases by the number of coding references to both voice and affect. Coding references for affect and voice are a sum of individual codes from each case.

Acknowledging this quantitative representation is subjective, based on the researcher's interpretation of data sources, it presents an 'at-a-glance' look at the degree of voice exhibited, and affect experienced, by healthcare professionals, in each case.

On the scale of affective experience, a couple of individuals were affected in Urology, with more wide-spread affective response found in Maternity, and Surgery cases. There were varying degrees of voice coded across cases. In Urology the least number of references for voice was found, with more moderate reference to voice found in Maternity, while Surgery had the highest number of references for voice.

Figure 5.1 Representation of cases by # of coding references for Voice and Affect



Summarised Case Descriptions and Highlights

Surgery Case Quick Summary

Description: Nearing the end of a complex 10-hour multi-site surgery, involving 12 team members, a nurse informs the surgical team leader that a small surgical swab is missing and might have been retained in the patient. The swab cannot be found anywhere. A radiologist is called in to take scans of the patient using fluoroscopy, the wrong imaging device for this type of scan known to miss radio-opaque swabs 15% of the time. Subsequently a decision was made not to re-open the patient as no swab could be found. Two months later the patient attended a clinic visit in obvious discomfort and underwent emergency surgery for the removal of a retained swab.

Highlights: The hierarchical challenge prevented nurses from raising concerns, while those who did speak-up where ignored. These conditions for silence were 1) hierarchical culture, 2) fatigue, and 3) futility of voice. Both Surgeons and Nurses had negative affective experiences. These were characterized as anger and shame. Compassion for patients was also expressed. The conditions for prosocial voice were 1) 'thriving' second victim, Mr. K, the lead surgeon, setting expectations for voice, 2) closer adherence to policy by nurses, 3) nursing management engendering voice among staff, and 4) a reinvigorated sentiment of care. The outcome of this team's voice climate, is that at least two similar never events were prevented, when members from this team were involved in surgical procedures at other theatres/hospitals in the trust. Further, evidence suggests knowledge of his event has been shared to other trusts in the NHS.

Maternity Case Quick Summary

Description: A high-risk pregnant mother arrives suddenly to the emergency room with vaginal bleeding. She is immediately brought into the maternity ward and assigned to a healthcare team. The primary midwife looking after her is from the community and not experienced with high-risk pregnancies. The infant's heart rate is not monitored effectively. The Obstetrician assigned to the case diagnosed an abruption, but makes a poor decision to monitor the patient every four hours. An opportunity for emergency caesarean section is missed and the infant expires.

Highlights: Inappropriate allocation of a community midwife (midwife z) to a high-risk mother, and lack of escalation by CS302 Doctor S, were the root causes in the birth of a still-born child. The conditions for defensive silence were 1) punitive investigations, 2) defensiveness by nurses, and 3) a departmental blame culture. Doctor S and midwife Z, the second victims, were affectively impacted through direct involvement in the incident, going on to influence the affective state of their colleagues. Affective experience was characterized as anger, shame, and guilt. Compassion for patients was also expressed. The conditions for prosocial voice were 1) clinical director of obstetrics setting expectations for voice, 2) midwifery management engendering voice among staff, and 3) a reinvigorated sentiment of care.

Urology and Ward X Quick Summary

Description: On a busy inpatient ward a newly qualified nurse receives a phone call from the laboratory informing her of a patient's elevated potassium levels. The nurse went to the bedside of the patient and informed the doctors' caring for that patient of the elevated results. No action is taken regarding the elevated potassium and the patient is discharged home later that day. The next day the patient arrives to the emergency department in cardiac arrest and expires.

Highlights: Nurse CS412 informed doctors about a patient's abnormal blood results, and although they listened, no action was taken, leading to futility of voice. Conditions for silence were 1) hierarchical culture, and 2) futility of voice. CS412 had a negative affective experience, feeling anger and guilt. Individual affect was felt by other nursing colleagues, particularly CS403, senior sister, who supported CS412 post event, going on to implement numerous safety improvements, including introducing a standard operating procedure (SOP) for taking blood results over the phone. Conditions for defensive voice were 1) closer adherence to SOP by nurses, 2) Defensiveness, and 3) Nurses setting expectations for voice. While nursing was found to have implemented recommendations from the RCA investigation, Urology had not implemented any.

Full Case Descriptions

Surgery Case Full Description

Case: Surgery, Never Event: Retained Foreign Object (RFO)

Date: February 2013

The Department

This case focuses on an event which occurred in one operating theatre, within a broader surgical directorate that runs 25 operating theatres across three hospital sites, with a budget of around £15m. The department has around 350 staff split between theatre Nurses and Operating Department Practitioners. Consultant Surgeons and Anaesthetist make up the other professional groups in this department.

The Incident

Never Events are a classification of serious medical errors for which national safety recommendations and guidance are available, and should be in place for all healthcare providers. These events have the potential to cause serious patient harm or death, are wholly preventable, have occurred previously, and are at risk for recurrence (NHS England, 2015). Two never event classifications relevant to Surgery include wrong-site surgery and retained foreign objects (RFO). It's estimated surgeons operating on bilateral structures (i.e. kidneys) have a 25% lifetime risk of operating on the wrong-site, while an average-size hospital reports retained objects occurring at a rate of approximately 1 per year (Thiels et al., 2015).

This case focuses on a retained object never event which occurred in one operating theatre, within a broader surgical directorate. A team of 12 theatre staff consisting of 3 plastic surgeons, scrub nurses, operating department practitioners (ODP), and surgical assistants, were performing a complex multi-site surgery. Their patient, a middle-aged woman, was undergoing a mastectomy, and reconstruction known as a DIEP flap where skin from the lower abdomen is transferred to the chest. The patient's procedure was part of ongoing treatment for breast cancer following seven months of chemotherapy. This surgery involved three stages at different sites on the patient's body occurring simultaneously, each led by a consultant surgeon and supported by scrub nurses and ODPs. Total procedure time is between 10 -12 hours.

"You're looking at in excess of 150 swabs, in excess of 15 people working together, different sub-specialities, protected operating time" – Surgeon (cs211)

"There's a grading system for the complexity of surgery and it is the highest complexity which is what we call CM05, complex major 5" - Mr K. Lead Consultant on call Plastic Surgeon (cs213)

8 and a half hours into the procedure one of the scrub nurses performed her final check for the breast operative site and noted that the swab count was incorrect, informing the lead surgeon immediately. By this time all three surgical incisions had been closed.

"there's a lot of people around this one individual and because there's such a vast area open, breast and abdomen, surgeons are taking swabs. Although there's a clear divide who's doing the abdomen and who's doing the breast, "Is that my swab?" "It might be your swab." "Well, why have you taken my swab?" it all got mixed up because I had already done the mastectomy part, the removal of the breast, sort of about five hours before. You don't tell the surgeon a swab is missing when he's closing skin. You start doing your count as soon as they start closing the internal muscle and whatever else. the first check was correct. The second check you don't know if it was correct because everyone is fighting to finish the case, it's late at night." – CS204 Senior Staff nurse, theatre practitioner

"We used between 200 to 300 swabs. So before we close the wounds the senior nurse checks the swabs. After you close the second layer they check it again. Unfortunately, on that day I was informed that there was a swab missing on the final count." - Mr K. Lead Consultant on call Plastic Surgeon (CS213)

After checking extensively in the operating theatre, radiology was contacted to screen the patient. The radiographer took 20 images of the operative fields using mobile fluoroscopy. During this time only the lead surgeon and radiographer were present in the theatre. Outside of the theatre, at least two nurses spoke-up to the other surgeons that the radiographer was using the incorrect imaging modality, fluoroscopy, rather than plan film x-ray. Surgeons were dismissive of these concerns. No swab could be identified on the images. The lead surgeon decided it was too risky to re-open the incisions to look for the missing swab.

"it's up to the surgeon's discretion to weigh up the pros and cons of reopening the patient again… If I open this wound again I'm exposing the mesh and I'm causing devitalisation of tissues and more dissection which would increase chance of infection. So I took a decision I'm not opening this patient." - Mr K. Lead Consultant on call Plastic Surgeon (cs213)

A decision was made to finish the procedure, wake the patient up and transfer to recovery area. X-rays were requested at a later stage once the patient was stable enough to go to the radiology department. These later x-rays did not capture all of the left chest and soft tissue and thus did not detect a retained swab. Two months following discharge, the patient attended a clinic in obvious discomfort, the lead surgeon requested an urgent ultra sound of the left breast, identifying a retained swab and immediately organised theatre time for surgical removal.

"We declared that the swab was not there in the body, saw the surroundings again, couldn't find the swab, so the patient was sent to recovery. Later on when the patient came to the clinic Mr. K noticed the wound was a bit infected, so he asked for a CT scan, ultrasound scan, and they found a swab on the very lateral extremity of the wound, so then that swab was removed." - Consultant Associate Specialist Breast Surgery (CS214)

This incident was categorised as a never event and investigated by the Trust, under the Department of Health 'Never Events' list and healthcare 'never events' policy framework.

RCA Investigation Findings

- Following the initial swab counts; a small swab was placed within the breast operative field and subsequently retained at the time of skin closure by surgical team.
- There was a lack of awareness (by radiography as well as the surgical team) of the limitation of fluoroscopy in identifying radio-opaque swabs.
- The surgical and theatre team did not review the Trust policy on swab counts to ensure that all necessary actions for this situation were completed. If they had they would have discovered that plain film x-ray should be used if a missing swab is not identified, as fluoroscopy may miss 10-15% of radio-opaque swabs.

- Several nurses identified that they had been informed in the past that fluoroscopy was not the correct imaging modality for identifying swabs.

Given the length of the operative procedure (10-12 hours), fatigue may have affected personal/team decision making at the time the incident occurred.

"My view of the root cause was there needed to be a better standard operating procedure for managing swabs in complex operations where there is a change in phase of the operation or change in position." - Consultant Surgeon, Clinical Director of General Surgery & Gastroenterology (CS215)

Surgery: RCA Recommendations

The root cause analysis investigator's recommendations for improvement are listed in Table 5.1.

Table 5.1 Surgery: RCA Recommendations

RCA Recommendations	Status
Review of current policy "Accounting for Swabs, Packs, Sharps and Instruments During Sterile Procedures Policy version 1".	Completed
Modification of the Trust's IRMER regulations associated with radiological imaging requests associated with management of swab discrepancy and extent of clinical field to be imaged.	No Evidence
Review of current practice of surgical counts as detailed in the above policy ensuring a standardised process within theatres across the organisation.	Completed
Senior Theatre Management Team and the Professional Development Team of the Theatre Directorate should work with the Trust Simulation Centre to develop an Emergency Checklist for use in the event of swab discrepancy during surgical procedures.	Completed

RCA Recommendations	Status
Senior Theatre Management Team, Breast Surgery Team and Trust Simulation Centre team to consider a programme of team observation of complex surgical procedures with formal debrief for process improvement.	Partially Completed (see below)
For the Theatre Directorate management team to consider commissioning the Trust Simulation Centre team to deliver formal human factors/teamwork training for all theatre teams across the organisation.	Partially Completed, some 'in-theatre' training, but lack of funding for full Simulation Centre training
Investigating Team to provide an opportunity for Patient to meet with the Investigating Team to talk through the findings of the investigations	Completed

The findings of the Trust's investigation, and recommendations, are summarized in Figure 5.2 'SUI at a Glance', a printed poster used throughout the Trust, to share learning from the SUI.

Figure 5.2 Surgery SUI at a Glance Poster

SUI at a Glance Report

Trust wide key learning points:

•Fluoroscopy/image intensifier should not be used in isolation as may fail to locate radio-opaque swabs.

•Plain X-ray should be used, following fluoroscopy, if a missing swab is still unaccounted for.

•In the event of retained swab the correct Policy and Procedure should be followed.

•There should be clear documentation in patient records regarding events.

Incident Theme(s):

•Retained foreign object
•Adherence to Trust Policy and Procedure
•Documentation

NEVER EVENT
Retained foreign object

Situation

On [redacted] following complex breast surgery, an incident was reported identifying that a small sterile surgical swab was unaccounted for at the end of the procedure. Despite the use of fluoroscopy imaging in theatre, and with a post operative plain chest X-ray on HDU, the swab remained unaccounted for.

Following discharge from hospital the patient developed a discharging sinus over her left reconstructed breast. On [redacted] the patient attended an outpatients appointment where an ultrasound scan of the left breast reconstruction was undertaken. The scan identified the presence of a radio-opaque swab in the left breast area – this was also confirmed by chest X-ray. The patient was taken to theatre and the swab surgically removed the same day.

Background

Mrs X was admitted on [redacted] to [redacted] Hospital for a planned left mastectomy and axillary node clearance with immediate reconstruction as part of her on-going treatment for breast cancer following chemotherapy.

The procedure is performed in 3 main surgical stages – this involves two surgical and two scrub teams working simultaneously, with Stages 1 and 2 of the procedure commencing at the start of surgery.

•At the completion of Stage 1 of the procedure, a standard swab, needle and instrument count was completed in line with Trust policy and was correct on the final count. Stage 3 of the procedure was commenced.

•At the start of closure of the breast operative field (stage 3), the surgeons were informed that the first count for stage 3 was correct. At the same time the first count for the abdominal operative site (stage 2) was completed and was also correct.

•At approx 17.30 hours both scrub nurses performed their final checks simultaneously. Scrub nurse 1 confirmed that the final check for Stage 2 was correct for all swabs. Scrub nurse 2 performed her final check for Stage 3 and noted that the swab count was **incorrect**. There was one 10cm x 7.5cm 'small' swab missing.

•In light of this discrepancy, both scrub teams repeated their counts confirming the missing swab for stage 3.

•The theatre team then proceeded to recheck all used swabs on the swab racks, and performed a thorough check of the area and equipment in an attempt to find the missing swab including re-counting all waste bags used in Stage 1.

•Radiological screening was requested as part of the process to locate the missing swab. A number of images were taken using Fluoroscopy (Image Intensifier) with each image being reviewed by the surgeons and the radiographer. There was no evidence of a retained swab on any of the images taken.

•During the immediate post operative period the patient a plain chest X-ray taken. There was no foreign body identified on this film. Further requests were submitted for plain abdomen and pelvis X-rays but these requests were rejected in light of the formal report of the screening undertaken in theatre.

•Mrs X recovered from her surgical procedure and was discharge from hospital on the 24th February 2013. She was reviewed regularly as an outpatient both by the breast care team and by the surgical team.

•On 28th February 2013, Mrs X was reviewed in clinic and further X-ray abdomen was requested. This did not demonstrate the presence of a retained swab.

•On 30th April 2013 when Mrs X attended a clinic appointment she had sero-sanguinous material discharging from a sinus on the reconstructed left breast. An ultrasound of the left breast identified a retained swab which was confirmed on plain chest X-ray.

•Mrs X underwent surgical removal of the retained swab within 4 hrs with discharge home later that day.

Assessment

•Radiological imaging was requested to try to identify the radio-opaque swab within the patient – the modality used was fluoroscopy which did not demonstrate the missing swab

•The surgical team decided to proceed to plain radiological imaging to exclude a retained swab post operatively rather than proceed to in-theatre plain mobile X-ray imaging

•The surgical and theatre team did not review the Trust policy 'Accounting for Swabs, Packs, Sharps and Instruments during Sterile Procedures Policy v1.0' to ensure that all actions undertaken in light of swab count discrepancy were completed in line with Trust Policy.

•The chest X-ray request form was incomplete as it did not include the laterality of the breast reconstruction.

•The documentation regarding the missing swab in the medical records was limited and it was not mentioned in the operation record or discharge summary. There was no record of any review of the chest X-ray taken on HDU nor the discussions with Mrs X informing her of the incident.

Recommendations

•Review of current policy "Accounting for Swabs, Packs, Sharps and Instruments During Sterile Procedures Policy version 1" with particular reference to imaging modalities in the scenario of a missing swab.

•Modification of the Trust's IRME regulations associated with radiological imaging requests associated with management of swab discrepancy

•Review of current practice of surgical counts, in line with Trust policy, ensuring a standardised process within theatres across the organisation.

• Development of Emergency Checklists for theatres including checklist for use in the event of swab discrepancy during surgical procedures.

•Formal human factors/teamwork training for all theatre teams across the organisation.

Maternity Case Full Description

Case: Maternity Department: Serious Untoward Incident (SUI) unexpected death of a neonate

Date: April 2015

The Department

This case focuses on a serious untoward incident (SUI) that occurred on hospital x's maternity unit. The women & children's services are spread across 70 beds at three hospital sites, and deliver about 10,500 babies each year with around 6,500 deliveries happening at hospital x. The infrastructure at hospital x is over 20 years old and was built to handle 3,500 deliveries per year.

Women & children's services employs about 450 full-time equivalent midwives, which is close to about 1000 total midwifery and gynaecology staff (including support staff). There are approximately 25 obstetrical consultants at hospital X, and another 12 split between the other two sites. Midwifery staff are encouraged to work as part of a multidisciplinary team with consultant obstetricians. A recent Care Quality Commission (CQC) report identified staff shortages as a major concern at hospital x's women & children's services, with 22 vacancies identified as of April 2016.

The population which hospital x's maternity department services is considered very high risk for pregnancies. This stems from fluctuations in terms of ethnicity, poverty, illiteracy, and ability to speak English. Further, the department faces high number of staff sick days and turnover. These factors combine with aging infrastructure to create a high-risk environment.

> *"Because of all the immigration and its poverty. A lot of nationalities and lack of education and the language. I mean especially all the refugees, they do come up here first, and then you're getting a lot of European migrants also coming up here as well. Plus compliance is poor here by the patients. And because of immigration they bring their own problems. For instance, they wouldn't know their medical history, and they will just pop up on the day or at 39 weeks, and just present here. I think it's one of the highest risk populations in Britain that we actually see in this hospital… we have a huge capacity issue. We cannot cope with the amount of deliveries on this suite. We have staff problems, a lot of sick leave here, so basically most of the time we are*

understaffed here and the workload is immense." - CS313 Consultant Obstetrics, labour ward lead

As of April 2016 Women and Children's risk management department was internal, consisting mainly of midwifery staff. This risk management department, which investigates all incidents in the service, is separate from the Trust's risk management department and governance structure. This internal risk management service was established in response to the high number of patient safety incidents and litigation claims associated with Maternity and Obstetrical care.

The Incident

Patient x, a 35-year-old woman with history of two previous pregnancies was booked for delivery at Hospital x in April 2015.

0945 - 1029hrs: Patient X arrived four days ahead of scheduled delivery to hospital X via ambulance, with 'frank vaginal blood loss' as evident by two blood soaked incontinence pads and abdominal pain since 0700hrs.

The ward was quite busy, 12 midwives were on duty and there were 14 other patients, one requiring emergency caesarean section, and five others who were induced for labour. The midwife coordinator on duty assigned: midwife Z, a community midwife, to care for patient X in the delivery suite.

"The community midwife should not have been put into that situation. She was a community midwife and she wasn't used to looking after intrapartum haemorrhage." – CS304 Assoc. Head of Women's Services for Nursing and Midwifery

"The co-ordinator should never have put that midwife in that position" – CS305 Head of Midwifery, Governance and Quality Clinical Dean

Doctor S, the consultant obstetrician on the ward, along with several midwives, including Z, saw the patient immediately. Doctor S noted 200ml fresh blood loss, pain becoming stronger and constant, and the patient was rolling on the bed in pain.

The cardiotocography (CTG) reading showed a normal baseline foetal heart rate of 130bpm. Doctor S checked patient x's abdomen and found her uterus was firm and not relaxing in-between contractions. Doctor S performed a vaginal examination and noted an antepartum haemorrhage with a possible small abruption. Doctor S's plan of care included: Ensuring intravenous access, intravenous fluids, blood sent

urgently for full blood count. Doctor S ordered half-hourly maternal observations, continuous CTG recording, analgesia to be administered for pain, and critically, Doctor S planned to review the patient in four hours' time at 1400 hours.

"I quickly diagnosed the fact that she had an abruption. I mean obstetricians will say that sometimes abruptions deliver quite quickly, so my initial plan was to allow her to labour, have a normal delivery … I mean I should have gone and reviewed my decision in half an hour or something like that, rather than waiting for them to come back to me." – Doctor S (Consultant Obstetrician)

There was difficulty continuously monitoring the foetal heart rate, because the patient found the straps uncomfortable, kept pulling them off, and removed them when she went to the bathroom.

"She (patient) was uncooperative and, you know, the monitoring was an issue." CS302 Doctor S (Consultant Obstetrician)

1029hrs: The CTG recording noted a drop in the baby's heart rate but this was not escalated to the obstetric team by midwife Z.

1050hrs: Midwife z asked doctor S what analgesia the patient could have, it was agreed she would have an epidural so the anaesthetist was called. There was no mention of the CTG by midwife Z to doctor S at this time.

1103hrs: From 1103 onwards, the CTG machine paper recording kept showing a "?FHR" (foetal heart rate) symbol, an alert that should prompt the midwife to ensure which heart rate is being detected and recorded: the mother or the baby.

1140hrs: Patient X was given a loading dose of anaesthetic via epidural insertion. The epidural appeared to have worked well with the patient becoming calmer and more settled. The CTG monitoring at this time was recording the mothers heart rate of 120bpm with the "?FHR" alarm still evident.

1200Hrs: Midwife Z informed the midwife coordinator that she was uncomfortable looking after the patient as she is a community midwife with limited experience of epidurals. Midwife Z did not feel competent to carry out the epidural check, so the midwife coordinator asked another more experienced colleague, midwife E, to takeover.

1220hrs: Midwife E arrived to the patient's room to receive handover and noted patient's condition had deteriorated, her blood pressure had dropped. Midwife E immediately laid the bed flat and administered oxygen. Midwife E noticed the CTG

was picking up the maternal pulse only, and contractions were occurring nine times in ten minutes. Doctor S was called to review the patient.

"When I went in she (patient) was pale. I was looking at her thinking "Oh my gosh, is she still alive?" because she'd just deteriorated." – Midwife E

1230hrs: Doctor S performed an emergency ultrasound scan, showing the foetal heart rate was 56bpm, well below normal of around 130bpm at term.

1233hrs: a 'crash call' was made for an obstetric and neonatal emergency. Patient X was taken directly to theatre for an emergency caesarean section.

1247hrs: a baby boy was still born. Resuscitation attempts were unsuccessful. Concerns were raised with regards to the care that patient X had received and her treatment and management plan were investigated in line with the Trust's Serious Untoward Incident Framework.

RCA Investigation Findings

Foetal and maternal wellbeing were not effectively monitored resulting in missed opportunities to recognize foetal compromise and expedite delivery in a timely manner.

The patient's care plan should have been altered at 1029 hours when a prolonged drop in the baby's heart rate was noticed. The consultant should have been called immediately. "On the balance of probabilities" this would have resulted in a delivery time of no later than 1103 hours, which is more than likely to have resulted in a live birth.

Two root causes are evident for this incident:

1. The skills mismatch between patient and midwife, which resulted from the midwife coordinator inappropriately assigning community midwife Z to look after patient X. Midwife Z was used to looking after low risk mothers, not caring for high risk mothers, or those with an epidural. Further, midwife Z did not speak up about her limitations.

"the shift leader inappropriately allocated this patient to the community midwife. it sort of started off because someone who didn't have the right skills to look after a high-risk lady was looking after this lady."- Doctor S (Consultant Obstetrician)

"inappropriate allocation of a high risk patient to a midwife more used to looking after low risk patients, so the symptoms and signs weren't in that particular person's skill set." – CS303 Consultant Obstetrics, Clinical Director

"I felt that as an organisation we'd actually failed in our duty of care to the community midwife who was allocated to look after the woman" –CS310 Lead Midwife for Quality & Governance, Woman & Children's Services

2. The delay which resulted from doctor s's plan to review the patient after four hours. The investigation findings suggest a one-hour review would be been medically appropriate given the diagnosis of ante partum haemorrhage.

"I should have gone and reviewed my decision in half an hour or something like that rather than waiting for them to come back to me." Doctor S (Consultant Obstetrician)

"The consultant, by saying the patient to be seen in four hours, not an hour, she sort of flawed the process really because we should have been seeing the patient sooner, and according to policy it should have been sooner than that." – CS305 Head of Midwifery, Governance and Quality Clinical Dean

"The key time for the management plan to have altered is at 1029 hours where there was a prolonged period of foetal bradycardia. A consultant review should have occurred at this time" – Serious Untoward Incident Report into the care of Ms X

Maternity: RCA Recommendations

The Trust's Root Cause Analysis investigator's recommendations for improvement are listed in Table 5.2.

Table 5.2 Maternity: RCA Recommendations

Recommendation	Status
Recommendation 1: The Directorate will arrange simulation training based upon this incident for all staff. This training will incorporate: o Communication o Recognition of the deteriorating patient o Escalation processes o Staff allocation and consideration of skill mix o Management plan of ante partum haemorrhage o CTG interpretation o Appropriate analgesia a) Meet with the Centre to discuss the case and ascertain whether they can set up a simulation training based on this incident. b) Contact the TRUST Faculty of Education to further assist with implementing of simulation training c) Determine how long it will take to train all staff and then implement the training programme	Partially Completed, lack of funding for Simulation Centre.
Recommendation 2: The Directorate will complete a training needs analysis for all staff involved in this incident and ensure any shortfalls in training are addressed a) Midwife trainers to complete a training needs analysis of all midwives involved in this incident to ensure any shortfalls to practice are met. b) Clinical Director & Obstetric Anaesthetic lead to complete a training needs analysis of all doctors involved in this incident to ensure any shortfalls to practice are met.	Completed
Recommendation 3: The Directorate will issue a reminder to all staff regarding the Trust standard for documentation. There will be an audit of documentation to ensure adherence against the Trust standards.	Completed
Recommendation 4: Ms X and her partner will be given the opportunity to meet with the investigation team to discuss the report and findings.	Completed
Recommendation 5: All staff involved in this investigation will meet with the investigation team to go through the report and its findings and recommendations.	Completed

Recommendation	Status
Recommendation 6: The investigation team will produce a SUI @ glance report to ensure that learning from this incident is cascaded Trust wide.	Completed

The findings of the Trust's investigation, and recommendations, are summarized in Figure 5.3 SUI at a glance, a printed poster used throughout the Trust, to share learning from the SUI.

Figure 5.3 Maternity SUI at a Glance Poster

SI at a Glance Report

Ref No: 199299
Location: Ward Maternity [redacted]
Low Med High

Trust wide key learning points:

- Do you know the Trust Ante partum Haemorrhage Guidelines?
- Do you know what the '?FHR' symbol on CTG monitoring indicates

Situation:
Serious untoward incident investigation into the unexpected death of a neonate.

Background

- A patient at 39+4 weeks gestation presented to [redacted] at 0945 hours via ambulance with a history of sudden onset of vaginal bleeding and abdominal pain.
- The Band 7 midwife co-ordinator arranged for a midwife from [redacted] to attend the delivery suite to enable the patient to have one to one care.
- On arrival the patient was noted to have two blood soaked [redacted]

0950-1029 hours

- The patient was reviewed by the obstetric consultant who noted that she had had a fresh PV bleed and that her pain was becoming stronger and constant.
- A CTG showed a normal baseline fetal heart rate of 130bpm. It was also noted that the patient's uterus was firm and not relaxing between contractions, examination showed she was 2cm dilated. ARM was performed and 300mls of blood stained liquor noted.
- The obstetric consultant noted that this was an antepartum haemorrhage with a possible small abruption. A plan was made for IV fluids, bloods, half hourly observations, continuous CTG recording and analgesia. The consultant made a plan to review the patient in four hours time.
- There was difficulty in monitoring the fetal heart beat as the patient found the straps uncomfortable. Between 1001 and 1029 hours there is no recording of the fetal heart rate on the CTG paper as the paper feed had been turned off.

1029-1100 hours

- The CTG paper feed was recommenced and there appeared to be a broad prolonged fetal deceleration lasting 8 minutes. The maternal pulse was intermittently being recorded on the CTG during this time and this was incorrectly interpreted as loss of contact.
- At 1055 hours the patient was requesting analgesia and a decision to insert an epidural was made. There was no escalation of the CTG to the obstetrician whilst discussing the analgesia.

1103-1200 hours

- From 1103 hours the CTG paper was recording '?FHR'. The CTG was recording a rate of 110-120bpm but appeared to be the maternal heart rate rather than fetal. No check of the fetal heart rate was performed during this time.
- The patient underwent epidural insertion. Following this the midwife from [redacted] raised concern about looking after a patient with epidural as per her scope of practice and the co-ordinator asked another midwife from the ward to take over the care.

1220 hours

- The new midwife went to receive a handover and noted that the patient's BP had dropped to 87/64mmHg. The midwife also noted that the CTG was picking up the maternal pulse and that the contractions were occurring nine times in tem minutes.
- An attempt was made to reposition the CTG transducer as there was difficulty in locating the fetal heart rate. The fetal heart rate could not be detected at this time.

1230 hours

- The consultant obstetrician performed an emergency ultrasound and this demonstrated that the fetal heart rate was 56bpm.

1236-1247 hours

- The patient was taken to theatre for a category one emergency c-section. A baby boy was delivered at 1247. He was born with no signs of life and resuscitation attempts were unsuccessful.
- Following delivery of the baby the patient continued to be unstable and severe uterine bleeding was noted. Repair of the uterus was undertaken and the patient was transferred to HDU post-operatively. She made an uneventful post op recovery.

Assessment

- Fetal and maternal well being were not effectively monitored resulting in missed opportunities to recognise fetal compromise and expedite delivery in a timely manner.
- The key time for the management plan to have altered is at 1029 hours where there was a prolonged period of fetal bradycardia. A consultant review should have occurred at this time. This in all likelihood would have resulted in bringing forward delivery to no later than 1103 hours.
- Delivery by 1103 hours is more likely to have resulted in a live birth.
- Babies affected by an abruption can deteriorate very quickly despite rapid delivery and it is not possible to predict what condition at delivery would have been.
- The diagnosis of Ante Partum Haemorrhage was appreciated and the management plan made at presentation was reasonable, however, medical review should have been planned for after one hour and not after four.
- It would have been more appropriate to allocate the care of the patient to a midwife who was used to caring for high risk mothers, the alternative would have been to give the midwife from [redacted] support from another midwife more used to caring for high risk mothers.

Recommendations:

- The Directorate will arrange simulation training based upon this incident for all staff. This training will incorporate: communication, recognition of the deteriorating patient, escalation processes, staff allocation and consideration of skill mix, management plan for ante partum haemorrhage, CTG interpretation and appropriate analgesia choice.
- There will a training needs analysis for all staff involved in this incident and ensure that any shortfalls in training are addressed.
- The Directorate will issue a reminder to all staff regarding the Trust standard for documentation. There will an audit of documentation to ensure adherence against Trust standards.

Urology and Ward X Case Full Description

Case: Inpatient Ward X Urology: Patient discharged with elevated potassium levels.

Date: July 2015

The Department

This case focuses on a serious untoward incident that occurred on inpatient ward X which cares for urology and general surgery patients. The patient population spread among 26 beds, generally includes those recovering from thyroid, bladder, kidney, and prostate surgery. These patients, in recovery, remain on the ward from a couple of days to long stays of up to 20 – 30 days, depending on whether complications arise post operatively. Patients on the ward generally require regular testing for various markers, for example testing whether kidneys are functioning properly and determining fitness for discharge.

Nurses on ward X begin their shift with a handover meeting led by the Senior Sister to discuss all 26 patients.

> *"each day, as you saw today, we have a handover and have the changes from the ward round… We have all the doctors' rounds and then we have changes from the ward round, so we let everybody know what those changes are, and if they need to do anything, and often (CS403 Senior Sister 7) will pass on any information while we're all together" - CS409 Band 5 Staff Nurse*

> *"I've had a very good handover this morning which involves whether a patient's even been a little bit wobbly on their feet or what the risks might be for every single patient, and I felt coming out of handover even though I haven't seen the person I felt able to look after them, like to reduce any risks. I felt that the team who had admitted them were already on it." - CS412 Band 5 Staff Nurse*

Patients are divided into bays of eight patients, some are in side rooms. Following handover from the previous shift team, nurses are designated to a bay of patients and begin attending to them. Each shift is staffed by approximately five nurses total, four band five nurses and a senior sister (CS403) who is in charge, as well the ward matron (CS411) who oversees ward X and one other ward. Urology consultants, and junior doctors as part of their educational rotation, perform rounds on the ward, following up surgeries, assessing patients, ordering tests, and

determining the fitness of their patients for discharge.

Ward X relies heavily on the Pathology department for the processing of patient samples. Once the Urologist, or Junior Doctor, has ordered a particular test, phlebotomists come to acquire the sample, it is then taken to the laboratory for processing. Following the samples assessment by a Pathologist, the results are electronically updated and available via computer terminal for Ward X staff. In the event of abnormal results, pathology will phone the ward, it is the responsibility of the Nursing staff to answer the phone, and share these results with the nurse caring for the patient.

The Incident

An elderly male patient, Mr. X, a type II diabetic who recently underwent surgery for resection of a bladder tumour, arrived at the hospital emergency department on 14th July. Mr. X was admitted to Ward X, under care of the urology team, for urosepsis and treated with antibiotics and IV fluids. Late in the evening of July 17th a junior doctor (unknown) completed a blood request form and left it for the phlebotomists.

First thing in the morning on July 18th, a phlebotomist took Mr X's routine bloods. Mr X was then seen during rounds by on call consultant, doctor X, and urology registrar, doctor Y, who planned to discharge the patient that same day.

At 1210 hours on the 18th, Band 5 Staff Nurse (participant CS412) received Mr. X's blood results over the phone from the laboratory, his potassium level was elevated (6.5 mmols, 3.5-5.5 mmols is normal), an increase from blood results on July 16th. This staff nurse claims she interrupted doctors X and Y to show them Mr. X's blood results, and they acknowledged it and said 'OK'. During the investigation, doctor X did not recall being informed of the blood results. Mr. X was discharged later that day with an elevated potassium, no discharge checklist was completed by nursing.

The following day, 19th July, Mr. X arrived to the emergency department, this time in cardiac arrest, staff were unable to resuscitate him, and he sadly died. The clinical director for urology reviewed Mr. X's medical records, and in his professional opinion it was reasonable to assume that elevated potassium level contributed to his death. As a result, Mr X's care was investigated under the Trust's Serious Untoward Incident Framework.

Investigation Findings

- The root cause of this incident is the breakdown in communication between clinical staff on the ward resulting in no action being taken regarding the elevated potassium.

"That's what the investigation team said, that it boils down to 'he said, she said'" -Staff Nurse CS412

- Band 5 staff nurse (CS412) is newly qualified, having started her career, on ward x, in May 2015. She had not taken abnormal results over the telephone from pathology prior to this event. CS412 was unaware which of the results she had received were abnormal (elevated potassium)
- Staff nurse CS412 recalls showing the blood results to doctor X, however there is no entry in the medical record, by CS412, to confirm that these blood results had been noted, or to which doctor they had been shown, nor any management plan for treating high potassium.
- Doctor X does not recall being shown the results at any time during the ward round. This conflicts with nurse CS412's recollection of showing the results to doctor X. Doctor X claims had he known of the results he would have delayed the discharge and treated the high potassium.
- Doctor Y *did* recall being interrupted by Staff Nurses and informed of the abnormal blood results.
- The presence of doctor X (on call consultant) may have altered the normal escalation process which normally would involve the staff nurse informing the nurse caring for Mr. X. Under the circumstances, the staff nurse (CS412) informed the on call consultant, doctor X, and did not believe it was necessary to also inform the nurse caring for Mr. X, as she had told the most senior person on the ward.

"at lunch time I got a phone call from the lab, from microbiology … I turned around to see if I could see where anybody was and the consultant was there who the patient was under, so I spoke to the consultant and there was another doctor there also in scrubs. So I spoke to him and I said "Excuse me," because they were talking, "but is this your patient? and they say yes. So I said "I've had a phone call through from microbiology and these are the blood results that are listed on there." Now at this stage I didn't realise… the potassium was really, really dangerously high. the consultant looked at me and I said "It's the patient in bed two." I gave his name because he looked at me as if to say "Pardon?" So I repeated myself again and I was very explicit. I said "Are you going to review the patient?" and he said "Yes." …I don't think I

put doctor informed (in the notes) and I just signed it because in my brain then I'd escalated it to the most senior person that I knew. -Staff Nurse CS412

Urology and Ward X RCA Recommendations

The Root Cause Analysis investigator's recommendations for improvement are listed in Table 5.3.

Table 5.3 Urology and Ward X: RCA Recommendations

Recommendation	Status
The Urology Directorate should produce a clear set of guidelines for their junior doctors which offer rationale for the ordering of blood tests. There should be a reminder to all junior doctors that when blood tests are ordered it is to be documented within the medical records to allow results to be followed up.	Not Implemented
The Urology Directorate should ensure that there is a robust plan in place to ensure that when blood tests are ordered there are clear processes for review and action if required.	Not Implemented
Ward X should develop a Standard Operating Process which incorporates the escalation process for communication and documentation when receiving abnormal blood results by telephone.	Completed
Consideration should be given to extending the escalation process to include the nurse in charge being informed of any abnormal blood results received by the ward.	Completed
There should be an audit of both medical and nursing documentation to ensure that it complies with the expected Trust standard.	No Evidence
Ward X should complete a training analysis of all staff with regards to knowledge and understanding of commonly requested blood tests.	Completed
Ward X will ensure that the discharge process is clarified and reinforced to all members of the team.	Completed
The staff involved will meet with the investigation team to go through the report and findings.	Completed
The investigation team will produce a SUI @ a Glance report to ensure that learning is cascaded Trust wide.	Completed

The findings of the Trust's investigation, and recommendations, are summarized in Figure 5.4 SUI at a glance, a printed poster used throughout the Trust, to share learning from the SUI.

Figure 5.4 Urology and Ward X SUI at a Glance Poster

SUI: At a glance

Trust wide key learning points:

- If you took a call regarding abnormal blood results, who would you escalate to?
- Do you know the normal parameters of commonly requested bloods in your area?
- What is the discharge process in your clinical area?

Incident Themes

- Communication
- Documentation

Situation:
Serious untoward incident investigation into the unexpected death of patient following discharge.

Background:

- Mr X, a 70yr old man, was admitted to [redacted] in May 2015 with an obstructed left kidney. He was found to have a bladder tumour and a nephrostomy tube was inserted.
- In June 2015 Mr X was admitted for elective surgery to resect the bladder tumour. The surgery was uneventful and Mr X was discharged the home the next day. Following surgery his case was discussed at the Urology MDT and a plan was made for him to be referred for palliative radiotherapy.
- Three weeks later Mr X presented to ED and was admitted with a diagnosis of urosepsis. He was treated with antibiotics and intravenous fluids.
- Four days after his admission Mr X was deemed medically fit for discharge.
- On the morning of his discharge Mr X had routine bloods taken.
- The blood results were telephoned through to the ward at midday as the potassium level was elevated at 6.5mmols. This was an increase from two days previously when the potassium had been 5.7mmols.
- A newly qualified staff nurse recorded the results in the medical records and recalled at interview that they had informed the on call consultant who was on the ward.
- No action was taken regarding the blood results and Mr X was discharged home later that day.
- The following day Mr X was admitted to ED at [redacted] in cardiac arrest, resuscitation attempts were unsuccessful and he died. It was noted at this time that the previous days potassium result had been elevated.
- Mr X's death was referred to Her Majesty's Coroner, the referral detailed the previous admission and the raised potassium result prior to discharge. Following Her Majesty's Coroner post mortem the medical cause of death has been recorded as acute pulmonary oedema and carcinomatosis from carcinoma of the bladder.

Assessment:

- It was not possible to identify why Mr X had bloods requested for the day of discharge and there is no indication in the medical records as to why the bloods were requested.
- The blood request form held no clinical details.
- The Clinical Director for Surgery has advised that within the Urology Directorate it is normal practice for patients who have undergone major surgery, patients who have a change in condition and those who are critically unwell to have daily blood tests. Mr X did not fit any of these criteria.
- The Pathology Department followed their Standard Operating Procedure for phoning through abnormal results to the ward.
- The staff nurse had not taken abnormal results over the telephone before, however, demonstrated an understanding that if results were phoned through they required escalation.
- There has been a difference in recollection between the staff nurse and the consultant. The staff Nurse recalls that they showed the results to the consultant and that the results had been acknowledged and no further action was required in terms of escalation. The consultant does not recall being showed the results at any time whilst on the ward. The investigation team have been unable to resolve this difference in recollection.
- The consultant confirmed that had they been aware of the blood results Mr X's discharge would have been delayed and the high potassium would have been treated with oral calcium resonium followed by repeat blood tests to check the potassium level.
- The investigation team believe that the presence of the consultant on the ward may have altered the normal escalation process which would have involved the staff nurse who took the results informing the nurse who was caring for Mr X on that shift.
- Upon review of the medical records it was identified that the last written entry was made by the staff nurse who took the blood results. There is no further nursing documentation. The staff nurse caring for Mr X was able to demonstrate an understanding of the normal parameters for potassium levels. It is the view of the investigation team that had this nurse made an entry she would have noted the abnormal results and this represents a missed opportunity for the high potassium to be recognised and acted upon.
- The expected escalation of abnormal results telephoned through to the ward is for the doctors to be informed and a management plan agreed with the appropriate clinical l teams. There is currently no expectation to inform the nurse in charge of abnormal blood results.
- The discharge checklist was not completed at the point of discharge.

Recommendations:

- The Urology Directorate will produce a clear set of guidelines regarding the ordering of blood tests. In addition all junior doctors should be reminded that when blood tests are ordered it is to be documented in the medical records to allow results to be followed up.
- The Urology Directorate should ensure that there is a robust plan in place to ensure that when blood tests are ordered there are clear processes for review and action if required.
- Ward [redacted] should develop a SOP which incorporates the escalation process for communication and documentation when receiving abnormal blood results by telephone.
- Consideration will be given to extending the escalation process to include the nurse in charge being informed of any abnormal blood results received by the ward.
- There should be an audit of both medical and nursing documentation to ensure that it complies with the expected Trust standard.
- Ward [redacted] should complete a training needs analysis of all staff with regards to knowledge and understanding of commonly requested blood tests.
- Ward [redacted] will ensure that the discharge process is clarified an reinforced to all team members. A local audit should be carried out to assess compliance with the Trust Discharge Policy.

Conclusion

Chapter 5 introduced Section II: the empirical findings of this thesis. An overview of the surgery, maternity, and urology & ward x cases was provided. For each case, descriptions of the departments, incident, and investigation findings were included to provide contextual information for the remainder of the findings and discussion.

Evidence for implementation of RCA recommendations were found in each case. The extent of implementation varied by case, with surgery and maternity having completed most of their assigned recommendations, while only nursing recommendations were completed on ward x.

In all cases poor communication was a contributing factor leading to the serious safety incident. Where individuals did not feel that speaking up would be acted upon, or that it was unsafe, they remained silent. As seen in surgery, when futility of voice was witnessed, other staff elected to not speak-up. These conditions for silence will be explored in greater detail in the coming empirical chapters 6, 7, and 8. Further, the conditions which promoted voice, arising following these serious safety incidents will also be described

In the next chapters' 6 surgery, 7 maternity, and 8 urology & ward x, the findings of each case are provided using coding reference tables taken from querying the NVIVO database. These tables group together the responses of participants into categories and related themes which examine the journey of each department following the medical error, RCA investigation, and resulting affective and practical responses of professionals.

Chapter 6 – Findings for Case Study: Surgery Department

Introduction

Chapter 6 provides the findings for the Surgery case. The overview for this case, describing the department and full-details of the never event, were previously outlined in Chapter 5: Surgery Case Full Description.

These findings use coding reference tables taken from the NVIVO database, to group together the responses of participants into categories, and related themes. These findings examine the journey of this department, from acquiescent silence and futility of voice, to the encouragement of prosocial voice, leading to improved patient safety. When three or more supporting quotes are shown, the primary quote will appear in the main text, while secondary quotes follow directly in a table.

The presentation of this case's findings is ordered into 6 sections. First, responses of professionals and documentation analysis, which evidence the conditions for silence, including hierarchical culture and fatigue, where futility of voice was prevalent, leading to the never event, are described.

Second, an overview of key second victims and their affective experiences, including anger, shame, and compassion, are described with an emphasis on the role these experiences play in enacting positively valenced changes to practice, which encourage voice.

Thirdly, responses of professionals or documentation analysis, which evidence recommended and emergent practice changes, which created the conditions for voice following the never event, including: setting expectations for voice, closer adherence to policy, management engendering voice, and a reinvigorated sentiment of care, are described.

Fourthly, evidence for expression of prosocial voice by professionals (primarily nursing) is shown.

Fifth, the case findings related to voice and silence are summarised in table 6.12 Surgery Voice and Silence Summary, which, at-a-glance, shows the journey of this surgical team from a climate of silence to a climate where voice is encouraged when patient safety is at risk.

Finally, a summary of follow-up and validation meetings with the department are presented, offering evidence of a sustained voice climate which resulted in the prevention of further never events.

1 Conditions for Silence

While several causes were identified as contributing to the never event, a lack of awareness of the limitations of fluoroscopy to identify radio-opaque swabs among them, the emphasis here is on the hierarchical barriers to communication between surgical nurses and surgeons.

Table 6.1 Conditions for Silence

Surgery Case	Coding References		
Conditions for Silence	Doctor (n=1)	Nurse (n=3)	Document (n=1)
Hierarchical Culture	2	2	1
Fatigue		3	1
Futility of Voice		3	1

There were three barriers to communication as shown in Table 6.1 Conditions for Silence.

Hierarchical Culture

The first was team hierarchy, where nurses, traditionally subordinate to surgeons, were silenced because they did not feel safe to speak-up, even where they knew the proper x-ray guidelines. The team was not psychologically safe enough. This led them to question their knowledge (of fluoroscopy) and diminished their confidence that speaking-up would be acted upon.

> *"Nurses questioned their lack of ability to raise concerns. There were nurses who recalled being told about use of fluoroscopy, but felt that they didn't have the confidence in the environment they were working in, to raise that as a possibility, because they weren't sure about it. So there was a lack of self-belief in their knowledge, and also a lack of assurance that actually if they raised that concern it would be taken on board as a possible issue." - CS201 Consultant Anaesthetist, Lead Investigator*

> *"Due to team hierarchy they felt unable to raise their concerns to the surgeons" – Serious Untoward Incident Report of Mrs X*

Fatigue

Second, fatigue, from the 10-hour procedure, was reported to have influenced both nurses, with regards to assertiveness, and surgeons with regards to receptivity.

"in light of the length of the operative procedure, possible fatigue within team members may have affected personal/team decision-making at the time the incident occurred" – Serious Untoward Incident Report of Mrs X

Table 6.2 Fatigue: Secondary Quotes

Secondary Quotes
"it was a long procedure, a lengthy process, and they were tired… the surgeon was too tired at closing. They (nurses) probably weren't assertive enough to challenge the surgeon at the time." -CS205 Theatre Matron
"It was a lengthy procedure and the surgeon could have been tired at closing. He was too tired." CS205 Theatre Matron

Futility of Voice

Thirdly, Surgeons ignored concerns that were brought forward by more senior nurses, CS202 and CS204, who had the confidence to speak-up, leading to futility of voice. Nurse 204 was angry, assigning blame to one of the surgeons.

"I insisted that we were using the wrong x-ray device, but I was told "No, no, it's alright," and I said "No, it's not! This is not what you do when you lose a swab. You need a proper x-ray with a plate." – Scrub Nurse (204)

Table 6.3 Futility of Voice: Secondary Quotes

Secondary Quote
"You know, I'm sure we should be doing plain x-ray. I don't know why they've brought that," and the surgeon said "No, it's alright. It's alright, it'll be fine. We'll see it." and you just think "Oh," and again that was an opportunity for me to have said to somebody "Let's get the policy up," and then we could try and follow it. A missed opportunity." - Scrub Nurse (202)

"It's like the consultant doctor has spoken, therefore they must be right" CS208 General Manger for Theatres

2 Second Victims and Affective Experiences

In addition to nurse 204, several other team members had negative affective experiences. These are summarized (with the addition of compassion, which is discussed more fully in section 3) in table 6.4 affective response coding references.

Table 6.4 Affective Response Coding References

Surgery Case	Coding Reference			
Affective Response	**Doctor (n=5)**	**Assistant (n=2)**	**Nurse (n=4)**	**Manager (n=1)**
Compassion	9	3	9	1
Anger	7	3	4	1
Shame	7		3	

Anger

The main second victim is the lead surgeon, CS213 Mr. K, who was extremely upset over the case, being deeply affectively impacted. Mr. K, and a more junior surgeon CS211, both internalized the event as a failure, displayed anger by blaming themselves, and made comparison to the usually high quality of care they provide. For team leader Mr. K, who completed hundreds of procedures of similar nature over his lengthy career, this was a first.

"in the last seven and a half years we've done 350 microvascular tissue transfer… of these 350 we had this one retained swab … It was very, very difficult. This was the first time in my life. I'm now 21 years in this business as a plastic surgeon and since I started my career I've been always involved in complex procedures – never happened to me. But it happened! And I had to take this decision on my discretion because everyone was looking up to me because I'm the most senior member of the team here." - Mr K. Lead Surgeon (CS213)

"I was very upset when the SUI happened obviously because you feel like you've let yourself down, and the surgical team, and the patient most importantly"- CS211 Locum Consultant, Senior Microvascular Fellow

Mr. K, explained that he received no emotional support after the event and he was busy supporting the more junior surgeons involved who were upset.

"No one supported me… I was supporting junior doctors, they were upset" – CS213 Mr. K, Lead Surgeon

Shame

There was a sense of shame among members of the surgical team involved in the never event. Surgeons CS211, CS213 (quote on previous page), and Radiologist CS212, who contrasted the never event with an ideal for their team, and professions. Junior Surgeon CS211 felt that he, and his team, through the occurrence of a never event, had failed to live up to the high standards, and compassion for patients they had previously demonstrated. This surgical team, who routinely performed complex operations, was known for going above and beyond for patients. Mr. K who completed hundreds of similar procedures in the past, had to make the difficult decision to close-up the patient, with swab still missing, took this event hardest of all.

"We were always very focused on achieving the best results for our patients and that's why we were all very disappointed or upset by this incident. I've worked in over 12 different units and this is the only unit where I've genuinely felt that everybody without exception went above and beyond for our patients…Mr K's team and himself as a surgeon by far is the best surgeon that I've ever worked with and for this to happen in our team was very disappointing and very surprising… it was such a bitter pill to swallow that this had happened. If it had happened elsewhere I wouldn't be necessarily as disappointed or as surprised, but the fact that it happened here was a very personal, negative experience" –CS211 Locum Consultant, Senior Microvascular Fellow

"Once we found out that it was in there, I got upset and I felt, you know, I wish it had never happened. So I was very upset in my head it won't fade because I've had a bad experience. I will remember that for ages" -CS212 Consultant Radiologist

One scrub nurse, CS210, experienced shame. This was due to the nursing policy '*Accounting for Swabs, Packs, Sharps and Instruments During Sterile*

Procedures Policy' not being followed during the procedure, which would have pointed to x-ray as the correct imaging modality.

> *"to this day I'm still devastated by it really and I should think we all are because in my nursing career of 38 years there's very few things happen really and when it does it sticks in your mind … I didn't sleep very well when this happened and obviously it's not a nice thing. I thought I was doing things properly before, maybe I wasn't doing things properly 100 percent, which is why I feel now I need to refer to the policy to make sure every step of that policy is followed" -CS210 Sister 6*

3 Conditions for Voice

A summary of responses which evidence practice changes, both recommended as part of the RCA investigation, and emergently, by professionals, are shown in table 6.5 Conditions for Voice.

The conditions for voice, which enables lower-hierarchically positioned professionals to speak-up, are discussed below. First, and most strongly, an emergent practice change by Mr. K, a second victim of the never event, to set expectations for voice among professionals from the top-down. Second, recommended practice changes by nurses to follow standard operating procedures. Third, emergent support from nurse management to engender voice among staff. Fourthly, an emergent reinvigorated sentiment of care among all professional groups, which had previously been rendered dormant by a hierarchical culture, resulted from a build-up of expressions of compassion towards patients.

Table 6.5 Conditions for Voice

Surgery Case	Coding References			
Conditions for Voice	Doctor (n=5)	Assistant (n=2)	Nurse (n=6)	Documents (n=2)
Setting expectations for voice	20	2	1	
Closer adherence to policy	2	1	14	2
Management engendering voice among staff		1	5	
Reinvigorated sentiment of care	9	3	9	

Setting Expectations for Voice

While Mr. K, lead surgeon, played a key role in setting expectations for voice among team members, this change happened gradually, seeming to occur over two phases. The first phase, immediately following the never event, saw a sudden knee-jerk reaction by Surgeons CS211 and CS213 to take over the swab-counting process going forward in the operating theatre. This change resulted in overlapping

professional boundaries, where surgeons involved themselves in the swab counting process (a nursing duty). This change represents, initially, a lack of trust in colleagues, by no longer relying on them, and was thought to have possible negative consequences (see CS205 quote below).

"I have received information that it (surgeons taking over swab counting) could be harmful" CS205 Theatre Matron at Follow-up Meeting

This initially resulted in some surgeons no longer accepting the division of responsibilities between operative field and scrub nurses' table, specifically dictating to nurses what instruments they want on the tray, and how many swabs should be present, rather than having the whole tray set-up. Prior to the event it had been ingrained in practice that nurses were responsible for trolleys and swabs, while surgeons were responsible for the surgical field.

"I would say that previously the swab counting part was always seen as part of the scrub nurses' duty … In a way, me personally at least, I've taken over that part… I no longer accept this division between operative field and scrub nurses' table and I no longer accept this division of responsibilities – that you're responsible about the surgical field and that the scrub nurse is responsible about the trolleys and swabs, which was prior to this event quite ingrained really" -CS211 Locum Consultant, Senior Microvascular Fellow

Table 6.6 Setting Expectations for Voice Part I: Secondary Quotes

Secondary Quotes
"more vigilant with the swabs, more vigilant with making sure that others are attentive for the swabs … before I was not looking because I know who's covering my back is taking care of things. Now, I'm putting myself in every step of the surgery. That's why I say more vigilant. It shouldn't be like this. Maybe this is just because I don't want this to happen to me again. I stopped relying 100% on the team members." - Mr K, Lead Consultant on call Plastic Surgeon (cs213)

Secondary Quotes
"A knee jerk reaction of one junior surgeon (CS211) to take over the swab counting process of nurses… this has impacted him at an early stage of his career, he is very sensitive to swab counting now, will it stay with him? I don't know, we are working in a highly stressful environment… now there is a level of trust." - Mr K, Lead Consultant on call Plastic Surgeon (cs213) at follow-up meeting

This form of the emergent change, where surgeons were individually *"vigilant" (CS213)*, was short lived for CS211 and CS213, eventually evolving into the second phase, where Mr. K established expectations for voice among multi-disciplinary team members. Mr. K, was the driving force in creating a more inclusive environment for inter-professional communication.

> *"I've added more steps to ensure that we are definitely doing better. I mean mind-wise I'm more vigilant. I'm becoming more attentive... Vigilant in terms of making sure of the communication between the team members, your swabs good? your instruments are good? all together, take a wider angle, rather than a narrow angle – I'm not just looking at my wound or operative field and just minding my business, no we used to be like this, but not anymore, now we take a more comprehensive approach… a change in mind-set" -Mr K. CS213 Lead Surgeon*

While many second victims don't 'survive' the tragedy, resulting in them leaving the organisation or profession altogether, Mr. K's performance as a leader thrived following the affectively charged never event. Having been angry, and feeling shame for his involvement in the never event, Mr. K, first, as discussed above, took part in the short-lived change taking over swab counting duties. After having reflected on the experience, Mr. K, broadened his perspective on the situation, taking a step back during complex multi-site surgeries (where multiple parts of patients' bodies are operated on), and encouraging inclusive communication between surgical site teams consisting of multiple-professions.

While vigilance can lead to negative outcomes, as was the case here initially, it appears to have evolved into setting expectations for the type of communication

required during surgery, which helped set the conditions voice. By setting expectations for open-communication during procedures, Mr. K, as team leader, is creating opportunities for voice from all team members, across professions.

"It's not about being a good surgeon, but being a better surgeon who has a more comprehensive approach to the whole service… everything is discussed openly, it's everyone's responsibility, no one is not important enough to be listened too ever" -– Mr. K CS213 Consultant on call Plastic Surgeon

"I think it has made us more aware from this first-hand experience, being more vigilant, being more attentive that this can happen despite the guidelines. So we always need to be aware and we all need to retrain ourselves …I think people have been more aware, more influenced by this incident… After this incident, I'm becoming more vigilant, so I'm more alert, I'm more conscious about even if you have the system you still can have a problem, which I didn't have first-hand experience with before" -Mr K. CS213 Lead Surgeon

Further evidence by CS214, breast surgeon, speaks to the surgical perspective of being more inclusive, while, operating department practitioner CS209 (and many of the nursing quotes in the following section on expressions of voice demonstrate) shows the positive effect this surgeon-led emergent practice change, has on speaking-up by lower-hierarchically positioned professionals.

"The nurses and doctors are more vigilant now for the swabs… and a shout is given to the nurses that "I've left a swab inside." Whether that is for five seconds, but they shout it and it is written on the board that a swab is inside the body and then they rub it off when it is retrieved… there's more sensitivity I would say. There's more consciousness now" - CS214 Consultant Associate Specialist Breast Surgery

Table 6.7 Setting Expectations for Voice Part II: Secondary Quotes

Secondary Quotes
"You're part of that environment you have a contribution to that. So keeping an eye on the environment… If the nurses are counting, I look towards them, stop for a while and don't disturb them … So I give them time and space to fulfil their duties… if you ask for 'give me forceps' and if she's (nurse) doing something else she'll stop that and give you the instrument. So this creates problems sometimes. If she's in the middle of counting, she'll interrupt that, refocus, go back and so human errors are more. So be aware of what she's doing at that time and don't interrupt." – CS214 Consultant Associate Specialist Breast Surgery
"we all count together. We never used to count together. You would know where yours were. I won't do a count unless someone else is going to do the count as well. If I stop and do mine I'll make sure that they stop and do theirs… it just makes you more aware that everybody in the team has got to be responsible for it and everyone's got to be stopping, and thinking at the same time … know you've got to do it as a whole." CS209, Operating Department Practitioner

Closer Adherence to Policy

In line with RCA recommendations to review policy '*Accounting for Swabs, Packs, Sharps and Instruments During Sterile Procedures'* and ensure a standardized process within theatres across the organisation, nurses were found to reference, and more closely adhere to the standard operating procedure (See Figure 6.1) found in this policy, in the event of a swab/instrument count discrepancy. This recommended practice change saw nurses' expressing voice, through a more assertive communication style when dealing with surgeons. In describing assertive voice behaviour, nurses mentioned how they had followed the SOP, often nurses would physically reference the policy, pulling it off the wall, or accessing via computer terminal, and showing it to other team members.

"One of the recommendations was you have a swab missing and you're going through the process. "Actually bring the policy up," and this is why I said I went into that theatre, visited and said "Look, let me just bring the policy up. Let's just scan it. Let's read it through and let's see," ... And that's what we didn't do on the never event day." – CS202 Sister

Table 6.8 Closer Adherence to Policy: Secondary Quotes

Secondary Quotes
"Yeah, the policy gets pulled up each time now. There's a printout or it's up on the computer screen and one person goes through that point by point now." -CS209 Operating Department Practitioner
"A specific change to my practice is look at policies more. If there's an issue, to look at the policy and make sure we follow it and that we're guided by that, whereas before perhaps I wouldn't have done that…… None of us looked at the policy. We followed most of the policy, but not quite all, so it's good to look at it and go through it. I stopped thinking I knew what I was doing and I was confident in everything I did. I made sure I read the hospital policy. I made sure I was following policy and procedure" –CS210 Sister 6

Figure 6.1 Surgery Standard Operating Procedure (SOP)

Accounting for Swabs, Packs, Sharps and Instruments During Sterile Procedures Policy
Version 1.0

NHS

[redacted]

Appendix 1: Flowchart of Escalation when there is a Discrepancy Noted in the Swab / Instrument Count

Swab, needle, instrument etc. is discovered, or suspected, to be missing.

↓

The Scrub practitioner will immediately inform the surgeon in charge of the

↓

An immediate search will be conducted of the rubbish bags and the theatre floor by the unscrubbed theatre personnel, and both the Scrub practitioner and the surgeon

↓

If the missing item cannot be traced, each bag of discarded swabs/packs will be opened and the swabs/packs re-counted by both Scrub practitioner and 'checker'.

↓

If the missing item has still not been traced, the Theatre Lead Practitioner or Deputy should be informed immediately and the procedure stopped until the missing item is located.

↓

An X-ray film must be carried out prior to closure of the incision.

↓

If there is ongoing concern about patient safety and/or the discrepancy cannot be accounted for the Theatre Lead Practitioner must escalate further to prevent a breach of policy and to maintain patient safety.

↓

IN HOURS

↓

The Lead Theatre Practitioner or deputy must escalate to the list of people below depending on what their concern is, and continue until patient safety is maintained.

- The Theatre matron or general manager
- The Clinical Director for relevant speciality.
- The Clinical Director for Theatres.
- The Site Head Nurse
- The Group 2 Medical Director
- The Group 3 Medical Director

OUT OF HOURS

↓

The Lead Theatre Practitioner or deputy must escalate to the list of people below depending on what their concern is, and continue until patient safety is maintained:

- The 1st on sister
- On call manager
- On call Consultant Surgeon
- Executive on call

Management Engendering Voice Among Staff

As part of emergent practice changes following the never event, nursing leaders in response to Mr. K's call for more inclusive communication, responded from the bottom-up. Senior nurses CS207 and CS205 directly support their staff to be more assertive with surgeons when they feel safety is at risk. Examining the changes by surgeons and nurses collectively an interplay is observable. Nurses increased their level of assertiveness with surgeons, while surgeons appear to welcome increased communications during complex multi-site surgery, as a mechanism to prevent further never events.

> *"We're trying to empower the staff to challenge the surgeons and if they cannot do that ring the on-call manager. Don't be frightened to do that or ring your general manager or your matron. Don't be frightened to challenge if you're not sure. The staff are, yeah." - CS205, Theatre Matron*

> *"if there was an issue and they haven't got the confidence to raise it, like a more junior team member in a team if something like that happened again, I know that they would be quite happy to come to me if they hadn't got the necessary experience or confidence to raise it and quite often they do… We have had it a couple of times where we've lost a swab and they'll (nurses) come and report to you straightaway" -CS207 Senior Sister 7*

Reinvigorated Sentiment of Care

The final condition for voice was an emergent reinvigoration of professionals' sentiment of care towards patients. This sentiment of care developed from professionals' first-hand involvement in the never event and its affective impact upon them. While the event elicited negative affect, in the form of shame and anger described above, compassion towards patients was also expressed. Professionals experienced a sense of compassion for the patient which reinvigorated their focus on caring. Surgeons and Nurses were moved by the patient's suffering and talked about wanting to prevent further harm from happening to their patients, while seeming to maintain sufficient detachment to avoid being overwhelmed with distress. This affective experience, compassion, led to a common moral grounding among team members, helping to moderate the hierarchical challenge between professions by placing emphasis on caring for the patient.

Further, negative affect, in the form of anger, centred around the patient,

where both surgeons and nurses blamed themselves (or in the case of Nurse CS204, blamed a surgeon) for having harmed the patient, also contributed to a renewed sentiment of care. The below quotes emphasises the sense of compassion professionals on this team exhibit, putting the patient at the centre of everything they do.

"We're not here to harm patients, we're here to help patients. That patient was helped but harmed as well and that's not good, that's not what I'm here for… We're nurses, we're here to look after patients and to make sure they're safe and that's just my job, that's everybody's job in this department, is to make sure the patient's safe." -CS210 Sister 6

Table 6.9 Reinvigorated Sentiment of Care: Secondary Quotes

Secondary Quotes
"There was a roundtable after the incident where it was discussed, how we can learn from this event, the patient was the centre of everything discussed" -CS205 Theatre Matron
"in my clinical practice I'm probably more focused on patients' experiences than I used to be… it was probably that conversation with the patient and the relative to actually say I've got an obligation to do that as a professional which I may not have appreciated beforehand." -CS201 Consultant Anaesthetist, Lead Investigator
"Staff had to hear from the patient side how inconvenient it was. They lost time at work, they lost time coming into hospital and how stressful it was on them. I think with that face to face with that patient you try and tell staff you wouldn't want to be in that position … you feel like you're putting that patient in danger and we're here to make sure it's alright. -CS205 Theatre Matron
"So I think another time, another scenario that's somewhat similar, or another potential crisis scenario, certainly for a patient, I'm going to stick to my guns and what I wouldn't let is the patient come off the table" - CS202 Sister 6

Secondary Quotes
"You think more about the impact on patients, about things that teams can become quite blasé about, something that you do a hundred times a day, day in, day out. Swab counts, yeah, we do it every day, but you think well you need to take these things seriously because when you don't and you become lackadaisical or blasé about something that's when mistakes happen, the outcome for that patient could be quite detrimental like that particular lady" -CS207 Senior Sister 7
"You kind of put yourself in the patient's position, don't you, and it's sort of bloody hell, if that had happened to your mother or whoever else how would you feel? So yeah, there is emotion attached to it, but then also it's kind of "Right, the buck sits with me". -CS208 General Manager for Theatres
"We have a duty of care to our patients, so in terms of that I was a bit concerned that the patient had to suffer" -CS214 Consultant Associate Specialist Breast Surgery
"you just want to make sure it doesn't happen to anybody else really. You know, you're really mindful of the patient and the patient could be a relative of you somewhere else and have this happen, so you want to ensure that you're doing what's best for them really". -CS209 Operating Department Practitioner

4 Expressions of Prosocial Voice

Following the never event, and the emergence of conditions identified above, there is evidence for increased assertiveness by team members to escalate concerns and challenge hierarchy when they feel safety is at risk. A summary of prosocial voice by professional group, primarily exhibited by nursing, are found in table 6.10 expressions of prosocial voice.

Table 6.10 Expressions of Prosocial Voice

Surgery Case	Coding References		
Expressions of Prosocial Voice	Doctor (n=1)	Assistant (n=2)	Nurse (n=4)
Prosocial Voice	2	8	17

There has developed a shared sense among team members that speaking up is supported, and even expected. The conditions described previously are moderating factors, suppressing (in part) the hierarchical challenge between nurses and doctors. As shown in the quotes below, nurses and healthcare assistants, demonstrated voice through increased assertiveness to escalate and challenge hierarchy, specifically when dealing with Surgeons, when patient safety might be at risk. Nurses, followed by surgical assistants, were found to exhibit the most expressions of voice post-never event, given the recommended (SOP) and emergent (i.e. management engendering voice, reinvigorated sentiment of care) changes in place and top-down receptivity by surgical team leader, Mr. K.

"I am more assertive in theatre and make sure that policies are followed. If I'm unhappy with the surgeons rushing I'll tell them. I'll say "You'll have to wait. You will have to wait. I'm doing a swab count," or "You'll have to wait, I've only got one pair of hands. You're both asking for things together," which is always the case. I'm not afraid to speak up now. So I'm more assertive for safety reasons." – Sister 6 CS210

Table 6.11 Expressions of Prosocial Voice: Secondary Quotes

Secondary Quotes
"I feel that I wasn't listened to in the incident, so I think another time, another scenario that's somewhat similar or another potential crisis scenario certainly for a patient I'm going to stick to my guns and what I wouldn't let is the patient come off the table. That's the bit I would do and even if half of the hospital management has to be outside theatre doors, do you know what I mean, I just would be sort of making such a fuss that they'd have to investigate and look inside for that swab sort of thing" - Sister 6 CS202

Secondary Quotes
"Everybody is more vigilant of what they're expecting to find and if there's an incident people will speak up now. In theatre we tell them at briefings "If there's anything troubling you to speak up." if there's a swab or an instrument not accounted for." – Healthcare assistant in Theatre CS206
"I think a lot of staff would be more forceful in their communication I believe. I'm sure the nurse that was involved in that situation would definitely try and escalate that situation further at the time before the wound was closed" – Senior Sister 7 CS207
"The surgeons who are adamant saying "No, I'm not going to. No, it's fine. It's fine, it's not in the patient. I heard it fall on the floor." You probably think "Well, I haven't got the confidence or the experience to sort of stand up and challenge it," whereas now I would challenge anybody for a situation like that regardless of who they were." – Senior Sister 7 CS207
"if there was an issue and they haven't got the confidence to raise it, like a more junior team member, I know that they would be quite happy to come to me if they hadn't got the necessary experience or confidence to raise it and quite often they do. If they have a problem in theatre, people will come and escalate instantly because they know we'll sort it out." – Senior Sister 7 CS207
"I have on two occasions questioned the surgeon and told them "I believe there's a swab still inside... our breast surgeons definitely are very good at listening to us now. One consultant will actually stop his team when we say we've got one missing. He'll go "Right, everybody stop. Let's all do a count and let's recheck the cavities," and I think this has spurred that. You know you'll be heard and you'll be listened to because of it." - Operating Department Practitioner CS209

Secondary Quotes
"I am more assertive in theatre and make sure that policies are followed. If I'm unhappy with the surgeons rushing I'll tell them. I'll say "You'll have to wait. You will have to wait. I'm doing a swab count," or "You'll have to wait, I've only got one pair of hands. You're both asking for things together," which is always the case. I'm not afraid to speak up now. So I'm a little bit more assertive perhaps because of it and that's for a safety reason." – Sister 6 CS210
"I'm quite happy to say I'm not happy with this situation. It feels unsafe" - Sister 6 CS202
"it's something that they're working on in theatres, trying to get the nurses to feel confident about questioning surgeons and question what's being done if they're not happy." – Consultant Radiologist CS212

5 Voice and Silence Summary

Table 6.12 Surgery Voice and Silence Summary, provides an overview of this team's journey which started with climate of silence, where junior nurses lacked confidence their concerns would be acted upon due to a hierarchical culture, and futility of voice, where more senior nurses were ignored when they did speak up, leading to further silence. This absence of voice contributed to the occurrence of a never event, which acted as a catalyst for many affective and practical changes, leading to a voice climate, where enactment of prosocial voice was found, and patient safety improved.

Table 6.12 Surgery Voice and Silence Summary

Climate	Scenario	Motive	From	Message	Direction	Target	Outcome
SILENCE	During Never Event in Surgical Theatre -Hierarchical Culture	To improve safety	Nurses	*"they didn't have the confidence in the environment to raise that as a possibility … there was a lack of assurance that if they raised a concern it would be taken on board" – CS201 Consultant Anaesthetist, Lead Investigator*	Upward	Surgeon	Silence
		To improve safety	"several team members"	*"Due to team hierarchy they felt unable to raise their concerns to the surgeons" – Investigative Report*	Upward	Surgeon	Silence
	During Never Event in Surgical Theatre	To improve safety	Sister 6 202 25 years' experience	*"You know, I'm sure we should be doing plain (XRAY). I don't know why they've brought that," and the surgeon said "No, it's alright. It's alright, it'll be fine. We'll see it."*	Upward	Surgeon	Futility of Voice
	During Never Event in Surgical Theatre	To improve safety	Senior Staff Nurse 204 "many years" experience	*"I insisted that we were using the wrong x-ray device, but I was told "No, no, it's alright," and I said "No, it's not!"*	Upward	Surgeon	Futility of Voice
NEVER EVENT							
VOICE	Post Never Event in Surgical Theatre	To improve safety	Operating Department Practitioner 209	*"I believe there's a swab still inside."*	Upward	Surgeon	Efficacy of Voice, error correction *"And fair play, they have looked back in and found the swab."*
	Post Never Event in Surgical Theatre	To Improve Safety	Sister 6 202 25 years experience	*"the other week we had a retained potential problem … I went to that theatre and said to them "I hear you've done x-ray," and they said yes, they had. I said "You did do a plate, didn't you? It was a plate x-ray and wasn't a C-arm?"*	Upward	Theatre Team led by Surgeon	Efficacy of Voice, error correction *"they confirmed that they knew that they had to do that"*
	Post Never Event in Surgical Theatre	To Improve Safety	Surgeon 213 21 years experience	*"a couple of months later, … I was operating in X hospital… … and they lost a small swab, they couldn't find it and immediately I went through the guidelines and I said "You need to get an x-ray."*	Lateral	Theatre Team led by Surgeon	Efficacy of Voice, error correction *"they immediately located it, took it out"*

6 Follow-up with Surgery Department

There is evidence to suggest recommended and emergent changes have spread throughout the organisation and been sustained through to current day (interviews May 2016, follow-up May 2017). The outcome of this surgical team's improved conditions for voice is at least two similar never events were prevented, when individual members from this team were involved in surgical procedures at other theatres/hospitals in the trust.

"a couple of months later I was operating at another hospital and next door they were doing a video-assisted thoracoscopic surgery and they lost a small swab. … Immediately ***I went through the guidelines and I said "You need to get an x-ray." And you know what? After about 45 minutes trying to find this, they immediately located it and took it out****" – Mr. K CS213 Consultant on call Plastic Surgeon*

Table 6.13 Preventing further Never Events: Secondary Quotes

Secondary Quotes
"I know I have something to contribute because they mentioned that they can't find it, they have been struggling for 45 minutes and I was actually operating with my colleague … and I just de-scrubbed, went to the other theatre, and then started managing it." –– Mr. K CS213 Consultant on call Plastic Surgeon
"The surgeon who was involved was at X Hospital probably about two or three months after the incident and the closure of the investigation, and he was in the operating theatre suite when they had a retained swab, and actually advised the team there and then that we had lost a swab, that they should not use fluoroscopy." – CS201 Consultant Anaesthetist
"I'm now a little bit more vigilant to what are other problems that are happening anywhere else, so that it could be avoided in my speciality. There was a group meeting to go and discuss challenges in other specialities and I was very happy to attend this. I'm very happy to share this with other departments and to be aware." Mr. K CS213 Consultant on call Plastic Surgeon

Further, there is evidence by CS214, which suggests knowledge of this never event has spread to other trusts in the NHS, this is a result of CS213, Mr. K, going to speak with groups of other surgeons about this event. Mr. K, as part of his 'thriving', performing above expected levels post event, seems dedicated to spreading knowledge from this never event so that other healthcare teams can learn from this '*painful journey'*.

These findings are not going to just affect the whole team, this team is determined for this not to happen again to then, but the important message is will it happen to someone else? We went through the journey, the painful journey, will this happen to another team?" The whole idea is the distribution of this experience to other teams, I had something to do today but I cancelled it because I felt this (meeting) was very important… I go speak to rounds, and share this experience as much as possible" - Mr. K CS213 Consultant on call Plastic Surgeon

"We've learnt the lesson that despite all the risk reducing management and other things, things can go wrong. The same lesson about radiology is learnt by other Trusts as well. So I think it had a major impact on that practice. When I went to the conference a couple of years ago, somebody else from a London site knew about this incident" – CS214 Consultant Associate Specialist Breast Surgery

Surgery Case Conclusion

These findings demonstrate the powerful impact the occurrence of a never event can have on healthcare professionals, both negatively, in terms of generating feels of anger and shame, but also positively, with regards to acting as a catalyst for important professional changes which create the conditions for voice, improving patient safety.

Leading up to the never event, the surgical team was characterized by a strong hierarchical culture which silenced employees and led to futility of voice during a complex multi-site surgery, resulting in the harming of a patient. This incident, and the negative affective experiences it generated, had a major influence on the practice of professionals, specifically, lead surgeon, Mr. K, who went on to enacted positively

valenced change in the form of establishing expectations for voice going forward. This top-down emergent change helped make the team safer for communication, which was further strengthened by the engendering of voice from the bottom-up by nursing managers, and closer adherence to policy, which acted as a reference for nurses enacting voice. Further nurturing the conditions for voice, the reinvigorated sentiment of care by team members helped moderate the hierarchical culture through establishing a common moral grounding, placing emphasis on caring for the patient.

At follow-up with the team, evidence was found for continuing expressions of voice, and indication that two further never events had been prevented due to the presence of lead surgeon, Mr. K, who has demonstrably thrived following the 'painful journey' he and his team went through.

The response of these professionals to this tragic event, with specific mention to Mr. K, has been exemplary, and knowledge transfer of this case to practicing surgical and other healthcare teams is warranted.

Chapter 7 – Findings for Case Study: Maternity Department

Introduction

Chapter 7 provides the findings for the Maternity case. The overview for this case, describing the department and full-details of the incident, were previously outlined in Chapter 5: Maternity Case Full Description.

These findings use coding reference tables taken from the NVIVO database, to group together the responses of participants into categories, and related themes. This highlights the journey of the department from a blame culture and defensive silence, to one which encourages voice, improving patient safety. When three or more supporting quotes are shown, the primary quote will appear in the main text, while secondary quotes follow directly in a table.

The presentation of this case's findings is ordered into 6 sections. First, responses of professionals which evidence the conditions for silence are described. This includes how punitive investigations and a blame culture resulted in defensive silence, contributing to the incident.

Second, an overview of second victims, Doctor S, and Midwife Z, and their affective experiences of shame and guilt are described, including the trajectory of their recovery. Through a process of emotional contagion these individuals shared their negative affective experience with departmental managers, causing them to express their own negative affect in the form of anger. They blamed themselves for putting these individuals in a precarious position leading to the incident. These managers then went on to enact positively valenced changes which encouraged voice.

Thirdly, responses of professionals which evidence recommended and emergent practice changes, which created the conditions for voice following the incident including: setting expectations for voice, management engendering voice, and a reinvigorated sentiment of care, are described.

Fourthly, evidence of increased prosocial voice behaviour by midwives is shown. Fifth, the case findings are summarised in the table 7.13, Maternity Voice and Silence summary, which, at-a-glance, shows the journey of this department from a climate of silence, to a climate where voice is encouraged when patient safety is at risk.

Finally, a summary of follow-up and validation meetings with the department are presented, offering evidence of a sustained voice climate, where 'respectful challenge' is encouraged, and a sentiment of care sustained.

1 Conditions for Silence

Responses by participants' evidence three conditions which discouraged voice in the maternity department, contributing to the incident. These conditions, shown in table 7.1 Conditions for Silence, are the presence of an embedded risk management department which investigates incidents in a punitive way. This contributes to a hierarchical blame culture, and defensiveness, that silenced individuals from speaking up.

Table 7.1 Conditions for Silence

Maternity Case	Coding References	
Conditions for Silence	**Doctor (n=2)**	**Midwife (n=7)**
Punitive Investigations	3	6
Defensiveness	1	3
Blame Culture	2	13

Punitive Investigations leading to Defensive Silence

Several midwives (CS306, CS311), described the process of RCA investigations to be punitive. This was validated by CS301, an anaesthetist specialized in obstetrics, who assisted with the investigation, confirming the punitive and reactive nature of investigations carried out by maternity's embedded risk management department.

"There's quite an emotional impact on the midwives, slightly more, than the obstetric group, in that there's more of a personal implication for them, their role within the unit can change as a direct consequence of the event. I don't like to say the word punitive, but I think it perhaps is." – CS301 Consultant Anaesthetist Spec. Obstetrics, Investigator

The way investigations were conducted contributed to defensive silence of staff in the department, where reporting of patient safety errors is discouraged, largely because midwives didn't want to be blamed, or didn't want themselves to be punished or blamed by their colleagues. Defensive silence is the withholding of information based on fear, omitting facts to protect the self.

Table 7.2 Defensiveness: Secondary Quotes

Secondary Quotes
"it has a very negative impact sometimes. That is probably part of our problem, particularly on this site, that people feel that it is all very reactive and that they are being punished when something's gone wrong" - CS306 Matron of Clinical Quality and Safety for Obstetrics
"Keep quiet yea… people are scared of losing their job essentially because of making a small error, you feel like someone's going to jump on top of you for it, and you're going to be dragged through the coals about it." -CS311 Midwife Band 6

The seeming dual nature of Maternity's risk management investigations, which focus not only on safety, but also management of personnel, are a key condition for defensive silence. Investigations in the department have tended to focus not only on incidents, but also the performance and competency of midwifes' involved, commonly leading to disciplinary actions. CS310, the lead midwife for quality, found the punitive nature of investigations in the department problematic, often resulting in conflict with the head of midwifery over personnel management outcomes.

> *"We needed to do an RCA, So, Head of Midwifery came to me and said "What have you done to the midwife?" and I said "What do you mean what have I done to the midwife? We're doing a RCA investigation and there are individual problems. She said "I was concerned about the individual's practice and whether she should be put in a different role." I said "but that's not part of my RCA investigation" … the whole RCA process was part of the disciplinary process that was going to happen to the midwife and that's very difficult" –CS310 Lead Midwife for Quality & Governance, Woman & Children's Services*

Table 7.3 Punitive Investigations: Secondary Quotes

Secondary Quotes
"They've done an investigation, a supervision investigation and management investigation. The one midwife who was the co-ordinator that day, there's learning. She's going to have a development plan put forward for her" - CS304 Associate Head of Women's Services for Nursing and Midwifery
"I believe she's (Midwife Z) got a [450] hour training plan. She's been put through that and she'll probably have some disciplinary courses on there as well now" - CS305 Head of Midwifery, Governance and Quality Clinical Dean
"the co-ordinator's been taken out of the co-ordinator role for the last year while the investigation's been going on." -CS307 Clinical Midwifery Manager Delivery Suite (former co-ordinator)

Blame Culture

At the time of the incident, an 'us vs them' mentality existed between front-line clinicians (midwives and obstetricians) and maternity's risk management department. This embedded risk management department was responsible for the development of a 'blame culture' where midwives feel as though management is reactive to incidents, investigating individuals, demanding statements, and making them feel as though they are the root cause. The process of error investigation is focused more on individuals and less on broader learning. CS313 consultant obstetrics, labour ward lead, mentioned that both midwives and obstetricians are often trying to hide their employee pin numbers, as a type of defensive behaviour, so they can't be blamed.

> *"There's huge disengagement between maternity clinical governance, maternity managers, and working staff… there is clinical disengagement... it's creating anger and resentment. Staff have left and it's a very, very kind of unfriendly atmosphere. people are scared. People work on this unit thinking every day "Will I protect my pin #?" or "Will I protect my GMC #? … So everything they do they'll have their pin number at the back of their mind. That's how you come in every day… If you have an*

incident, and it gets reported then they will be taken out of the system – suspended or even struck off." - CS313 Consultant Obstetrics, labour ward lead

Table 7.4 Blame Culture: Secondary Quotes

Secondary Quotes
"Nurses always see incidents as a "Oh God, I'm going to be blamed for something," and it's very much a blame sort of culture." -CS307 Clinical Midwifery Manager Delivery Suite (former Co-ordinator)
"There's quite a strong hierarchy within midwifery and if there is felt to have been some human error on the side of the midwife, then they will be taken out immediately. It may even go as far as a suspension or they may drop a grade and then be retrained." – CS301 Consultant Anaesthetist Spec. Obstetrics, Investigator
"I think the blame culture here is really bad." – CS311 Midwife Band 6
"There's not a positive culture towards safety and I think it's because of the processes, the way governance has been applied and the way the whole investigation process has been applied. ... think there's very much a focus on individual practice and that's why the culture is very negative... We miss opportunities to learn at a systems level because there's such focus on individual." – CS310 Lead Midwife for Quality & Governance, Woman & Children's Services
"I would say we are reactive, with a high blame culture. I don't think the wider scenario is always taken into consideration… it's quite a quick reaction to something … It massively reduces morale because midwives feel like they need to protect themselves." -CS311 Midwife Band 6

2 Second Victims and Affective Experiences

The incident had a profoundly negative affective impact on midwife Z and doctor S. The former left the profession before she could be interviewed, while the latter is linked to the affective coding references for guilt and shame, in table 7.5. Anger was felt by managerial professionals through emotional contagion with, Doctor S and Midwife Z, specifically those from midwifery who felt angry about the incident, blaming themselves for having put Midwife Z in a precarious position. A renewed sentiment of care, discussed more fully in the next section, was found through expressions of compassion towards patients by both obstetricians and midwifes. The recovery trajectory of second victims, with Doctor S 'surviving', and Midwife Z 'dropping out' is also discussed.

Table 7.5 Maternity Affective Response Coding Reference

Maternity Case	Coding References	
Affective Response	**Doctor (n=3)**	**Midwife (n=4)**
Anger	3	4
Compassion	8	4
Shame	6	
Guilt	4	
Crying (Context)	2	1
Stigmatising (Context)	3	
Involving the Soul (Context)	1	

Shame and Guilt

Doctor S found the process of investigation to be traumatic and felt stigmatized, singled out from her obstetrical colleagues. The term 'SUI', serious untoward incident, was like a label applied to doctor S, still stuck to her even a year after the incident had occurred. While the investigation did not name doctor S specifically, it referred to a 'consultant', and she felt all her colleagues knew this referred to her. Both clinical director (CS303) and doctor S were upset when recalling the details of this event and aftermath, crying at times during their interviews.

> *"I think the word SUI is just so stressful and it's traumatic being involved in SUI, it's sort of a title that goes before or after your name … you have to put it in your appraisal, but how long do you stick with it? I just find will this ever go away? [crying] I find being involved in a SUI very stigmatising and, you know, it takes the whole year [crying] I mean in fact I'm sort of in some ways coming*

up to the anniversary of this, so I am pretty much on tenterhooks really" - Doctor S (CS302 Consultant Obstetrician)

The incident was a negative affective experience for doctor S, experiencing both guilt and shame. Her guilt stemmed from both the incident, where she caused preventable harm to the innocent patient and child, and the process of investigation, including the label of 'SUI', which led her to question whether she had acted in a morally deficient way. Because she acted alone in her decision to review the patient only after four hours, she felt that no one else was to blame for the incident besides herself, attributing this to poor judgement.

"It was very much emotional because I just took it very personally in that I felt that I actually had this chance to make a difference because I'd seen her. I had examined her myself, so there was no question of relying on someone else's findings or anything like that and I've always thought… I mean I think I'm a good clinician and I felt that it was all there… the investigation found that 'the patient was seen by a consultant', which made it very personal." – Doctor S (CS302 Consultant Obstetrician)

Doctor S later felt a sense of shame, experiencing negative internal feelings and humiliation about herself not performing to the ideal of her profession as an obstetrician. These negative feelings have stayed with her, even a year after the incident.

"the coroner, was reviewing my practice and potentially I hadn't actually… I don't know how to put it. Potentially I had sort of not been up to the mark. I could have done better… I took it quite personally, I wasn't good enough" – Doctor S (CS302 Consultant Obstetrician)

Emotional Contagion and Anger

Those professionals affectively impacted through direct involvement in the incident, Doctor S, and Midwife Z, influenced the affective state of several colleagues, including their leaders (CS303, CS304, CS306, CS307) through direct verbal contact and close working proximity.

"when there's an incident there's quite an emotional impact on the people who are involved and the impact often can be felt I think

perhaps on the others" - CS301 Consultant Anaesthetist Spec. Obstetrics, Lead Investigator

The affective states of these second victims spread to their colleagues, mainly leaders, with whom they had interactions with following the incident, during recommended training and coaching sessions. For CS303, clinical director of obstetrics, who had repeated direct contact with doctor S following the event, this transfer of affective experience was physically and verbally evident. CS303 was upset by the experience of doctor S, wiping tears away several times, before composing herself and continuing during the research interview (Field Journal Note).

"I was incredibly angry and frustrated and I cried and, you know, I lost control." –CS303, Consultant Obstetrics and Clinical Director Obstetrics

Negative affective experiences among midwifery management, spreading from midwife Z, were quite common following the incident. This was evident in CS304, CS306, CS307 who expressed anger, particularly CS307, the co-ordinator at the time of the incident, blaming herself for putting midwife Z in that position. The anger experienced by this group centred on blaming themselves as managers, having let down a member of their team by putting her (Midwife Z) into a precarious position, where she did not have the appropriate skillset, contributing to the incident. The severity of the incident, being described as 'tragic' and resulting in a death of a new-born, may also have played a role in the affective reach of the situation.

"I really felt for the woman and the midwife involved in this case. I felt quite angry that we'd put somebody in that position" -CS306 Matron of Clinical Quality and Safety for Obstetrics

Table 7.6 Emotional Contagion: Secondary Quotes

Secondary Quotes
"I even cried in this case and that's very unusual for me now because I've been in it such a long time, but this is a tragic case" -CS304 Assoc. Head of Women's Services for Nursing and Midwifery
"it's such a tragedy and I think potentially we could have perhaps had a live baby at the end of the day. It has had an impact. It's touched a lot of people" -CS306 Matron of Clinical Quality and Safety for Obstetrics
"It affects everybody when something like that happens. It affects the whole team." -CS307 Clinical Midwifery Manager Delivery Suite (former Co-ordinator)

Recovery Trajectory of Second Victims.

As per the RCA recommendations, consultant obstetrics, clinical director (CS303) immediately met with doctor S, the consultant obstetrician (CS302), to complete a training needs analysis, ensuring any shortfalls in training were addressed. Doctor S claims she was not lacking in knowledge that would have made a difference in this case, but admitted she used poor judgement in not reviewing the patient sooner. The training analysis, and incident, resulted in doctor S changing practice, becoming more sensitive to vaginal bleeding in her patients. She is more mindful of these symptoms which could be a sign that urgent caesarean section is needed, describing her management of such situations now as 'aggressive'.

> *"I was involved in debriefing Doctor S (CS302) and doing a training needs analysis with her. We went through all the notes and saw what was going on… I'm pretty sure that the debrief and the discussion with Doctor S has changed her practice… You assume when somebody's done their seven years of training that they should be ready to be a consultant, but you can never experience all the different situations you're going to be in" - CS303 Consultant Obstetrician, Clinical Director*

Table 7.7 Recovery Trajectory of Second Victims: Secondary Quotes

Secondary Quotes
"One of the actions was that me, and the midwife involved, each of us had to have a meeting with our line manager respectively and see if there were any learning or training needs… to identify if there were any gaps in my learning or understanding of management of abruptions, ante partum haemorrhage, and also about CTG interpretation… CS303 asked me "Do you think there's anything you feel you don't know, that you could learn?" I didn't think I didn't know anything about it. It was just sort of wrong judgement at that time." -CS302 Doctor S
"If I had said she (patient) needs a caesarean section, then all of that wouldn't have happened. So for me every time a lady comes with vaginal bleeding immediately I want to know. I mean somebody who doesn't know this may even say my management is a little bit aggressive for even small bleeds, so in some ways that has had an impact on my practice. So anybody with bleeding for me is something… as a symptom I'm more mindful of it." -CS302 Doctor S

Doctor S (CS302 consultant obstetrician) was psychologically impacted by the incident and investigation, describing it not only as traumatising but also *"ingrained in my soul".* What's interesting is that although other professionals (midwives and obstetricians) on this team went on to make practice improvements (see next section), doctor S, paralysed by 'shame' and 'blame', is still on her recovery trajectory from the incident. She only very briefly commented on minor changes to her practice (i.e. aggressive treatment of vaginal bleeding).

"I was a bit disillusioned with the whole structure of the investigation process within this department. I just distanced myself from the whole thing because I felt so unsupported and I felt that if there was learning I felt it was for me and I didn't think anybody within the organisation had anything to contribute to it." – Doctor S

While Doctor S has endured the ‘inquisition’, and obtained emotional first aid, in moving on from the incident she had neither dropped out, nor thrived post incident, but simply survived. Doctor S is coping, performing at expected levels, but unable to move on, and still having intrusive thoughts about the incident.

“So the emotional response was quite profound really because I just felt that I had this opportunity to make the decision which I messed up … And then the consequence of that was the stigma and I felt that all the good that you’ve done in the last seven or eight years or whatever was just wiped out with a brush and you were just tainted with being involved in a SUI...I think the implications or the psychological impact it has on you is far greater in some ways than the outcome itself, which it shouldn’t be like this though.” -Doctor S

A lack of a sentiment of caring shown by Doctor S would seem to be driven by the stigmatising investigative process that she went through, making her feel labelled by the SUI, and left still questioning how she could have prevented the incident from happening.

“the case was presented as the patient was seen by a consultant, which made it very personal, by putting it as “was seen by a consultant” just made it personal and I knew it was none of the 22 others (obstetricians). I knew it was me and I felt that if I knew it, everybody else knew it.” – Doctor S

There is evidence to suggest that community midwife Z, has moved on from the incident, her recovery trajectory ending with her dropping out, leaving her previous role.

“I know it’s ongoing with the girl still… I know Midwife Z is going a different way [professionally] at the moment” – CS307 Clinical Midwifery Manager Delivery Suite (former Co-ordinator)

3 Conditions for Voice

A summary of responses which evidence practice changes, both recommended as part of the RCA investigation, and emergently, by professionals, are shown in table 7.8 conditions for voice. Despite history of a blame culture this case found evidence for prosocial voice behaviour by midwives following the serious

safety incident. The conditions for voice in this case were driven by professionals who were affectively influenced by close contact with the incident's second victims' doctor S and midwife Z. This included the obstetrical clinical director who set expectations for voice from the top-down, and midwife leaders who responded from the bottom-up to engender voice among front-line staff. Further, having been rendered dormant by a blame culture and defensiveness, a reinvigorated sentiment of care emerged through a build-up of expressions of compassion directed at patients.

Table 7.8 Conditions for Voice

Maternity Case	**Coding References**	
Conditions for Voice	**Doctor (n=3)**	**Midwife (n=5)**
Setting expectations for voice	5	0
Management engendering voice among staff	3	5
Reinvigorated sentiment of care	8	4

Setting Expectations for Voice

Since the affective experience of the incident and follow-up with doctor S, CS303, clinical director of obstetrics, has changed how she communicates with colleagues. She established informal standards of what's rewarded, supported, and expected for inter-department communication. By attempting to shift the overall tone in the department with respect to communication, she has created a safer environment for professionals of equal or lower hierarchical position to speak up, with less fear of reprisal than previously. This top-down emergent behaviour, where barriers to speaking up have been attenuated, has effectively enabled professionals, both midwives and obstetricians, to contribute more openly to patient safety.

> *"My interactions with people are less defensive. I'm more open. People don't feel anxious about talking to me because I don't want to be a barrier to communication … I say "Look, please tell me about this. Please tell me about that," and "I want you (midwife) to come and tell me this," and "I'll come back in this length of time. Come and find me if I've forgotten." So we're all in it together and it's a shared thing… you just have to behave the same way all the time. Be open, fair, non-judgemental… If you start ridiculing people or saying "Why are you asking me about this?" people will soon know that they don't want to talk to you. I'm finding ways that I can communicate with them to make sure we have open communication… It feels like midwives are more at ease coming to ask me stuff." -CS303 Clinical Director Obstetrics*

"Model behaviours that you expect other people to have. Demonstrate appropriate behaviour and an appropriate way to communicate… They can't turn that back on you if you have high standards." -CS303 Clinical Director Obstetrics

Midwife leaders, affectively influenced through contact with midwife Z, responded to the clinical director of obstetrics change with their own emergent bottom-up shift in practice. They ensure that midwifes involved in incidents receive training, and are reassured that they can rely upon experienced staff to support them when they need help escalating concerns. Evidence of this emergent bottom-up practice is discussed next.

Management Engendering Voice Among Staff

A change which drove increased voice behaviour is midwife management's empowering of front-line midwives, encouraging them to 'respectfully challenge' their colleagues, whether obstetrician or fellow midwife. This support seemed particularly important for junior midwives who might lack the confidence to raise an issue, now they approach midwife coordinators, or matrons, about concerns, who will advise on next steps or assist with contacting more senior staff or obstetricians. Part of the encouragement comes in the form of coaching, where senior midwifes are pro-actively engaging with junior midwifes, testing how they might respond in certain situations and what approaches they would choose. Further, managers are teaching 'respectful challenge', where midwifes learn how to ask others, like obstetricians, about the rationale behind their decisions. With a bit of support from their managers, midwifes can communicate more effectively to professionals of higher-hierarchical position.

"You know, some of the more senior midwives would feel happy to do that, but I think with the more junior midwives it's having the confidence to come to us as co-ordinators to be able to say "I'm not happy about this. I'm not happy with this decision," and its sort of educating them really as well." –CS307 Clinical Midwifery Manager Delivery Suite (was Co-ordinator)

Table 7.9 Management Engendering Voice among Staff: Secondary Quotes

Secondary Quotes
"They've got to feel powerful enough to go and perhaps challenge a consultant from all levels of staff, but particularly when it somebody who is quite senior it can be difficult, so there have been times when I've said "I'll do that then." -CS306 Matron of Clinical Quality and Safety for Obstetrics
"Junior midwives come to the band 7 coordinator, to query, ask advice, and escalate their concerns. The Band 7 could also respond to the junior midwife by saying, "what would you do in this situation?" "You might like to try this approach", there is a bit of coaching going on … we do try to empower midwives, if you are still concerned about a decision go above, to your manager or your coordinator… we are trying to teach respectful challenge, how to approach colleagues in a respectful way, we teach juniors to 'ask about the rationale' behind consultant's decisions" - Matron for Maternity Services (during follow-up meeting)

Compassion and Reinvigorated Sentiment of Care

While negative affective experiences were common following the incident, there was also expression of compassion, directed towards patients. Consultants (CS301, CS303, CS313) and midwifes (CS306, CS311) described a reinvigorated focus on patients, strengthening their sentiment of care. Obstetricians and midwifes felt moved by the avoidable harm which had been inflicted on this patient and her new-born child, expressing a desire to prevent further harmful events in maternity. The hierarchical barriers between professions were moderated by a mutual desire to put patients first and care for them safely, encouraging voice.

This reinvigorated sentiment of care is spurred on by several factors, including: professionalism, which speaks to the disposition and training of people coming into careers as midwives and obstetricians. A desire to put the needs of the patient and family first, and analogously treating the patient as though they were a member of your own family. Mention of this safety incident, or other recent incidents,

preceded all compassionate expressions, suggesting incidents are a catalyst for shaping how these professionals feel about patients, specifically a feeling of distress at the suffering of their patients, and vocalizing a desire to help.

"you come into the profession because you want to look after people and you care about people, you want to do your best, so if you've learnt something then you will change because you think that it's better. I think all midwives do that." -CS311 Midwife

Table 7.10 Compassion and Reinvigorated Sentiment of Care: Secondary Quotes

Secondary Quotes
"once an event has happened, our very first thought is… obviously it is for the patient and it is for the family" - CS301 Consultant Anaesthetist Spec. Obstetrics, Lead Investigator
"when you're working in things like this it is about what is best for the woman and her baby... when you have met a family who've had a tragedy you kind of feel like you owe it to them to make it better." -CS306 Matron of Clinical Quality and Safety for Obstetrics
"Take the power completely out. Treat the patient as somebody who's like your own family member" -CS313 Consultant Obstetrics, labour ward lead

4 Expression of Prosocial Voice

Following the incident and the emergence of the conditions identified above, there is much evidence for increased assertiveness by team members to escalate concerns and challenge hierarchy when they feel safety is at risk. A summary of prosocial voice by professional group are found in table 7.11 expressions of prosocial voice.

Table 7.11 Expressions of Prosocial Voice

Maternity Case	Coding References	
Expressions of Prosocial Voice	**Doctor**	**Midwife (n=4)**
Prosocial Voice		9

With reference to Table 7.11 expressions of prosocial voice, it was found that midwives have been more likely to escalate concerns and challenge hierarchy in the department, since the incident. Midwives, and midwifery management, reported that midwives are more assertive in their communication style when dealing with supervisors and obstetrical consultants. If they see something that is potentially concerning, there is less hesitation to flag it up.

"Midwives are getting better at escalating to the right people… getting better now at going straight to the doctors and getting the doctors to come… before, if the registrar had come and said "I think it's okay," I probably would have just accepted that, whereas now I'm going "Well I'm not happy with it," so going above that registrar and going to the consultant…having the confidence to challenge doctors more than anything" –CS308 Midwife

Table 7.12 Expressions of Prosocial Voice: Secondary Quotes

Secondary Quotes
"it's about being able to question the consultants. I'm quite vocal, so I will question if I didn't agree with something. I'm quite happy to challenge any doctor or consultant decision and sort of justify and go through policy or procedure and get their opinions really" – CS307 Clinical Midwifery Manager Delivery Suite (Former Co-ordinator)
"During a shift on delivery last week, I saw the midwife co-ordinator respectfully challenge the decision of a consultant. Resulted in a conversation, which came to the right decision for the patient, keeping her on the delivery suite, which was looking to free up beds." – Matron for Maternity Services (during follow-up meeting)

5 Voice and Silence Summary

Table 7.13 Maternity Voice and Silence Summary, highlights the silencing of midwifes and obstetricians stems from a blame culture, where individuals felt punitively targeted by departmental level risk management, which investigates individual practice and imposed managerial sanctions. These conditions led to reinforcement of defensive behaviours that stymie voice and encouraged defensive silence. On the contrary, affective experiences, and emergent practical changes following the incident, and changes in the structure of departmental risk management (see next section), created the conditions for voice, leading to enactment of prosocial voice in the form of respectful challenge.

Table 7.13 Maternity Voice and Silence Summary

Climate	Scenario	Motive	From	Message	Direction	Target	Outcome
SILENCE	Speaking up, whistleblowing, and reporting of errors on the Maternity Ward	Defensive	Midwife/ Obstetrician	*"it's a very, very kind of unfriendly atmosphere. It's kind of people are scared. People work on this unit thinking every day "Will I protect my pin #?" or "Will I protect my GMC#?" – CS313 Consultant Obstetrics, Labour Ward Lead*	Upward	Supervisor	Defensive Silence
		Punitive	Midwife	*"There's quite a strong hierarchy within midwifery, if there is felt to have been human error on the side of the midwife, then they will be taken out immediately. It may even go as far as a suspension or they may drop a grade" - CS301 Consultant Anaesthetist Spec. Obstetrics*	Upward	Supervisor	Defensive Silence
		Punitive	Midwife	*"there's very much a focus on individual practice and that's why the culture is very negative... We miss opportunities to learn at a systems level because there's such focus on individual" - CS310 Lead Midwife for Quality & Governance, Woman & Children's Services*	Upward	Supervisor	Defensive Silence
Serious Untoward Incident / Changes to Maternity Risk Management Department							
VOICE	On the Maternity Ward	To improve safety	Midwife	*"Midwives are getting better at escalating to the right people… getting better now at going straight to the doctors and getting the doctors to come… now I'm going "Well I'm not happy with it," …having the confidence to challenge doctors more than anything" –CS308 Midwife*	Upward	Obstetrician	Voice
		To improve safety	Midwife co-ordinator	*"During a shift on delivery last week, I saw the midwife co-ordinator respectfully challenge the decision of a consultant. Resulted in a conversation, which came to the right decision for the patient"– Matron for Maternity Services*	Upward	Obstetrician	Voice (Respectful Challenge)
		Coaching	Midwife / Manager/ Coordinator	*"there is a bit of coaching going on … we do try to empower midwives, if you are still concerned about a decision, go above, to your manager or your coordinator… we are trying to teach respectful challenge, how to approach colleagues in a respectful way, we teach juniors to 'ask about the rationale' behind consultant's decisions" – Matron for Maternity Services*	Upward	Obstetrician	Voice (Respectful Challenge)

6 Follow-up with Maternity Department

In follow-up meetings held in June 2017 there was evidence suggesting that midwife management continue to promote escalation among their midwives, often in the form of respectfully challenging decision making, or prioritization of patients. Junior midwives have been approaching coordinators to query, ask for advice and, when necessary, to escalate their concerns. The term 'respectful challenge' was developed by midwife management after a trend of safety incidents were identified, where lack of challenge led to a safety risk. It emphasises how to approach colleagues in a respectful way, and to ask about the rationale behind their decision(s). This development grew out of 'appreciative inquiry' training the department had received.

Further sustaining a sentiment of care is the practice to give out compassion cards to staff who are seen delivering compassionate care.

"Touching a patient's hand, sitting with the family, we call it 'making a difference' in midwifery." – Matron, Follow-up Meeting June 2017

As of June 2017, the maternity risk management department had been rolled up to a corporate level, this resulted primarily from a change in leadership at the Trust. Whereas before investigations were focused on getting statements, it's now more of a roundtable, focused on initial debriefing with the staff involved, and diffusion. The incidents now go directly to the midwife matrons who speak with their staff, rather than an internal risk management department. This change should result in less defensive behaviours by staff because investigations feel less intimidating and punitive, and are dealt with by front-line managers, rather than risk management investigators, who can follow-up with their staff individually.

"That team wasn't clinical (former maternity risk management) … so they just concentrated on administrative investigations. They were office based. As a manager I was getting frustrated "you don't understand what's going on at the shop floor" … Because we (Midwife Matrons) are trained in managing people, and performance management, and capability, the way you approach things is different 'Your firm but fair'. We've changed the way we think of things, now staff feel less intimidated and less blamed. We are taking ownership of our incidents. The incidents used to get taken by the maternity governance. Now they go right to the

maternity matrons, go speak to the midwives. Before it was all about getting statements. Now it's more of a roundtable, rather than "I need a statement from you". We get more mileage from speaking to that person involved, if an incident happened on the delivery suite, get the 4-5 people that were involved around the table. It's more about getting an initial debrief, a diffusion." – Matron for Maternity Services (during follow-up meeting)

Maternity Case Conclusion

This case highlights the tragic consequences of a blame culture, where professionals practice a form of defensive silence, keeping quiet about patient safety risks to protect themselves from the inquisition of a risk management investigation. Such was the high rate of occurrence of similar types of incidents resulting from lack of challenge in the department that a plan was adopted by midwifes, introducing 'respectful challenge' to break-up some of the defensive behaviour and promote voice.

Many of the features of a hierarchical blame culture are gone with the dissolving of an embedded risk management program, resulting from a top management change.

The second victims found in this case, while suffering much negative affective experience themselves, were part of the catalyst, proving emotionally contagious to their managerial colleagues, spurring on several positively valenced changes following the incident and investigation, improving conditions for voice. The clinical director of obstetrics, having been affectively influenced by what doctor S went through, led a change from the top-down, setting informal standard of what's reward, supported, and expected for communication between professionals. This shift in tone encouraged voice, allowing all professionals to contribute more openly to patient safety.

In response, midwifery management responded through engendering voice among their staff in the form of 'respectful challenge'. These changes were successful in breaking down some defensive behaviours, encouraging expressions of voice. Further driving voice, and moderating hierarchical barriers between professions, was a mutual desire to put patients first, described as a reinvigorated sentiment of care.

Chapter 8 – Findings for Case Study: Urology and Ward X

Introduction

Chapter 8 provides the findings for the Urology and Ward X case. The overview for this case, describing the department and full-details of the incident, were previously outlined in Chapter 5: Urology Case Full Description.

These findings use coding reference tables taken from the NVIVO database, to group together the responses of participants into categories, and related themes. These findings examine the journey of professionals in this department from a hierarchical culture, and futility of voice, to the enactment of defensive voice by nurses. When three or more supporting quotes are shown, the primary quote will appear in the main text, while secondary quotes follow directly in a table.

The presentation of this case's findings is ordered into 6 sections. First, responses of professionals and document analysis, which evidence the conditions for silence, weakened by a hierarchical culture, and futility of voice, directly resulting in the incident, are described.

Second, an overview of second victim: staff nurse CS412, and her affective experience is described, including the trajectory of her recovery. Through a process of emotional contagion, she shared her negative affective experience with departmental manager, senior sister CS403. CS403 then expressed her own negative affect in the form of anger, blaming the urologist involved for causing the incident. This manager, senior sister CS403, went on to enact positively valenced changes which encouraged voice. There was a notable lack of compassion expressed by professionals towards the patient in this case.

Thirdly, responses of professionals, which evidence recommended and emergent practice changes creating the conditions for defensive voice are described. These include: closer adherence to standard operating procedure, defensiveness, and setting expectations for voice.

Fourthly, evidence for expressions of defensive voice by nurses, a type of voice that aims to shift focus to others to protect the self, is shown.

Fifth, the case findings related to voice and silence are summarised in table 8.9 Ward X Voice and Silence Summary. This table, at-a-glance, shows the journey of this department from a climate of silence, and futility of voice, to a voice climate, where enactment of defensive voice is encouraged.

Finally, a summary of follow-up and validation meetings with ward X and urologists are presented, offering evidence of a sustained voice climate where enactment of defensive voice is found.

1 Conditions for Silence

Responses by participants, and analysis of the investigative report, evidence two conditions for silence on ward x having directly contributed to the incident. These are the presence of a hierarchical culture, and evidence of the futility of voice by a nurse, having dire consequences for the patient in this case.

Table 8.1 Conditions for Silence

Urology Case	Coding References		
Conditions for Silence	**Doctor (n=1)**	**Nurse (n=1)**	**Document (n=1)**
Hierarchical Culture	1	2	2
Futility of Voice		3	2

Hierarchical Culture

Differences in the hierarchical-positions of urologists and nurses played a role to inhibit inter-professional communication on ward X, contributing to the incident. Specifically, staff nurse CS412 informed doctor X, the most senior person on the ward, of the patient's abnormal blood results, and neglected to inform the nurse caring for the patient as per standard procedure.

"In this circumstance [Staff Nurse] informed [Doctor X] and then did not believe it was necessary to inform the nurse caring for [Patient] as she had told the most senior person on the ward." – Serious Untoward Incident Report into the care of Mr X

"At interview [Staff Nurse] stated that she assumed that she had performed the appropriate escalation as she had showed the blood results to the most senior clinician on present on the ward." – Serious Untoward Incident Report into the care of Mr X

Ward X would appear to be a classic example of the hierarchical challenge. There were clear divides in culture between doctors and nurses, creating a *"them and us" (CS412)* scenario, where one side is of lower position and power, resulting in, as described next, futility of voice.

"There's still them and us. There's still this communication difference between the doctors and nurses… when it comes to decision making, I think there's still that divide – there's them and us" - CS412, Staff Nurse

"I think there are two aspects to this … there's the medical culture and the nursing culture… I don't think it's significantly changed the medical culture" – CS401 Clinical Director, Urology

Futility of Voice

This case presents an example of the circumstance under which futility of voice is possible. The staff nurse attempting to inform the urologist of an abnormally high potassium result demonstrates the struggle of an individual of lower-position to be heard by someone in a higher-position. Staff nurse CS412 claims to have interrupted doctors X and Y, showing them the patient's blood results, in response doctor X said "OK". This version of the event is corroborated by doctor Y, who recalled this interruption and the abnormal blood results.

However, doctor X, the more senior of the two doctors, claimed to not recall being showed these results at any time during the ward round. Doctor X indicated had he been aware, he would have delayed the patient's discharge and treated the high potassium. It's possible to see how this scenario would discourage further voice, silencing other nurses on the ward, who might assume their efforts at communication would not be listened to, as was the case here.

"Whenever we're [nurses] voicing an opinion it somehow is brushed away or feels insignificant" - CS412, Staff Nurse

Table 8.2 Futility of Voice: Secondary Quotes

Secondary Quotes
"Excuse me, is this a patient you're looking after? I've had a phone call from microbiology with these blood results. Are you going to review the patient?" – Staff Nurse CS412
"Staff Nurse recalled at interview that she interrupted the doctors, showed them (patient) blood results, and that (Doctor X) acknowledged them and said OK" – Serious Untoward Incident Report into the care of Mr X

Secondary Quotes
"Doctor X does not recall being showed the results at any time during the ward round. Doctor X was on the ward with the urology registrar Doctor Y. Doctor Y does recall being interrupted by Staff Nurse and informed of the abnormal blood results." – Serious Untoward Incident Report into the care of Mr X

2 Second Victim and Affective Experiences

The impact of this incident was profound for CS412, a newly qualified staff nurse, and her nursing colleagues, including senior sister CS403, who supported CS412 through the post event recovery. The affective response in this case centres on CS412, who felt as though she had been labelled the 'root cause' of the incident by the investigation team. As far as could be observed, there was a total absence of compassion expressed by both nursing and medical staff. Further, no affective response at all was found to be expressed by medical staff, the urologists.

Table 8.3 Urology and Ward X Affective Response Coding Reference

Urology Case	**Coding References**	
Affective Response	**Doctors**	**Nurses (n=2)**
Guilt		5
Anger		4
Crying (Context)		1
Involving the Soul (Context)		1
Stigmatising (Context)		1

Anger and Guilt

This incident led staff nurse CS412 to experience anger**,** where she blamed herself for the death of the patient, holding herself responsible for the situation. She blamed her lack of knowledge about blood results as contributing.

"it did affect me personally because I thought had I have done this [blood results card] then this might not have happened… It really was tough to know that you were partly responsible for somebody's death. [crying]. It's very tough." -Staff Nurse CS412

Guilt seemed to arise from the investigation itself, which she interpreted as having labelled her as the *"root of the problem" (CS412),* which she described as

"soul destroying" (CS412). While discussing this matter during the research interview, she started crying several times (Field Journal Notes). It seemed that she believed she had acted in a morally deficient way, wrestling with having been, in-part, responsible, for the death of a patient.

"It really was tough to know that you were partly responsible for somebody's death. [crying]." -Staff Nurse CS412

Table 8.4 Guilt: Secondary Quotes

Secondary Quotes
"it is called a root cause analysis, I felt like the root of the problem and it just is soul destroying, especially whenever somebody much more senior than I was sort of saying "Actually no, she didn't give me the results." That was so bad." -Staff Nurse CS412
"This was a very traumatic experience. It was really, really hard, when I found out about this it hit me very, very hard." – Staff Nurse CS412

Emotional Contagion and Anger

Staff Nurse CS412 brought her individual negative affective experiences to group interactions. For example, at handover meetings, which led to the spreading of her individual level affect to other group members.

"I hope that no newly qualified nurse has to go through what I went through. I spread the word… I've been very open and transparent about it all and I spoke with all the colleagues that I felt it appropriate to. I even spoke to students about how to avoid these things." -CS412 Staff Nurse

The affective experience of CS412 was thus felt by her nursing colleagues. In particular, senior sister CS403, was affectively impacted through close proximity with her staff nurse while providing post incident support. This led senior sister 403 to experience anger, with blame aimed toward the consultant who denied all knowledge of the incident, and about the situation in general where there was gossip that portrayed inaccurately the incident details and painted ward x in a negative light.

Senior sister CS403 was affectively charged as a result, going on to enact positively valenced practice changes on the unit (See next section on conditions for voice).

"when there's an incident everyone knows that the nurse is upset. Everyone understands and we talk about things and learn from them. It was awful, a man died, so everyone's shocked and wants to learn how it happened… I was emotional for the poor nurse because she was distraught, understandably. And we were cross that the consultant denied all knowledge. That was quite difficult we were very cross with the doctor, and found it quite difficult to work with him for a few weeks." - CS403 Senior Sister

"Various people were talking about it, and didn't know the full story, it's quite sad really because, you know, you hear someone'll make a comment "Ward x discharged a patient with high potassium and he died," and that isn't the full story. That's really hard and I say "Actually my nurse did tell the doctor." - CS403 Senior Sister

Recovery Trajectory of Second Victim

While CS412 spoke to the strength of her direct manager (senior sister 403) in supporting her emotionally and professionally, ultimately, she was left emotionally devastated, unable to cope, and opted to drop out, leaving the organisation. She accepted a nursing role in another country. The researcher interviewed CS412 on her last day at the Trust.

"I had such a good line manager. You know, in fact I don't think if I had her I probably wouldn't… I don't know what I would have done. I don't think I'd be here today. I wouldn't have been able to cope without that support." -Staff Nurse CS412

3 Conditions for Voice

Changes to nursing practice were closely aligned to the implementation of recommendations, while Urologists, having not implemented any, still had emergent practical changes worth noting, in response to this event.

The conditions for voice on ward x, shown in table 8.5, were found to be: first, the introduction of, and closer adherence to standard operating procedure (Figure 8.2) by nursing management, which is referred to by nurses as influencing their assertiveness with doctors. Second, emergent defensive behaviours by nurses,

including always informing the doctor of blood results and tighter documentation, and third, setting expectations for voice, where both urologists and nurses are checking for abnormal blood results for patients, leading to a form of inter-professional collaboration.

Table 8.5 Conditions for Voice

Urology Case	Coding References	
Conditions for Voice	**Doctors (n=3)**	**Nurses (n=5)**
Closer adherence to SOP	0	9
Defensiveness	4	11
Setting expectations for voice	3	9

Closer Adherence to Standard Operating Procedure

Immediately following the incident, senior sister 403 implemented several changes on Ward X, as per the RCA recommendations. This included printing and laminating small cards that show normal values for common blood tests (see figure 8.1), introducing a standard operating procedure (SOP) for taking blood results over the phone (see figure 8.2), and training analysis of all staff regarding knowledge of commonly requested blood tests, discharge process, and audits of nursing documentation. Senior sister 403 asked all nurses who had read and understood the SOP to sign a sheet indicating so (Figure 8.3).

Introduction and adherence to the standard operating procedure (SOP) (Figure 8.2) has encouraged voice behaviour of nurses. Having an SOP to fall back on has seemed to embolden nurses on ward x, spurring them on to speak-up, and communicate with doctors when abnormal blood results are received.

Figure 8.1 – Common Blood Tests (Wallet-sized Laminated Card)

BLOOD RESULTS

Hb - Males (135-180) Females (115-160)
Platelets 150-400
WCC 4-11
INR 0.8-1.2
Potassium 3.5-5.3
Sodium 133-146
Urea 2.5-7.8
Creatinine – (Males 64-111) (Females 50-98)

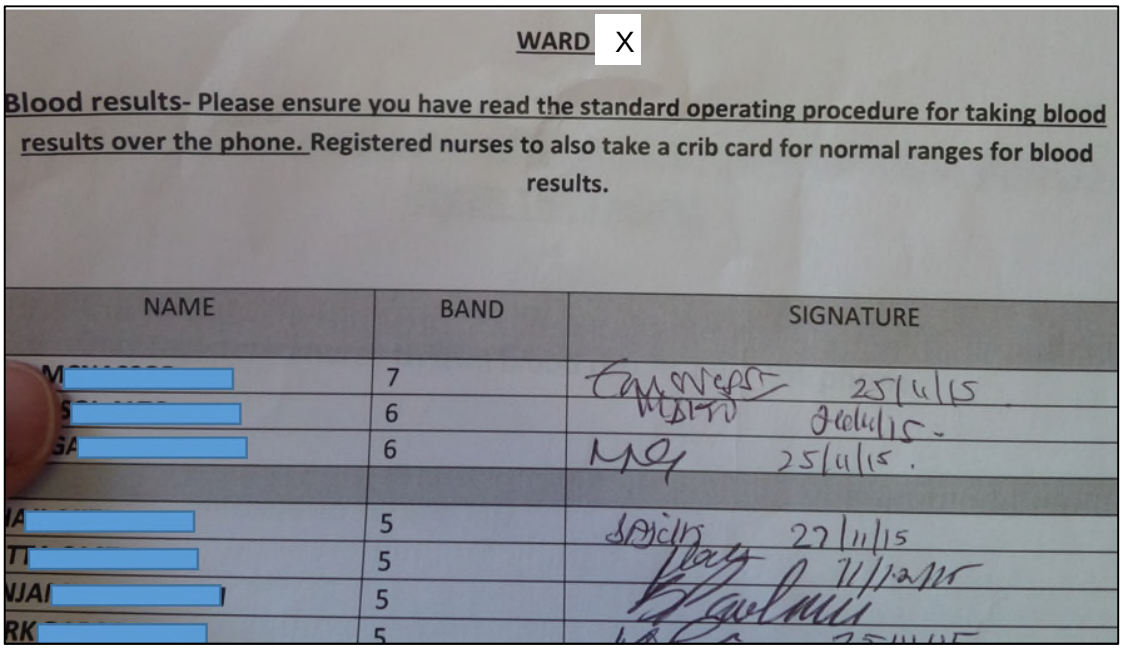
"when you're busy and you've got a hundred tasks, and you're trying to prioritise, and you're taking calls from all over, it's like a safeguard. You don't have to doubt yourself, "Oh, is this the one out of range?" There's no room for error if you've got it in black and white. You've got it written down (Figure 8.1) and you know the ranges." -CS412 Staff Nurse

Figure 8.2 – Ward X Nursing Standard Operating Procedure

STANDARD OPERATING PROCEDURE FOR TAKING BLOOD RESULTS OVER THE PHONE

- Only registered nurse to take blood results over the phone.
- Confirm patients name and PID
- Confirm patient is currently on ward x
- Repeat and confirm all results back to lab
- Confirm with lab which results are abnormal
- Inform nurse looking after the patient of the abnormal results.
- Ensure Dr is informed of the results
- Document all results in the patient's notes, date and time entry and document which Dr was informed of results.

Figure 8.3 – Learning Sheet



WARD X

Blood results- Please ensure you have read the standard operating procedure for taking blood results over the phone. Registered nurses to also take a crib card for normal ranges for blood results.

NAME	BAND	SIGNATURE
M[redacted]	7	25/11/15
S[redacted]	6	25/11/15
SA[redacted]	6	25/11/15
IA[redacted]	5	22/11/15
TI[redacted]	5	11/12/15
NJAI[redacted]	5	
RK[redacted]	5	

"It's all about making sure you confirm the results, inform the nurse looking after the patient of the abnormal results, ensure the doctor's informed of the results and document all the results in the notes etc. etc. and then I got all my staff to sign it (Figure 8.3) to say that they knew" -CS403 Senior Sister 7

Defensiveness

In contrast to the maternity case, defensive behaviour on ward x saw nurses more pro-actively speaking-up, in line with the newly introduced standard operating procedure (Figure 8.2). Consistent documentation in the patient chart, and the 'informing of doctors' seems a type of defensive behaviour. This was spurred by the severe experience of CS412 staff nurse, who did not document in the medical record who she had given the results to (doctor X), and thus was unable to defend her claims during investigation.

This defensive behaviour was evidenced through nurses documenting all blood results in the patient's record, as well as always notifying the doctor caring for the patient, and writing the details of such encounter down. For example, 'spoke to doctor X at <time> and advised blood results were #' (Field Journal Notes). This defensiveness contrasted with the maternity case where individuals wished to remain silent (defensive silence) for fear of punitive actions, while on ward x nurses' defensive voice was expressed out of a sense of compliance with SOP and self-preservation. This shifted focus to others, the urologists, to protect the self, effectively spreading the risk. Also notable was the absence of compassion by professionals in this case, thus defensive voice was not driven by a sentiment of caring, but anger and self-defence.

Although defensive in nature, this change resulted in increased voice behaviour through nurses following their SOP for taking blood results by always 'informing the doctor'.

"Inform the doctor and write in the notes the blood results and who we've spoken to. Yeah, time, date and all that lot." -CS409 Band 5 Staff Nurse

"it's a learning curve to always do documentation. To be honest, when I take blood results I always write down the time I've received it from microbiology, who I've spoken to and then I bleep … I mean I look myself to see if they're abnormal and then I bleep the doctor anyway... obviously write the doctor's name who you spoke to" -CS410 Band 5 Staff Nurse

Setting Expectations for Voice

A change several Urologists (CS404, CS405) were found to have made to their practice is being more aware and checking on test results more regularly. These Urologists commented that nurses are certainly also doing this, collectively contributing to the safety of this process. This is validated by quotes from nurses who claim to be checking up results on terminals. While doctors are responsible for checking results on ward computers, nurses have now added this responsibility to their workload as well, improving patient safety on the ward. There is some evidence for greater communication between nurses and urologists who have set expectations around checking abnormal results a shared responsibility.

"I think people are certainly more aware of checking on results more regularly… I think the nursing staff have become more aware of it, so they're definitely checking more often… the doctors have become more vigilant in making sure that all the results are actually reviewed before the patient is discharged" – CS404 Consultant Urologist, Education Lead

Table 8.6 Setting Expectations for Voice: Secondary Quotes

Secondary Quotes
"I think we're more aware to look at the blood during the ward round. Most of the blood tests are already written up in the doctor's notes. They have a little printout every day like that. I can see each patient, they get the blood results and we check that. If there's no blood result written up, we check it on the computer. We're more aware of anything missing in the process, we need to prevent any sort of tragedies like that" – CS405, Consultant Urologist
"I do look at results myself if I suspect say a urine sample has gone off or I think the patient looks a bit pale. I know that's the doctors job, but to cover myself I think I need to check. Because of that incident I think everyone's more aware now of the importance of it. It could happen again unless someone is really cautious and watching. Because we get so much turnover of new doctors and they might not be used to the

Secondary Quotes
ward… Definitely most of my colleagues on here are checking" - CS410 Staff Nurse

While the RCA investigation's recommendations pertaining to nursing practice had been implemented, there was little evidence whether the urology directorate had actioned the recommendations assigned to them.

> *"I've no idea whether that's been done (the recommendations for Urology Directorate). As nurses everything is followed up, but I'm not quite sure about the medical team." -Senior Sister 403*

Absence of Recommended Changes - Urologists.

The clinical director (CS401) of the urology directorate, who initiated the SUI investigative process, had, by May 2016 had taken no discernible action to implement recommendations from the October 2015 investigative report. Specifically, two recommendations stood out which were proving difficult to implement. First, producing a clear set of guidelines for junior doctors that provide rationale for the ordering of blood tests, and two, ensuring a robust plan is in place for reviewing and acting upon blood tests when they are ordered.

> *"I was left with instructions to develop some policies and, to be honest, I haven't done a great deal about it partly because it's not just a urology thing, it's a Trust-wide thing" – Urology Clinical Director (CS401)*

> *"There was some responsibility given to me to organise that and it's something I haven't specifically done, but it strikes me that it's a hospital-wide thing. You know, blood tests are being ordered by doctors all over the Trust … as far as I know there is no publicised mechanism for ensuring that doctors have written that they've ordered tests. So that's something where I've probably been lacking in dealing with this." – Urology Clinical Director (CS401)*

As the clinical director's (CS401) quote suggest, there is an argument that accountability for these recommendations do not lie solely within one department, but

with the entire Trust including professions beyond Urology, making it difficult to implement. As confirmed by the head scientist of the pathology department (CS402), there is no hospital wide system for escalating abnormal sample results. This exacerbates the difficulty in implementing these RCA recommendations, which require the challenging task of bridging together many departments and professions within the trust.

"In the hospital it's left to either individual directors like urology, haematology to come up with their own system, but there isn't a system in the hospital where we can phone abnormal results that we know they'll get dealt with" CS402 Head Clinical Scientist, Pathology Department

4 Expressions of Defensive Voice

Following the incident and the emergence of the conditions identified above there was increased assertiveness by nurses in the form of defensive voice. Nurses escalate concerns about blood results to urologists on the ward, shifting focus to others and protecting themselves by sharing the risk of managing a patient's abnormal blood result. These expressions of defensive voice by nurses are found in table 8.7 expression of defensive voice.

Table 8.7 Expression of Defensive Voice

Urology Case	Coding References		
Expressions of Defensive Voice	**Doctors**	**Nurses (n=4)**	**Documents (n=1)**
Defensive Voice		9	2

Increased speaking up by nurses, is connected to introduction of the SOP (Figure 8.2). This SOP introduced in October 2015 was referenced many times by nursing staff as influencing their practice as of May 2016. Further, learning from the traumatic experience of staff nurse CS412 also encouraged defensive voice.

During the June 2017 follow-up meeting, it was clear that nurse assertiveness, including 'chasing doctors', contacting the ward matron, and notification of blood results, were commonplace. Defensive behaviour was encouraged, if for example the patient looks very ill, but vital signs have come back ok, nurses are suspicious to interrogate the patient situation further, and follow-up with doctors again. This emergent change in practice sees nurses communicating more frequently with professionals of higher hierarchical-position. Although attempts at communication might still result in 'futility', nurses are protecting themselves by offloading some of the risk to doctors by notifying them straight away, and documenting who they spoke

to and when. Defensive voice seems spurred not by compassion for patients, but out of a sense of compliance, anger, fear and self-preservation.

"you must document the results and you must inform the doctors. Don't just put it in the notes. You must ring them straightaway and act on it and then obviously write the doctor's name who you spoke to." -CS410 Staff Nurse

Table 8.8 Expressions of Defensive Voice: Secondary Quotes

Secondary Quotes
"So it's (SOP) all about making sure you confirm the results, inform the nurse looking after the patient of the abnormal results, ensure the doctor's informed of the results and document all the results in the notes etc." -CS403 Senior Sister
"Inform the doctor and write in the notes the blood results and who we've spoken to." – CS409 Staff Nurse

5 Voice and Silence Summary

As shown in Table 8.9 ward x voice and silence summary, CS412 staff nurse did not appear to be discouraged from speaking-up, however the message that she delivered was not acted upon, leading to futility of voice and reinforcing that attempts at voice were not effective, a condition for silence. While the practices of nurses have changed, becoming more defensive, there is no indication of significant changes by medical staff. As such, the outcome of the incident sees nurses' speaking-up more as a defensive behaviour, in line with the newly introduced SOP, complying with their managers training on such. There is indication that urologists are aware of nurses overlapping with them to check patient results and seem to welcome this emergent behaviour which sets expectations for communication.

Table 8.9 Ward X Voice and Silence Summary

Climate	Scenario	Motive	From	Message	Direction	Target	Outcome
SILENCE	Nurse received abnormal blood results over the phone	To Alert Consultant	CS412 Band 5 Staff Nurse	*"Excuse me, is this a patient you're looking after? I've had a phone call from microbiology with these blood results. Are you going to review the patient?"* *"Staff Nurse recalled at interview that she interrupted the doctors, showed them (patients) blood results and that (doctor) acknowledged them and said OK" – Serious Untoward Incident Report into the care of Mr X*	Upward	Consultant Urologist *"Yes"*	Futility of Voice – no action was taken by consultant
	Hierarchical culture	Voicing an opinion	CS412 Band 5 Staff Nurse	*"there's still them and us. There's still this communication difference between the doctors and nurses… when it comes to decision making, I think there's still that divide – there's them and us – and whenever we're voicing an opinion it somehow is brushed away or feels insignificant" CS412*	Upward	Consultant Urologist	Futility of Voice *"brushed away or feels insignificant "*
	Hierarchical culture	-	CS401 Clinical Director	*"I think there are two aspects to this … there's the medical culture and the nursing culture… I don't think it's significantly changed the medical culture"*	-	-	-
				Serious Untoward Incident			
VOICE	Checking Results	-	CS404 Urologist	*"I think people are certainly more aware of checking on results more regularly… I think the nursing staff have become more aware of it, so they're definitely checking more often…"*	-	-	Setting Expectations for Voice
	Informing the doctor	Defensive - Follow SOP	CS403 Senior Sister 7	*"So it's (SOP) all about making sure you confirm the results, inform the nurse looking after the patient of the abnormal results, ensure the doctor's informed of the results"*	Upward	Consultant Urologist	SOP followed, Defensive Voice
	Informing the doctor	Defensive -Follow SOP	CS410 Staff Nurse	*"you must inform the doctors.. You must ring them straightaway"*	Upward	Consultant Urologist	SOP followed, Defensive Voice

6 Follow-up with Urology and Ward X

Evidence for continued defensive voice by nursing staff was found during the June 2017 follow-up meeting with ward x. The ward manager explained that *"everyone learned their lessons from when this patient died"*. She described how nurses are not afraid to escalate, whereas before the incident and SOP, they had sometimes doubted escalating concerns to a doctor, fearing they wouldn't be supported. Now nursing management is there to offer guidance and advice for situations when *"your not getting along with doctors replying to your concerns – we can escalate"*.

Interestingly, when queried about how doctors have responded to this increased voice, the ward manager replied *"it took a while for them",* suggesting that while it might have taken some time, receptivity has improved somewhat.

During the initial interview session (May 2016) with three urologists, they were unsure whether the RCA recommendations for urology had been acted upon, and said they would raise this as a safety concern at their next directorate meeting. Directorate meetings were scaled back due to financial constraints and senior management changes in the trust.

"We haven't even discussed this broadly and more deeply in the directorate meeting so that the message is taken to each consultant and the doctors." CS405 Consultant Urologist

Table 8.10 Follow-up: secondary quotes

Secondary Quotes
"To my knowledge [Clinical Director, Urology] has never discussed the recommendations of these in our directorate meetings to my knowledge… six months have gone by and none of us can remember that we have debated this in our directorate meeting…." - CS406 Consultant urologist
"To be honest, I'm not sure whether they've been implemented or not. I think the best way forward to know something about this is that we should chase it up at the next meeting, how far have we gone with this recommendation… we should have on our directorate

Secondary Quotes
meeting pencilled a date to say we will check on that day like in October or in April, how far we've got with this implementation." -CS407 Consultant Urologist

During the follow-up meeting of June 2017, and subsequent follow-up emails with CS401 clinical director, urology, it was found that these safety recommendations have now been discussed at a directorate meeting on more than one occasion, and also in the Divisional Quality and Safety meeting. While it is positive to learn these recommendations are being discussed more frequently, there is still no evidence they are being modified or considered for implementation at a future date.

Urology and Ward X Case Conclusion

The hierarchical culture which existed on ward x at the time of the incident contributed to staff nurse CS412's futile efforts to notify doctor x of an abnormal blood result, and neglecting to notify the nurse on duty because she had notified the 'most senior' person on the ward, with no SOP to follow.

The affective impact, of guilt, and anger, was so severe for the staff nurse that she found the experience *"soul destroying"* and, a year later, left the organisation. This traumatic experience was contagious, influencing her nurse colleagues, and the senior sister on ward x, who became affectively charged at the experience of her staff nurse. The senior sister directed anger towards the doctor involved, and enacted positively valenced practice changes in line with the RCA recommendations, which would end up establishing the conditions for voice on ward x.

Other nurses on the ward were influenced by the experience of the staff nurse, and enacted defensive practices, including tighter documentation and following a SOP which directed them to always notify the doctor, resulting in defensive voice. This defensiveness contrasted with the maternity case where individuals wished to remain silent for fear of punitive actions, while on ward x nurses defensive voice was expressed out of a sense of compliance with SOP and self-preservation, shifting focus to others to protect the self. Also notable was the absence of compassion by professionals in this case, thus defensive voice was not driven by a sentiment of caring, but fear, anger and self-defence.

Further, nurses were found to have set expectations for communication with urologists, through checking up on patient blood results on terminals, traditionally something urology would handle. It was found that doctors did take a while to respond

to these change, suggesting they are now aware and receptivity has improved somewhat.

Findings Conclusion

These findings provide new insight into overcoming the hierarchical challenge, a key barrier to the implementation of patient safety improvements following medical error and root cause analysis investigations. As found in these cases, overcoming this barrier is possible through establishing the conditions for voice. Those individuals emotionally affected by medical error, the second victims, play a key role in spurring on, either directly, or indirectly through emotional contagion, positively valenced practice changes which create the conditions for voice.

Each case, while different in context, was similar in that conditions for silence pervaded their environment. This contributed to the medical errors, either through staff not speaking up, in the case of silence, or futility of voice, where staff spoke up but were not heard. Defensive silence was found to exist in maternity, when a strong blame culture, coupled with punitive investigations, saw individuals keeping silent to protect themselves from the inquisition. Futility of voice, as seen in surgery and ward x, was possible when a hierarchical culture existed in the department, dividing professions, when those of low-hierarchical position attempted to communicate with high-hierarchical positioned individuals, they were not heard.

A climate of silence found in each case played a role in the occurrence of tragic medical errors. In all cases, patients were either harmed or expired. The profound affective impact was evident for professionals directly involved, the second victims, across all cases. Experiencing guilt and shame for one's direct involvement was common, often leading to anger, either directing blame at oneself, or other healthcare professionals for their involvement in the error. Indirectly, the second victim's colleagues also experienced affect, often in the form of anger, through emotional contagion. Compassion for patients, leading to a reinvigorated sentiment of care which moderates hierarchy, through a common moral grounding, was found in both surgery and maternity.

Affectively charged individuals who were directly involved, like second victim, Mr. K, lead surgeon, played key roles in establishing the conditions for voice through driving many emergent and recommended practice changes. In both maternity and surgery, physician leaders set expectations for voice among hierarchically varied professions. Nursing managers, across all cases engendered voice among their front-line staff through offering coaching and support. These bottom-up changes were further supported in ward x and surgery, through closer adherence to standard

operating procedures which specifically directed nurses to contact doctors under specific situations (i.e. abnormal blood result, missing swab/instrument). On Ward x, defensive voice (Van Dyne, Ang, Botero, 2003) was expressed out of a sense of compliance with SOP and self-preservation, shifting focus to others to protect the self. Also notable was the absence of compassion by professionals in the urology and ward x case, thus defensive voice was not driven by a sentiment of caring, but fear, anger and self-defence.

Contrasting defensive voice in ward x, with prosocial voice found in surgery and maternity, described as pro-social constructive employee behaviour intended to help the organisation or work unit perform more effectively, or to make a positive difference for the collective (Morrison, 2011). These later cases show an additional condition that enabled voice, a reinvigorated sentiment of care, evidencing a motive driven by compassion for patients and improvement of patient safety.

In chapter 9 discussion, a cross-case analysis is presented covering the varying conditions for silence and voice discussed in these empirical chapters. Expanded concepts of climate, including a climate of silence, and psychological safety to describe a voice climate, are setup to explain the *"painful journey"* that occurred in each case as these healthcare professionals transitioned from an environment where silence pervaded to one which voice was encouraged.

Section III: Discussion & Conclusion

Chapter 9 Discussion

Introduction

Findings from the empirical chapters show that a hierarchical culture, blame culture, and futility of voice, were all conditions leading to silence. These findings highlight the hierarchical challenge (Senot et al., 2016), cultural barriers between healthcare professionals inhibiting communication, as a key factor preventing voice, with dire consequences for patient safety.

However, this hierarchical challenge was moderated in each case, eventually leading to an increased use of voice. This discussion is structured to explain the moderating conditions from each case and bring them together in a safety incident model of voice for second victims. Within each of the following sections evidence from all cases are compared, and relevant literature included, to provide a comprehensive discussion.

First the idea of group climate, where silence pervaded, but later shifted, encouraging voice is reintroduced, setting the stage for this chapter. Attention is drawn to the conditions for each type of climate, first where silence pervaded, and later where voice was found to be encouraged.

The conditions which led to the development of a climate of silence are discussed including hierarchical and blame cultures, and futility of voice. Further the acquiescent and defensive silence which was found to result from these climates, leading to serious safety incidents, are described. These incidents had a negative affective impact on second victims, and colleagues through emotional contagion, who then enacted positively valenced changes.

The role of second victims in moderating the hierarchical challenge is discussed next. This includes a summary of each second victim found in the study, their recovery trajectory, and emotional contagion of colleagues. These second victims and their affectively charged colleagues enacted several positively valenced practice changes. These changes were antecedents to a climate which encouraged two types of voice, defensive and prosocial.

Presented next are the positively valenced practice changes which established the conditions for voice, these include: 1) setting expectations for voice, 2) management engendering voice, 3) closer adherence to policies and standard operating procedures, and 4) a reinvigorated sentiment of care. Further, the enactment of prosocial and defensive forms of voice which arose from a voice climate are discussed.

With hierarchically moderating factors presented from across the three cases, the safety incident model of voice for second victims is presented. Finally, the

conclusion to this discussion summarises all of these elements and transitions to the final chapter of this thesis.

Conditions for Climate

Group climate was introduced in chapter 3 as consisting of group members' shared perceptions about, and the meanings they attach to policies and procedures, and behaviours they see supported, rewarded, or what is felt to be expected.

Building on general definitions of climate, this study has branched out to describe climates which hinder or encourage voice. The former is described by a climate of silence (Morrison & Milliken, 2000), while the latter is a voice climate, or more specifically, one which is psychologically safe (Edmondson, 1999) enough to encourage those of lower-hierarchical position to speak-up.

In reviewing the three cases, both climates of silence and voice were found. The conditions which led to these climates were described and are summarised in Table 9.1 Conditions for Climate. On one end, the conditions for silence are listed, including a hierarchical and blame culture, futility of voice, and defensiveness, leading to both acquiescent and defensive silence. Following serious safety incidents which affectively impacted professionals, numerous conditions that supported a voice climate arose. This led to the enactment of both defensive and prosocial forms of voice. The purpose of this section is to demonstrate how climate in each case changed, highlighting the different conditions which moderated the hierarchical challenge, both organisational and psychological, to develop a climate that encourages the enactment of voice.

The starting point for this comparative case discussion is the climate of silence, and types of silence, which pervaded in each department and directly contributed to the serious safety incidents. Later, the conditions for voice which arose following each incident, supporting a shift to a climate that encourages the enactment of voice are compared.

While climate focuses on the local level, this study also draws in the concept of culture, specifically hierarchical and blame cultures, to describe broader shared assumptions, values, and beliefs that guide life inside the organisation. The latter are often taught to organisational newcomers as proper ways to think and feel, whereas climate is shared perceptions based on what employees experience locally and behaviours they observe (Schneider et al., 2013). Patterson et al. (2005) raise the distinction between climate and culture, suggesting while the two are sometimes used interchangeably, climate represents the things which happen to employees, that is, the patterns of behaviour. While culture is thought to emerge when employees are

asked why these behavioural patterns exist, referring to the assumptions, values, and beliefs mentioned earlier (Patterson et al., 2005).

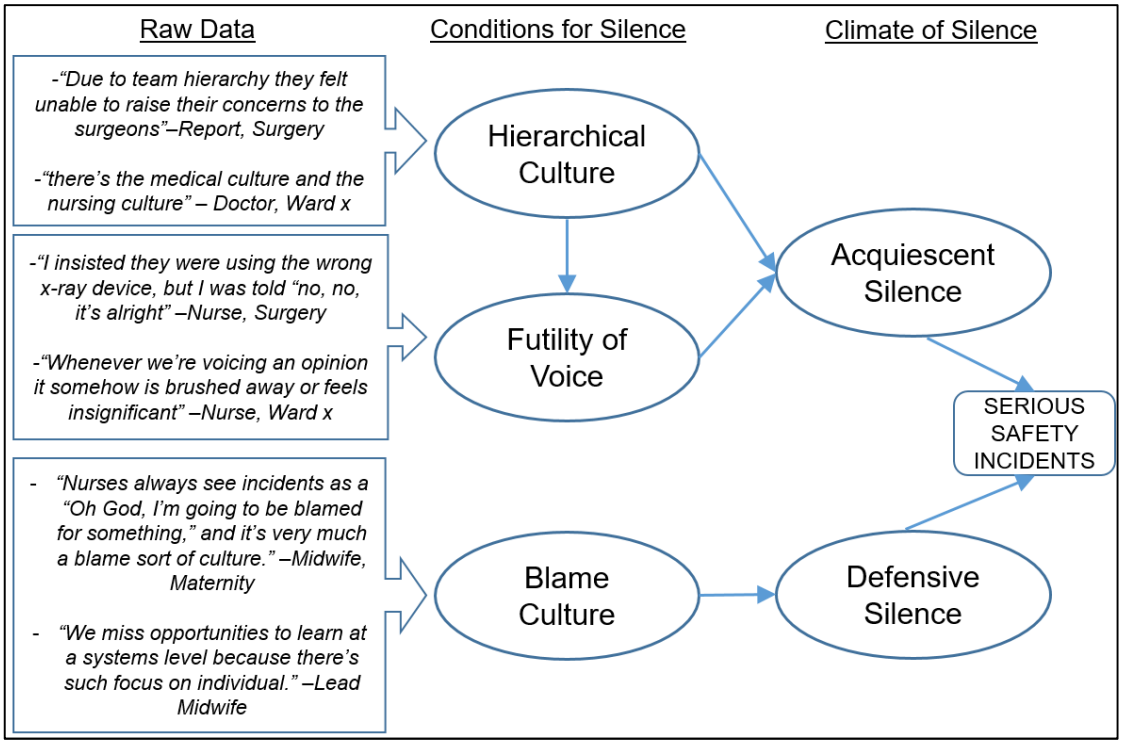
Table 9.1 Conditions for Climate

Case	Conditions for Silence	Climate of Silence	Affective Event Second Victims	Conditions for Voice	Voice Climate
	→	→	→	→	
Surgery	- Hierarchical Culture - Futility of Voice	Acquiescent Silence	- Anger - Shame - Compassion	- Setting expectations for voice - Closer adherence to policy - Management engendering voice - Reinvigorated sentiment of care	Prosocial Voice
Maternity	- Defensiveness - Blame Culture / Punitive Investigations	Defensive Silence	- Anger - Shame/Guilt - Compassion - Emotional Contagion	- Setting expectations for voice - Management engendering voice - Reinvigorated sentiment of care	Prosocial Voice
Urology and Ward X	- Hierarchical Culture - Futility of Voice	Futility of Voice	- Guilt - Anger - Emotional Contagion	- Closer adherence to policy - Defensiveness - Setting expectations for voice	Defensive Voice

Climate of Silence

The empirical portion of this study (Chapter 5) began by piecing together the history of each incident that occurred, building understanding of the conditions and circumstances which contributed to the errors. The main conditions which led to a climate of silence, as shown in Figure 9.1 Climate of Silence, were hierarchical culture, futility of voice and blame culture. As such, the environment under which these conditions were able to persist will be discussed, and similarities and differences drawn out.

Figure 9.1 Climate of Silence



Hierarchical Culture

The presence of a hierarchical culture between professions was found to restrain voice in the surgery and ward x cases. In surgery futility of voice and acquiescent silence, the passive withholding of relevant ideas based on resignation (Van Dyne et al., 2003) was found, while in ward x voice was simply futile. These findings are suggestive of a link between environments which harbour a hierarchical culture, and futility of voice by lower hierarchically positioned professionals.

It was written in the surgical never event investigative report that *"due to team hierarchy they (nurses) felt unable to raise their concerns to the surgeons"*. This manifested where nurses questioned their ability to raise concerns, that even if they raised a concern they lacked the assurance that it would be accepted by surgeons.

Where a senior nurse did raise a concern, it was ignored, leading other nurses to believe further voice would be futile and stay silent. Given the power associated with specialist doctors, viewed as higher status than generalist doctors and inter-professionally than nurses (Abbott, 1988; Freidson, 1970, 1988), it's not surprising that the lead surgeon's (Mr. K) decision to not reopen the patient to check for the swab, even after a warning by a senior nurse, remained final. Several nurses reported knowing the wrong imaging modality was being used yet remained silent. Unfortunately for the patient, the presence of the hierarchical culture led to silence and the swab was retained in her body.

The silence of nurses during surgery can be explained by the climate of the surgical team in the operating theatre, a multi-professional action team (Edmondson, 2003; Weiss, et al.,2016), where several team members witnessed futility of voice. The surgical action team, a multiple hierarchically organised group (Edmondson, 2003) should respond in a coordinated way to unexpected events requiring an open and free transfer of information to support real-time reciprocal coordination of action. However, group climate was unsafe resulting from shared beliefs at the time of the never event that speaking up was not tolerated. Thus team members had trouble creating shared meaning about the scenario they encountered and lacked a 'big picture' about how different expertises in the group fit together (Clark & Wheelwright, 1995).

Similar to surgery, professional differences varied by hierarchical position, between urologists and nurses in the ward x case. While hierarchical differences on ward x did not prevent the nurse from speaking up, they did prevent her from being heard by urologists. Unlike surgery, on the busy inpatient ward x only the staff nurse whose voice was rendered futile knew, it was not observed by others, and she was not aware of the futility of her efforts until much later when the tragic event had already occurred. Further, because the ward x staff nurse was newly qualified she believed she had completed the appropriate escalation, showing the blood results to the most high-status person on the ward, when in fact had she followed standard operating procedure she would have also informed the nurse caring for the patient. Evidence clearly showed that a 'them and us' mentality existed on ward x with clear separation between a medical and nursing culture.

While it was expected that a hierarchical culture would also be found among specialist doctors in obstetrics, and midwifes, this was not prevalent. A blame culture was instead found which pervaded the entire maternity department resulting from risk management's punitive investigations. This will be discussed in greater detail in the

next section.

Returning to the literature on cultural differences between doctors and nurses, Senot et al. (2016) describe the cultural barriers between nurses and physicians as a 'hierarchical challenge' that resulted in difficulty for nurses to speak-up during care delivery and promote collaboration between professions. As written in chapter 3, doctors tend to emphasise technical efficacy in translating abstract medical knowledge into effective interventions (Apesoa-Varano & Varano, 2014), while nurses traditionally employ a discourse of caring which emphasises soft skills (Nelson & Gordon, 2006).

Although nurses, seen as information brokers (Allen, 2004), play an important role co-ordinating patient information among multi-professional team members, doctors are known to use this information to make diagnosis, but do so without acknowledgment of the nursing skills involved, leaving nurses out of further diagnostic discussions (Wicks, 1998). This is a theme which continues throughout the literature, suggesting power imbalances make it difficult for nurses to directly influence medical decision making.

The findings of surgery and ward x cases which describe silence and futility of voice, are what would be expected, given several past studies, including Coomb's (2003) study of UK intensive care units, finding that while doctors seemed to appreciate nurses' detailed knowledge of a patient's condition, they did not value this in making decisions. Further, Savage (1995) described how nurses felt as if their knowledge counted for nothing when shared with doctors. Anspach (1993) offers an alternative suggestion that it is because of the nurses' position within the social organisation of healthcare work, and the information this makes readily available to them, that disagreements can develop with different professional groups, whose position might give them access to different information flows.

Futility of Voice

The poor receptivity by higher-status professionals to voice by those of lower-status, led to futility of voice, playing out similarly in both the surgery and ward x cases.

In surgery, a senior nurse with over 25 years of experience expressed concern over the imaging modality (fluoroscopy) brought to theatre by a radiologist. Upon observing this, she recalled plain film x-ray was the appropriate imaging modality for a retained swab and proceeded to explain this to the surgeon. His response was to dismiss the comment, *"No, no, it's alright*", to assure her it would be fine, taking no action.

On ward x a newly qualified nurse upon receiving abnormal blood results over the phone from the lab, went to the most senior doctor on the ward and notified him of the blood result. The senior doctor said ‘ok’ and carried on, dismissing the notification.

Conversely, futility of voice was not found in the maternity case. No one involved in that case spoke up in time to prevent patient harm. This is explained through the presence of a blame culture resulting from punitive investigations, leading to development of defensive silence among midwives, which saw them minimise risk through erring on the side of caution when conveying information about safety to other professionals, for fear of punitive repercussion. As such, there was no chance for poor receptivity by higher-status professionals about voice because lower-status professionals by default were more likely to keep quiet.

In search of the literature on futility of voice, organisational examples were scarce (Brinsfield et al., 2009), as such, these examples of futility are explained through *“silent treatment”,* a form of social ostracism, where individuals ignore or exclude people (Williams, 2007). Williams, Shore, and Grahe (1998) found that ‘failing to respond to any questions or comments’ was commonly reported by study participants describing *“the silent treatment”*. Similar to the findings of this thesis, where nurses reported negative affective experiences, the detrimental impact of the *“silent treatment”* is found to include resentment, withdrawal, and poor psychological functioning (Sommer, Williams, Ciarocco, & Baumeister, 2001). It’s a purposeful silence, enacted with the intention to ignore or exclude another individual or group of individuals. Thus the futility of voice found here can be explained by existing cultural barriers between professions, and hierarchical differences, that played a role in why surgeons and urologists ignored and excluded these nurses.

One study found employees who witnessed instances of voice futility, i.e. supervisors taking on comments but with no discernible action being taken, led employees to believe that further voice attempts would be perceived as low efficacy, and futile, further galvanising a climate of silence (Detert and Treviño, 2010). These findings are not unexpected given individuals of lower hierarchical position, and with less formal influence, are more likely to have feelings that their voice would be futile (Miceli, Near, & Dworkin, 2008; Morrison & Rothman, 2009). As such it’s unsurprising that the formation of shared beliefs about futility of voice developed in surgery, preventing further voice attempts. Surgical nurses witnessed futile efforts by a colleague to voice concerns and decided to stay silent. In ward x, as discussed later,

these shared beliefs about futility emerged as anger towards the higher-status occupational group, urologists, resulting in a type of defensive voice.

Blame Culture and Defensiveness

A blame culture is an environment where employees, due to long held assumptions that they will be considered at fault, held individually responsible, and punished, are hesitant to be transparent and honest about their experiences of error (Waring, 2005). Further, the use of Root Cause Analysis (RCA) investigative technique has been found to engender a culture of blame rather than promote organisational learning (Currie et al., 2014; Nicolini et al., 2011).

Comparing the findings from the maternity case to descriptions of blame culture from the literature finds similarities. Carroll, et al., (2002) in their study of root cause analysis in a chemical plant found a culture of blame created fear, leading individuals to worry about being held personally and professionally responsible for the safety incident, hindering the organisations ability to investigate and learn from incidents. In maternity, use of RCA by an embedded risk management team was a punitive investigation into the practice of individuals. Midwives and obstetricians felt that not only would the incident be investigated, but also the practice of individuals called into question and punitive actions taken, describing the process as both a safety and management investigation. For example, the co-ordinator in maternity was suspended from her role for more than a year, given a 450-hour training plan, and assigned disciplinary courses.

The risk management approach in maternity called into question the usual focus of RCA on 'latent' or system factors (Reason, 2000) and instead an emphasis was placed on individuals and human error. Further, RCA is vulnerable to 'political hijacking' (Peerally et al., 2016) which was evident to a degree in maternity when the lead midwife for quality & governance described frictions between her team's efforts completing investigations and the head of midwifery's emphasis on linking RCA to disciplinary processes.

The disciplinary and punitive measures associated with RCA in maternity, where an 'us vs them' mentality existed, played a direct role in the formation of shared beliefs among front-line staff that keeping quiet about patient safety errors was necessary to protect themselves. Front-line staff did not want to be blamed or punished and as a result initiated defensive behaviours which saw them keeping silent: hiding their employee pin numbers, and withholding information based on fear. Morrison & Milliken's (2000) description of a climate of silence seem analogous to the

experience of professionals in the maternity department where speaking up about problems is dangerous or futile.

Types of Silence

Now that the main conditions which led to silence: hierarchical and blame cultures, and futility of voice, have been described, the discussion will next explain the variance in types of silence present in the cases. Similarities and differences will be drawn out and links to literature established. Evidence for silence, which resulted when individuals perceived the risk to be too great to speak-up, were found across surgery and maternity cases. As mentioned above, futility of voice, a condition that can lead to silence, was found in ward x rather than a complete absence of voice.

While evidence for acquiescent and defensive forms of silence were found among the cases, there was an absence of prosocial silence, described in chapter 3, as the withholding of information out of cooperation or for altruistic reasons (Van Dyne et al., 2003).

Acquiescent Silence

While at least one senior surgical nurse, with over 25 years of experience, felt powerful enough to escalate concerns to the surgeon resulting in the futility discussed above, It's likely an individual factor, her long tenure, played a role in her enactment of voice. It's known that tenure is positively correlated to voice behaviour (Milliken et al., 2003).

The remainder of nurses on the surgical team were silenced completely. Their behaviour, described as acquiescent silence, is the withholding of relevant ideas, information, or opinions due to resignation (Van Dyne et al., 2003). The surgical nurses were resigned to decisions made by the lead surgeon and radiologist regarding fluoroscopy as the imaging modality brought to theatre, when in fact several of them reported having learned that plain film x-ray was the correct method for identifying a retained swab. In their belief, speaking up would be pointless and unlikely to make a difference, having just witnessed a senior nurse's futile efforts at voice.

This resignation to withhold further ideas and keep opinions to themselves results from a shared perceived low self-efficacy to make a difference, thus they disengaged and did not contribute further suggestions proactively. Resignation by nurses and poor-receptivity by surgeons was only worsened by the fatigue which both experienced from the long, ten-hour, and complex surgery.

Acquiescent silence also resulted from a hierarchical culture on the team, where nurses questioned whether a concern they might raise would even be acted

upon, they lacked assurance, viewing the situation as too risky, fearing reprisal and kept quiet. The professional hierarchy of medical professionals was found to directly influence this decision, with the specialist doctor being viewed as most powerful, while junior doctors, and nurses found themselves subordinate to the surgeons decision (Abbott, 1988; Freidson, 1988).

Defensive Silence

Analysis of the maternity department unveiled silence among the midwives. The nature of the silence in maternity differed from surgery. Among midwives there were signs of individuals maintaining silence to defend themselves, for example through deliberately neglecting to report patient safety incidents, hiding employee pin numbers, and not speaking up for fear of punitive action. These defensive behaviours, as previously mentioned, were found to result from a departmental blame culture, in which punitive risk management investigations were carried out.

Defensive silence, is a relatively new term in the voice literature, having similarities to an earlier description: ‘quiescent silence’, referring to situations where, due to fear of negative consequences, employees withhold information from those in positions of power (Pinder & Harlos, 2001). These behaviours were later defined as defensive silence (Van Dyne et al., 2003), which is more proactive, in that it involves awareness, and conscious decisions to withhold opinions, information, and ideas, as was found in maternity. These terms are consistent with definitions of organisational silence, and psychological safety, which emphasises fear as a key motivator of silence (Edmondson, 1999; Morrison & Milliken, 2000).

In each of the three cases, silence and/or futility of voice was found, directly contributing to patient safety incidents. Highlighting silence and futility in each case is important to provide a starting point to the journey that these professionals, across all cases, went through on their way to achieving a climate where voice is encouraged.

The next area for comparison and discussion, one central to moderating the hierarchical challenge, is how to address the second victim phenomenon. Specifically, developing understanding of the role of second victims in making, and influencing, positively valenced practice changes, leading to the establishment of conditions which encourage voice. The occurrence of the incident and investigations had a cascading effect on this process, beginning with negative affective experiences by second victims. These experiences affectively charged individuals, either the second victim them-self, or through emotional contagion to colleagues and managerial level staff. This researcher believes that any discussion of patient safety needs incorporation of this unavoidable and seeming over-looked element, the

second victims, and how these important individuals can be supported and harnessed for positive improvement and safety.

Second Victims

Key findings inherent to this study, which have not been addressed before, are the role these incidents, and their resulting negative affective experiences felt by second victims, and contagiously by colleagues, play in shaping the conditions for voice. These relationships are discussed next.

Given our partial understanding of the phenomenon so far, the severity of any medical error is thought to be positively correlated with the degree of affective impact on healthcare professionals involved (Sirriyeh et al., 2010). This leads to experiencing negative emotional states such as guilt and shame, reduced morale, confidence, and leading to further negative occurrences such as loss of professional reputation and substance abuse (Wu, 2000).

It's understood these victims recover along a trajectory (Scott, et al. 2009), and while much is known about detrimental effects, less is known about the potential positive implications of medical error for practice (Sirriyeh et al., 2010). Evidence was found for the enactment of positively valenced changes by a 'thriving' second victim, the study also found that second victims who 'survive' and 'drop out' play a role in positively valenced change through emotional contagion of colleagues. A list of the second victims and emotional contagion in this study is found in Table 9.2 Recovery Trajectory of Second Victims and Emotional Contagion.

Thriving

While understanding of 'thriving' following medical error is limited, the case of Bewtra (2002), is an example of a pathologist who experienced shame after a serious error, and arguably went on to thrive. Bewtra made amends for her mistake through successfully researching atypical medical presentations and educating her peers. Further, Iedema et al. (2009) found that for newly qualified anaesthetists, their emotional and practical responses to safety incidents were far from mutually arbitrary. Incidents were found to cause anguish, leading these anaesthetists to change their courses of action, and in some cases their careers.

Drawing on these examples from the literature, equating Mr. K, the lead surgeon, as having 'thrived' seems reasonable. Mr. K's experience, demonstrates the powerful influence, the so called *"painful journey"*, of a never event, had on his enactment of practices, some negative to begin, then followed by positive. Mr. K was particularly susceptible to the event, having not, in his 21-year career, been involved

in a never event, as such the incident was a milestone moment, shaping his practice thereafter. Of relevance was his emergent change to practice, setting expectations for voice among multidisciplinary team members. While this first began in a negative form, with taking over nurse swab counting duties, it later evolved into ensuring that expectations for communication were established between all team members. This change in practice was a key condition for improving climate, encouraging the enactment of voice.

While several factors are evidenced as encouraging voice in surgery, Mr. K's top-down setting of expectations for voice was a prime factor, spurring bottom-up change from nursing management in response to his positive behaviour. Further evidence of Mr. K's thriving trajectory is involvement in preventing at least one additional never event at the Trust when he heard a surgical team was in trouble with a missing swab, he scrubbed in, and informed of the correct way to manage the situation, finding the missing item and avoiding harming the patient. Further, desire to share these experiences with all surgical colleagues at the trust, speaking at conferences, and a desire to co-publish his experiences in a peer-reviewed journal with this researcher, show how he has gained insight and is continuously striving to improve patient safety.

Such was the consistency among surgical team members in their affective states, experiencing anger, shame, and compassion, across surgeons and nurses, it's suggestive of an influential relationship between the affective state of the team leader, the person who admitted making a key decision that led to the never event, and the collective affective state of the team. This is supported by studies which show group leaders infect their group members with their affective states, a form of affective convergence, that drives group outcomes (Barsade & Knight, 2015). In contrast to maternity and ward x staff, the surgical team members were all directly involved in the error, thus they were all affectively impacted by the same event, and no emotional contagion of departmental colleagues was found. The emotional contagion of close colleagues and managers by staff nurse 412, in ward x, and obstetrician doctor S and midwife Z, in maternity, are described more fully in the next section

Table 9.2 Recovery Trajectory of Second Victims and Emotional Contagion

Case	Second Victim	Affective Experience	Recovery Trajectory (Scott, et al., 2009)	Emotional Contagion
Surgery	'Mr. K' CS213 Surgical Team Leader	Anger, Shame, and Compassion *"It was very, very difficult."*	'Thriving'	None found. All team members directly involved in error
	CS211 Locum Consultant, Surgeon	Anger, Shame, and Compassion *"you've let yourself down, and the surgical team, and the patient most importantly"*	'Surviving'	
Maternity	'Doctor S' CS302 Consultant Obstetrician	Guilt and Shame, *"ingrained in my soul"*	'Surviving'	CS303 Clinical Director Obstetrics (Anger, Crying)
	Midwife Z	*"It's still ongoing with [midwife z]"*	'Dropping Out'	CS304, CS306, and CS307 midwifery managers (Anger, blaming themselves for putting Midwife Z in precarious position)
Ward X	CS412 Staff Nurse	Guilt and Anger, *"Soul destroying"*	'Dropping Out'	CS403 Senior Sister (Anger directed towards urologist involved)

Surviving, Dropping Out, and Emotional Contagion

Similar to, Mr. K, professionals from the other cases were also classified as second victims. Where they differ is with regards to their recovery trajectories. Both maternity and ward x, saw examples of professionals 'dropping out', leaving the organisation, while doctor S in maternity 'survived', performing at expected levels, but remaining emotionally distressed about her involvement in the incident.

Evidence of emotional contagion, an implicit *"automatic affective transfer process"* (Kelly & Barsade, 2001, p.101), which explains how emotions and moods of individuals spread to those nearby, was found in maternity and ward x cases. Negative affective experiences of second victims were transferred to their colleagues and managers, who also became negatively affected, expressing anger, blaming either themselves or other professionals responsible for the events.

This contagion is interesting in that even though these second victims did not 'thrive', they influenced others who became affectively charged, and went on to enact positively valenced changes, in the form of emergent or recommended practice changes, that were conditions for voice in maternity and ward x.

On the maternity unit, midwife managers who had close contact with midwife z expressed anger, blaming themselves for having put her in a precarious position contributing to the serious safety incident. These same individuals then went on to enact positively valenced changes in the form of engendering voice including coaching, 'respectful challenge' training, and a reinvigorated sentiment of care. Further, the clinical director of obstetrics had close contact with doctor S, the obstetrician, following the incident, expressing anger and crying over her subordinate being stigmatised and traumatised. She went on to set expectations for voice in the maternity department to prevent similar events from arising again.

Emotional contagion also played a role in the formation of defensive voice on ward x. Staff nurse 412's colleagues observed how *"destroyed"* she was by the incident and during the investigation, where she was unable to defend herself, having not taken defensive steps, documenting names and times, which would have protected her. Her nursing colleagues were contagiously influenced by her negative affective experience. They developed a self-protective attitude, including defensive behaviours such as always informing doctors to shift focus away from nurses, and strictly documenting who they spoke to, and when, for fear of a similar tragic incident happening to them.

This study's findings are suggestive of a new-found relationship between negative affective events like medical errors influencing positively valenced practice

changes. These changes were found to improve climate, encouraging the enactment of voice. The relationship between affect and voice is explained through the actions of affectively charged individuals, or emotionally infected colleagues, whose positive practice changes were a condition leading to a voice climate.

These positively valenced changes, driven by affectively charged individuals or directly by second victims, which improved climate, making it safer for voice, are compared next. These include both top-down changes by higher status-professionals including setting expectations for voice, and bottom-up changes by lower-status professionals including defensive behaviours, engendering of voice by managers, and closer adherence to policy and standard operating procedures. Further, a key change which improved climate, driven by both lower and higher-status professionals, a reinvigorated sentiment of care, is also explained. The concept of psychological safety is drawn upon in conceptualising the formation of a voice climate.

Voice Climate

Psychological safety at a team level is when shared beliefs exist among team members that their team is safe for risk taking. This stems from expectations that members will not reject or punish someone for speaking up, and mutual trust and respect (Edmondson, 1999). These beliefs are thought to converge in a team because members are implicated by the same set of shared influences, and because these perceptions develop out of salient shared experiences. Further, team leaders, particularly those who are more receptive, are thought to play a role in creating enhanced feelings of psychological safety (Detert & Burris, 2007; Edmondson, 2003). As explained in chapter 3, psychological safety is drawn upon in this study as synonymous with the idea of a group voice climate.

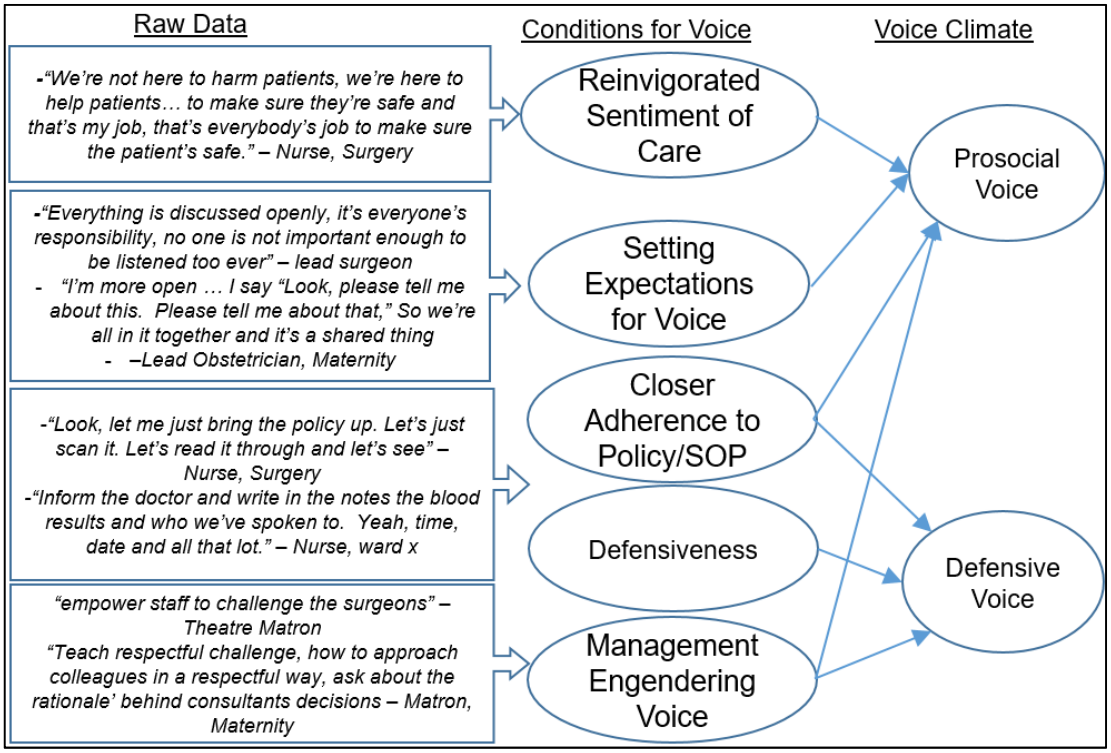
Professionals in teams where a voice climate is found are more likely to speak-up in the event of a medical error, allowing for corrective action to be taken (Edmondson, 1996). Further, this safe climate, where professionals embrace errors, has a positive influence on team performance (Edmondson, 1996).

As presented in this study's findings, individuals affectively influenced, whether second victims, or colleagues via a process of emotional contagion, drove several emergent and recommended positively valenced practice changes on each unit. These positive practice changes included: setting expectations for voice, management engendering voice, closer adherence to policies and SOP, and a reinvigorated sentiment of care.

These practices, as shown in Figure 9.2 Voice Climate, were found to strengthen climate, making it safer for voice, enabling the enactment of defensive and

prosocial voice. These conditions are discussed next and comparisons made across all cases.

Figure 9.2 Voice Climate



Setting Expectations for Voice

Affectively charged professionals in high-status positions were responsible for the top-down establishment of expectations for voice in their departments, contributing to voice climate. Mr. K, lead surgeon and 'thriving' second victim, and the obstetrical clinical director, who was emotionally infected, set about ensuring that professionals on their teams, whether of lower-hierarchical position, or equal, understood what was expected in terms of inter-professional communication.

These practice changes included medical leaders establishing expectations, from the top-down, for voice, in both surgery and maternity. This helped establish a safer environment for lower-hierarchically positioned professionals, where it was understood what was expected and would be supported when it came to inter-professional communication.

The impetus for Mr. K was in broadening his perspective as a team leader, to take a step back during complex multi-site surgeries and encourage more inclusive communication between the multi-professional surgical site teams. His change in approach can be summarised through his quote *"no one is not important enough to be listened to ever"*. Evidence for enactment of voice that resulted from this change in climate will be discussed in the upcoming section on prosocial voice which found

many examples of surgical colleagues now feeling supported in raising concerns.

The obstetrical clinical director, feeling upset over the traumatic and stigmatising incident her colleague and subordinate, doctor S, had to endure, was contagiously influenced, becoming affectively charged as a result. As the senior specialist doctor on the ward, she, from the top-down established informal standards of what's expected for inter-departmental communication with colleagues of equal (obstetricians) and lower-hierarchical (midwives) status.

Reflecting on the role of higher-status professionals, these findings are comparable to Senot, et al. (2016) who described 'physician-led cross-level collaboration' which helped mitigate the hierarchical challenge faced by nurses. This collaboration was described as involving frequent interactions between high level physicians and lower level nurses, for example physicians allowing nurses to identify or even pilot initiatives related to improving patient care, or physicians participating in the hiring of high level nurses in their department.

Where there was lack of second victim from medical community, as was the case on ward x, setting expectations for voice seemed to come from the lower-hierarchically positioned professionals: nurses. This change was aligned with the emergence of defensive behaviours which saw nurses make several changes including checking ward computer terminals for patient blood results rather than relying on urologists, and as such set expectations for communication around checking patient's blood results. While this emergent change by nurses led to the enactment of defensive voice, discussed in the next section, it's not certain whether receptivity by high-status professionals, urologists in this case, has improved, with ward x manager saying at the follow-up meeting only: *"it took a while for them (urologists)"* to respond to increased voice by nurses.

As discussed in chapter 3, lower-status professionals experience a sense of futility when it comes to voicing their concerns if the target of their voice, higher-status professionals, are unsupportive or unapproachable. Thus within a hierarchy of professions, both those at the top and those at the bottom, are part of an interplay which dictates employee voice behaviour. As such this positively valenced change, setting expectations for voice, can be viewed as part of the interplay between doctors and nurses, explained through negotiated order, where professionals engage in negotiations over how to treat patients, because formal policies and procedures are too general (Strauss et al., 1963).

In both surgery and maternity, the response to this top-down behaviour was

bottom-up emergence of changes by the managers of lower-status professionals who wished to engender voice among front-line staff.

Management Engendering Voice

Key emergent changes from the bottom-up, across all cases, were nursing managements' engendering of voice among their frontline staff, in the form of supportive coaching and respectful challenges. This was in response to medical leads' own setting of expectations, or independently, without medical receptivity, out of self-protection, in the case of ward x nurses.

In response to Mr. K's call for more inclusive communication among surgery team members, nurse managers supported their staff in being more assertive. These managers empower staff to challenge and escalate concerns, and advise they are available if staff haven't got the confidence or experience to challenge a surgeon. Staff can contact managers to come and address the situation.

Similarly, in the maternity case, midwife management was strongly involved in empowering front-line midwives in response to top-down setting of expectations by the obstetrical lead. This empowerment came in the form of 'respectful challenge' training, intended to enable junior midwives who might not have the confidence, to raise an issue when they have a concern. They learn how to ask higher-status professionals, like obstetricians, about the rationale behind their decisions. Further, midwife co-ordinators and matrons make themselves available and approachable for junior staff, to offer advice on next steps, or assist in contacting more senior staff like obstetricians. Coaching of junior staff was also reported, demonstrating that senior midwives are proactively engaged with their staff, testing how they might respond in certain situations.

These findings align with (Ashford et al., 2009) who found that supervisors play a role in creating opportunities for voice through informal and formal mechanisms which influence employees decision whether or not to speak up. Supervisors influence stems from their position which places them as frequent targets of voice and having power over controlling the outcome.

As such, it's clear how this engendering of voice strengthens group climate about safety and efficacy of voice. Managerial staff create and reinforce shared beliefs about what is supported, rewarded, and expected for communication between professionals in their department. Further reinforcing these expectations, leading to a voice climate, were the introduction of policies and standard operating procedures.

Closer Adherence to Policies and Standard Operating Procedures

Influencing group climate from the bottom-up in surgery and ward x was the implementation and closer adherence to policy and standard operating procedures. By setting expectations for the use of these policies and procedures, nurse managers bolstered front-line nurses, demonstrated what was expected, supported, and created shared beliefs that their departments were safe for voice.

Unlike the emergent positively valenced changes mentioned thus far, the review and closer adherence to policy and standard operating procedure (SOP) (Figure 6.1) in the surgery department, and implementation of SOP (figure 8.2) in ward x, were formal recommendations stemming from the root cause analysis investigation. These cases were similar in that lower-status professionals in both departments were found to more closely adhere to SOP, referring to these documents when describing assertive voice behaviour, mentioning how they had followed SOP: referencing the policy, pulling it off the wall, or accessing it via computer terminal and showing it to their peers. These SOP were utilised as part of nursing management's efforts to engender voice among their front-line staff.

The presence of, and direction from nursing management regarding SOP, helped strengthen beliefs that it was safe to escalate concerns and challenge hierarchy in these departments. As such, the introduction of these SOP, which established what was expected in circumstances requiring escalation (contacting higher status-professionals), led to a safer environment, bolstering front-line staff, and encouraging the enactment of voice. It demands mention that although these SOP encourage voice, it appeared to only influence voice which specifically addressed the needs of the situation, accounting for a retained object during surgery, and taking patients' blood results over the phone. Thus, SOP should not be seen as a panacea for creating a voice climate, but they did appear useful in helping establish a climate which drove voice behaviour for the specific safety situations addressed in these cases.

There was no recommendation to introduce SOP in maternity, the recommendations from that RCA were rather generic, and were criticised as such by the head midwife. However, the establishment of voice climate in maternity developed from: top-down setting of expectations for voice, specific training from the bottom-up that was assigned to address respectful challenge, and a reinvigorated sentiment of caring for patients. Expressions of compassion for patients were also found in surgery, but noticeably absent in ward x, these differences and similarities are discussed next.

Reinvigorated Sentiment of Care

An emergent reinvigorated sentiment of care by professionals in surgery and maternity cases was found to contribute to a voice climate. The contribution was in the form of witnessing what types of behaviours group peers demonstrate, particularly leaders who set expectations of model behaviour. Doctors and nurses from both cases were moved by the patients' suffering and talked about wanting to prevent further harm from happening to their patients, again demonstrating convergence of affective experience, compassion in this instance. The development of this sentiment of care led to a common moral grounding among team members, granting a shared perception and meaning about how future care would be delivered, with an emphasis on caring for patients.

In describing the sentiment of care of professionals, doctors, and nurses, in both surgery and maternity cases, as reinvigorated, it must be mentioned that it was first rendered latent by the hierarchical and blame cultures discussed earlier. Following the traumatic serious safety incidents, many expressions of compassion were expressed by second victims and their colleagues. This build-up of emotional episodes of compassion eventually reinvigorated a sentiment of care underpinning their professionalism which had previously been rendered dormant. This shows a re-emergence of professional work that is characterised by a sentiment of care having a moral or ethical imperative at its core, whereby the professionals sacrifice self-interest and accept responsibility for the client (Brint, 2015; Carr-Saunders & Wilson, 1933; Parsons, 1951).

A desire to put the needs of patients and family first was found in both surgery and maternity, analogously treating the patient as though they were a member their own family. Discussion of safety incidents seemed to precede all expressions of compassion, suggesting incidents are a catalyst for shaping how these professionals feel distress at the suffering of their patients and enacting voice with a desire to keep them safe. Further sustaining a sentiment of care in maternity was the practice to give out 'compassion cards' to staff who are seen delivering compassionate care. The hierarchical barriers between professions were moderated by a mutual desire to put patients first and care for them safely, contributing to a voice climate.

In stark contrast to maternity and surgery cases, the lack of compassion by professionals of both high and low-status on ward x are an interesting finding which appears linked to the type of voice enacted by professionals on that ward. Rather than prosocial voice which emphasised patient safety, nurses on ward x seemed to emphasise protecting themselves and their colleagues. This likely was due to the

context of the incident in which a nurse was held accountable for the death of a patient and was unable to defend herself during the investigation because she had not taken defensive steps. Further, higher-status professionals, urologists and their clinical director, seemed removed from the incident itself, displaying no emotion over the tragic event. Conversely, the emotional contagion among nurses on ward x was anger directed towards urology, and not compassionate expressions towards patients.

In comparing these emergent and recommend positively valenced practice changes, it's evident that factors which strengthen climate, making it safer for voice, are diverse, with some being driven top-down by high-status professionals, and from the bottom-up by lower-status professionals in response. As such an interplay between hierarchical levels is necessary to create the right environment for voice. The cumulative output of this climate changing process is a safer environment that encourages voice. Where people share perceptions of, and meanings attached to group behaviours, procedures, policies, and understand what is expected of them, and whether they will be supported.

The types of voice which emerge from this interplay however can be quite different. As hinted at, the voice with emerged among nurses on ward x was primarily defensive in nature, while a more constructive, prosocial form of voice was found in surgery and maternity cases. These differences and similarities are drawn out in the next section.

Types of Voice

The prevalence of voice behaviour in all cases is an interesting finding. The data shows under what conditions healthcare professionals feel safe to speak-up. The elements common to each case, which assemble as part of the "*painful journey"* (Mr.K, Lead Surgeon) toward a climate which enables enactment of voice include: the occurrence of a serious medical error, the harmful after-effects felt by second victims, and recommended and emergent practice changes led by affectively charged professionals. What we know from these cases is each group went through a journey, consisting of multiple elements, resulting in a shift to a climate which encouraged the enactment of voice.

The voice literature has grown to acknowledge that voice is a multi-dimensional construct. As such, types of both voice and silence can vary depending on contextual circumstances such as those found here (Van Dyne et al., 2003). These findings add novel insight to the discussion of psychological processes weighing on motive for voice, described in chapter 3 as cognitive and emotional components. These contributions include the role negative events like medical errors,

can have on the development of positively valenced changes, an area lacking consideration specifically in patient safety (Serou et al., 2017; Sirriyeh et al., 2010) and more generically, the positive effect of emotions in organisations (Barsade et al., 2003).

Prosocial Voice

Definition of voice as a prosocial behaviour (Morrison, 2011) is compatible with examples found in both surgery and maternity cases, defined as the discretionary communication of concerns about work-related issues with the intent to improve unit functioning. While there is nothing specific to Morrison's (2011) definition about protecting patients, expressions of voice in surgery and maternity were aimed at escalating concerns to prevent further errors from occurring, thus improving patient safety. Prosocial voice was found where a sentiment of caring was reinvigorated by professionals at both the top and bottom of the hierarchy, moderating hierarchical and blame cultures. The prosocial voice found in surgery and maternity was driven by a motive of compassion towards patients, across professional groups, helping to bridge hierarchical differences through a common moral-grounding and goal.

Exploring this idea of prosocial voice further, Van Dyne, et al. (2003) described it as the expressing of solutions to problems based on cooperation, and suggestion of constructive ideas for change, to benefit the unit or organisation.

In surgery, it was found nurses and surgical assistants reported being more assertive in the operating theatre with surgeons, specifically to make sure that policies are followed in the event of a retained object, and to avoid patient harm. In maternity, expression of voice by midwives were directed towards supervisors and obstetrical consultants to flag something that is potentially concerning, a safety threat. While in both cases reinvigorated sentiment of care played a role in shifting climate, the setting of expectations for voice by medical leaders in high-status positions also played a strong role. This top-down behaviour triggered a response from the bottom-up to engender voice among lower-status professionals. In surgery this was accomplished through closer adherence to policy and standard operating procedure, while in maternity training for 'respectful challenge' and coaching was provided.

This more compassionate, safety-oriented form of prosocial voice found in surgery and maternity cases differs quite starkly with the defensively oriented voice found on ward x.

While the voices of ward x and surgical nurses before the serious safety incidents were similarly futile, feeling that an opinion would be brushed away, or they would be made to feel insignificant, the outcome, their change to practice varied.

Through the emergence of positively valenced changes, climate was strengthened, enabling voice, however the type of voice that arose from these circumstances differed. The nature of voice that arose by ward x nurses was defensive in nature, described by behaviours that included informing the doctor, documenting who you spoke to and when, and protecting the self by redirecting potential blame to doctors in the event of an incident occurring. Among surgical nurses and midwives, a more prosocial form of voice was found that emphasised improving unit functioning and safety of patients, driven by a reinvigorated sentiment of care, closer adherence to policy and management support.

A chief variance between surgery and ward x in this enactment of voice, is the degree of engagement by higher-status professionals. The surgeons set expectations for voice from the top-down, whereas on ward x there was very little change in receptivity by higher-status professionals, the urologists, leaving the formation of voice climate entirely up to the nurses. Case findings would suggest this involvement of surgeons in positively valenced changes were due to acknowledgment of their direct role in the safety incident and subsequent affective impact. Whereas the urologists denied all involvement in the ward x safety incident, with members of their profession seeming to distance themselves from the investigation and recommendations for improvement. Thus, while evidence for prosocial voice, supported by higher-status surgeons and enacted by lower-status nurses, is found in surgery, defensive voice in ward x does not necessarily preclude further instances of futility of voice because there is lack of evidence for improved top-down receptivity by urologists.

Defensive Voice

The ward x case revealed no evidence demonstrating compassion or a reinvigorated sentiment of caring, instead defensive behaviours and nursing managerial efforts drove the enactment of voice on this ward.

Defensive behaviours found included tighter documentation standards with attention to who nurses spoke to and when, and always notifying doctors of patient test results, these steps seemed ingrained in the nurses of ward x. The traumatic negative affective experience of the staff nurse CS412, leading to her quitting the organisation, was contagious. These nurses witnessed the negative aftermath and career consequences on staff nurse 412, adjusting their own behaviour on the ward as a result, practicing defensively to avoid involvement in a similar circumstance themselves.

The senior sister on the ward x played an overarching role in formation of this

nursing wide defensive voice. She was contagiously influenced by staff nurse 412, directing anger at urologists, going on to protect her staff through implementation of training and a standard operating procedure (SOP). Staff seemed to completely embrace the SOP and referenced it when they described how they spoke-up to doctors on the ward and documented their results. The senior sister's changes bolstered the confidence of nurses, giving them something tangible to reference in the face of a hierarchical challenge, encouraging the enactment of defensive voice. Thus, voice on ward x was not driven by a sentiment of caring, but anger, self-defence, and managerial support.

This defensiveness contrasted with the maternity case where individuals wished to remain silent (defensive silence) for fear of punitive actions, while on ward x nurses' defensive voice was expressed out of a sense of compliance with SOP and self-preservation, shifting focus and potential blame to others, the urologists, to protect the self. Defensive voice was defined by Van Dyne et al. (2003) as a form of speaking up to protect one's own self-interests. There are few theoretical papers that describe defensive voice, and only two papers could be found (Lee, Diefendorff, Kim, & Bian, 2014; Maynes & Podsakoff, 2014), which tested this form of voice empirically. Lee et al. (2014) found defensive voice was generally more negative than prosocial voice, and extroverts and agreeable individuals were more likely to engage in the later than the former.

The enactment of voice across all cases is a desirable outcome for patient safety whether pro-social or defensive. Corrective actions can be taken if healthcare professionals are alerted to errors before they arise.

As such, understanding the nuances outlined in this discussion, which led to these enactments of voice are critical if others attempt to emulate this success in healthcare practice. The transfer of this discussion to a more general model of how second victims of serious safety incidents overcome the hierarchical challenge through establishing the conditions for voice, is presented next in figure 9.3.

Introducing the Safety Incident Model of Voice for Second Victims

Figure 9.3 is the culmination of this comparative discussion, integrating all components from this chapter. This model builds upon, and integrates, figures 9.1 Climate of Silence and 9.2 Voice Climate. This emerging model is event based, placing a serious safety incident centrally as a catalyst.

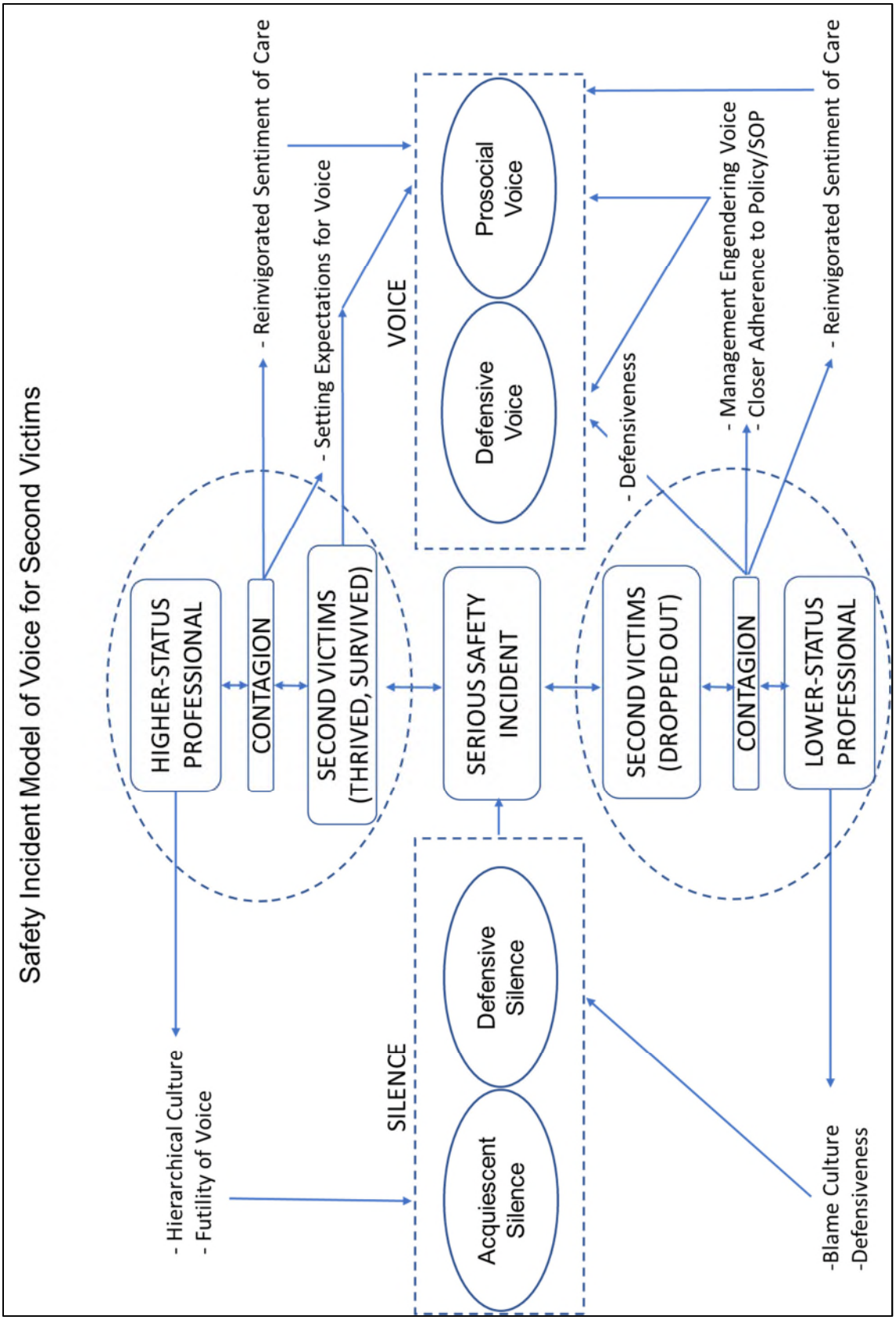
Starting on the left-hand side (rotate figure 9.3 to landscape), the model explains that hierarchical culture and futility of voice driven by higher-status professionals contribute to a climate of silence, leading to acquiescent silence. Blame

culture and defensiveness arose among lower-status professionals, leading to defensive silence. These forms of silence directly contributed to the occurrence of serious safety incidents which impact professionals identified as second victims.

These second victims, of both high and low status professions, infected their colleagues through a process of emotional contagion, resulting in both second victims and colleagues becoming affectively charged. Moving to the right-hand side of the figure, higher-status professionals, both second victim and those emotional infected, set expectations for voice, establishing the conditions for voice climate, in part contributing to prosocial voice. Prosocial voice was further influenced by reinvigorated sentiment of care by both high and low status professionals, and through lower-status managers engendering voice and closer adherence to policy and SOP. Defensive voice was driven by the emergence of defensive behaviours by lower-status professionals and lower-status management engendering voice through implementation of SOP.

This model is intentionally generalised so that its appeal and applicability extend beyond this study's empirical setting of healthcare. Applicability of this study's findings to other settings will be discussed in more detail in chapter 10 Conclusion.

Figure 9.3 Safety Incident Model of Voice for Second Victims



Discussion of Safety Incident Model of Voice for Second Victims

This section discusses and qualifies the emerging model presented in Figure 9.3, by explaining its boundary conditions and status. Further, factors not taken into account are listed, and a proposal for how this model should be used in the future included.

Figure 9.3 highlights the most coherent thematic relationships between causal conditions leading to silence as a major contributing factors of serious safety incidents, the affective impact leading to second victims, and the causal conditions which emerged from second victims leading to both defensive and prosocial voice.

This emerging model reflects what has been learned from this micro-level comparative evaluation of three cases involving serious medical error and second victims. The model's status as emerging reflects the desire of this researcher to position his findings as an early exploration of the relationship between affectively impacted second victims of serious error and the emergence of positively valenced practices, as found in these cases, to help engender the conditions for voice.

The level of analysis for this model is intentionally micro-level, reflecting the practices of front-line healthcare professionals that surfaced following error. The model excludes more meso and macro level forces such as structural changes at the trust due to financial difficulties, workforce strikes (i.e junior doctors strike), and mandatory national changes to practice (i.e implementing duty of candour). Excluding these later factors does not suggest they have no implication on the emergence of voice, but a reflection of the micro-level lens, which this study applied in analysis of data from 50 healthcare professionals across 3 cases. This model reflects their story, and focuses narrowly on their struggles to voice safety concerns, the affective impact of error, and the emergence of positively valenced practices.

The model is representative of findings from this single PhD study, it's exploratory, linking concepts, which have historically seen limited or no relationship. As such, it is the hope of this researcher that other research will build upon this first step in exploring what role second victims might play in the emergence of positive practice, leading to improved safety. For example, establishing conditions for voice might be one of potentially several positive practices arising from second victims, there is room to grow this model to include others. Cataloguing the various positive practices which emerge from second victims would be interesting for researchers adopting a safety II perspective, and could set-up further research in that area.

Further, additional antecedents to both silence and voice might be identified by other researchers and could enhance this model. It would be particularly

interesting to include additional data on ‘thriving’ second victims given only one (albeit with powerful implications) has been included in this model, with the rest either having ‘survived’ or ‘dropped out’.

There are many forms of voice and silence described in the literature (i.e Van Dyne et al., 2003) and this model is not inclusive of them all, due to their absence in this PhD’s findings. There is room for voice researchers to consider how, for example, prosocial silence, the withholding of information based on cooperation, might be a causal or preventative factor in error, and consideration given to what conditions might engender it. Additionally, acquiescent voice, where group members due to low self-efficacy, express vocal agreement with superiors, might also be an interesting inclusion, to look whether it could contribute to error and lead to particular affective results (i.e guilt).

Next, a walkthrough of figure 9.3 is provided. To explain the model it is useful to draw upon short examples from the comparative case analysis which explain the causal arrows that link each thematic category. Arrows represent a causal relationship, for example setting expectations for voice and a reinvigorated sentiment of care (top right) were both antecedents to establishing the conditions for prosocial voice by higher-status professionals. Working counter-clockwise around the figure, first, the conditions for silence are presented.

A hierarchical culture, where there were clear power differences between staff of varying status, was an antecedent for acquiescent silence. In both Surgery and Ward X a hierarchical culture was found to emanate from higher-status professionals, making lower-status professionals less likely to speak-up, and when they did speak-up (because they had long tenure, for example) their voice was found to be futile. When lower-status professionals saw their colleagues attempts at voice as futile, they too decided to remain silent.

Continuing this walkthrough of the model, the factors, which led to defensive silence, are described next. This form of silence, found only in the Maternity department saw individuals keeping quiet out of fear of repercussions. The conditions which engendered defensive silence in this case was a blame culture and the emergence of defensive behaviours. The blame culture in maternity was the result of a punitive investigative process for all medical errors, where not only were the incidents investigated, but also the professionals involved, often resulting in punitive measures. Staff exhibited defensive behaviours such as hiding their employee pin number so they could not be reported, and avoiding the reporting medical errors they observed.

Next, focusing on the dotted-line box labelled silence, this model links these forms of silence as a primary contributor to the three cases of medical error studied. The box in the middle of the model indicates that a serious safety incident has occurred. Next, several key second victims of both higher and lower hierarchical position were affectively impacted by these incidents, this is represented by the arrows pointing to the second victims boxes above and below, with a lead surgeon 'thriving', an obstetrician 'surviving', and a nurse and a midwife 'dropping out'.

Tracing the trajectory of each of these second victims brings this walkthrough to the dotted-line circles at the top and bottom. Beginning at the bottom dotted-line circle with the Ward X case, the staff nurse from Ward X who eventually left the organisation experienced both anger and guilt. Before she left, she had many interactions with her nursing colleagues, particularly her senior sister. They became affectively charged through the process of emotional contagion going on to enact several changes that engendered defensive voice. Because of anger towards urology, staff nurses were very defensive and seemed to practice increased assertiveness as mean to shift potential blame away from them. Their assertiveness was more mechanistic, driven by compliance with newly implemented policy & standard operating procedures (SOP), and fear of being blamed, not compassion for the patient. Thus, both closer adherence to SOP and defensive behaviours led to defensive voice.

Next, in the top dotted-line circle is lead surgeon Mr. K who thrived following the never event. Mr. K experienced both anger and shame. This event was a catalyst for him to revise his practice, specifically how he communicated with his team during complex multi-site surgeries. This is summarised, as setting expectations for voice. In response to Mr. K's emerging practice there was a bottom up response by scrub nurses and their management to engendered voice and more closely follow SOP. Further, a reinvigorated sentiment of care was found among both nurses and surgeons in this case having previously been rendered latent due to hierarchical culture. The top down expectation setting coupled with bottom up changes and a reinvigorated sentiment of care led to a form of prosocial voice among surgical team members.

Next, looking again at the dotted-line circle at the top of the model, the higher-status second victim who 'survived', the obstetrician Doctor S, experienced both guilt and shame. She made no significant improvements to practice, being paralysed by blame and shame. However, through emotional contagion her clinical director became affectively charged and took it upon herself to establish

expectations for voice in the maternity unit. Again, this top-down expectation setting for communication was followed up by emerging bottom-up changes. Midwifery managers were very upset via emotional contagion with Midwife Z, expressing anger at themselves for having put Midwife Z in a precarious position. They went on engender voice through 'respectful challenge' and supporting compassionate care through gifting 'compassion cards' to staff. This bottom-up engendering of voice interacted with the top-down expectation setting by a higher-status clinical director of obstetrics, setting the conditions for enactment of prosocial voice in the maternity unit.

Conclusion

A safety incident model of voice for second victims has been presented. The factors which allow a climate of silence to persist leading to acquiescent and defensive silence were summarised as a hierarchical culture, blame culture, and futility of voice. Both acquiescent and defensive silence directly contributed to serious safety incidents in each case.

Patients were harmed or expired as a result, but they were not the only victims, second victims, the healthcare professionals directly involved in the incidents also experienced repercussions, in the form of negative affective experiences. These individuals were emotional contagious, infecting their colleagues who became affectively charged.

Second victims and their infected colleagues went on to enact positively valenced practices, the conditions for voice, in their respective units including: setting expectations for voice, management engendering voice, closer adherence to policies and SOP, and a reinvigorated sentiment of care. This voice climate allowed the enactment of defensive and prosocial voice.

The next chapter, the conclusion to this thesis, will provide a reminder of the research gap addressed by this study, describe how these results extend the extant literature on patient safety and employee voice, highlight what practical implications might exist for this study's findings, and discuss transferability, limitations, and ideas for future research.

Chapter 10 Conclusion

Introduction

This concluding chapter will provide a reminder of the research gap addressed by this study and describe how these results extend the extant literature. Transferability is discussed, and practical implications highlighted. Study limitations, and ideas for future research are also included.

As described in chapter 2, this study addresses the implementation gap in patient safety which results from the hierarchical challenge and second victim phenomenon. Second victims are placed as central actors who play a key role in moderating the hierarchical challenge leading to the enactment of voice. Employee voice was introduced as a sensitising concept given its relevance to improving patient safety and consideration for it as an antecedent as well as an outcome of medical error.

Next, this study's claim as the first to explore the role of second victims in the effective enactment of employee voice is described. This research gap, identified by Sirriyeh, et al. (2010) and more recently by Serou et al. (2017), is explained.

Transferability is explained through identification of several considerations necessary for application of this study's findings and model to other safety sensitive fields. This includes professional organisation in healthcare, the incident-based nature of the model, and the range of safety contexts which exist in the healthcare field. Further, discussion of high reliability organisations and specific examples linking to aviation are described.

The section on practical implications sets forth three recommendations aimed at healthcare organisations wishing to cultivate a voice climate. These include leveraging second victims, fostering a group voice climate, and reinvigorating a sentiment of care among professionals.

Limitations of the study, and rationale for why they persisted, are described next. These include sampling of a single NHS hospital trust, an emphasis upon second victims instead of patients, the first victims, and limitations of methods used to classify the affective experiences of second victims.

Finally, ideas for future research include, first, the inclusion of patients and their families, the first victims of medical error, and second, consideration for how this study's results might fit with a 'learning from excellence' or safety-II type approach.

Research Gap Addressed

As described through review of four historically significant cases of medical error in chapter 2, an implementation gap exists in patient safety, which results from a lack of addressing the 'hierarchical challenge' and second victim phenomenon. This study acknowledges that affective experiences felt by healthcare professionals are positively correlated with the severity of any medical error they are involved in. As such, those professionals involved in serious safety incidents, are central to the enactment of practice changes, both negatively, which is well documented, and positively in the form of changes with consequence for improving patient safety, such as enabling voice.

Employee voice was introduced as a sensitising concept given its direct relevance as both an antecedent for medical error (i.e. choosing not to speak-up, as in the event of a hierarchical challenge), and a potential outcome of medical error (i.e. changing practice to be more assertive). Additionally, the known ability for affective experiences, such as fear, to influence employee voice decisions supports its suitability to this context.

Thus, this study establishes the second victims of serious safety incidents as key to moderating the hierarchical challenge, leading to the effective enactment of voice.

Extending the Literature: Second Victims Giving Rise to Voice

To the best knowledge of this researcher, this study lays claim to the first exploration of the role second victims of medical error play in the effective enactment of employee voice. This study addresses the research gap identified by Sirriyeh, et al's 2010 systematic review: little is understood about the possible positive outcomes of medical error. A more recent systematic review again highlighted this gap: a need to explore further the positive changes made by staff following error and consider what knock-on effects might exist for patient safety (Serou et al., 2017).

Evidence for a more constructive use of medical error, specifically, second victims enabling the effective enactment of employee voice, was found. Second victims, and their colleagues through emotional contagion, played key roles in establishing the conditions for voice which attenuated the hierarchical challenge. Further, with linkage to the role of compassion and renewed sentiment of care influencing voice, this study responds to Barsade's, et al. (2003) acknowledgement that very little research has explored the role of positive affective experiences in organisations.

Further, validation and extension of Scott's et al. (2009) recovery trajectory for

second victims was provided in the form of evidencing the positively valenced changes enacted by a 'thriving' second victim. Second victims who 'survived' and 'dropped out' were found to enact change indirectly though emotional contagion of colleagues.

Finally, a safety incident model of voice for second victims, figure 9.1, applicable to professional organisations in safety sensitive fields where second victims might be found, was developed and will be discussed further in transferability below.

Transferability

In thinking about these findings and their transferability to other settings, first consider the empirical setting of healthcare as dominated by a form of hierarchically arranged professional organisation. This form of organizing represents a professionalised workforce consisting of communities of powerful actors bound together by shared knowledge and cultures (Waring, 2013). As such, transferability of these findings might be limited to fields which are similarly organised.

Second, a serious safety incident is placed centrally as a catalyst in figure 9.1, thus the model is 'incident based' and requires one to function. Thus in generalising beyond healthcare, other fields might view incidents as forms of organisational deviance, which deviate from both formal organisational design goals and normative standards or expectations, resulting in an unanticipated suboptimal outcome (Vaughan, 1999).

Healthcare is a particularly complex environment (Baker, 2001), consisting of many different safety sensitive areas in a single hospital. Some areas are highly standardized and rely on information technology and automation such as pharmacy, these are considered *"islands of reliability",* or ultra-safe, within the broader, more chaotic hospital environment (Vincent & Amalberti, 2016, p. 33). Other areas, including ward care and scheduled surgeries, are more akin to a high-reliability approach to safety, where professional judgement and flexibility, coupled with standards and protocols, provide important controls on risks essential to providing safe, high quality care. Thus, given the range of safety contexts present in healthcare, as argued by Vincent and Amalberti (2016): healthcare is better than any other setting to study safety because an entire range of safety approaches and strategies can be found in one industry.

Support for this argument is found in this thesis given a range of cultural approaches to safety, some negative and some positive, were evident across cases. This included punitive investigations, managing risk through following standard

operating procedures, and escalating concerns, theorised as defensive and prosocial forms of voice.

Thus, given this study's model, figure 9.1, was developed in a high reliability setting that acknowledges risk as inherent to the field, it's expected to have application in other high reliability organisational (HRO) fields such as: marine, shipping, oil industry, fire-fighting, policing, and military. Further, the model may offer some usefulness to ultra-safe fields which aim to avoid risk altogether such as: aviation and the nuclear industry. Although in these fields, second victims may be rarer, or no longer living, following a serious safety incident, given the nature of the field.

Catino & Patriotta's (2013) study of learning from errors in the Italian Air Force highlights some similar themes as found in this study: safety culture, negatively valenced emotions, and emotional contagion, suggesting a degree of transferability to the aviation field. For example, flying with relaxed vs stressed colleagues was found to result in emotional contagion, generating different types of responses by pilots, similar to how emotional contagion by second victims influenced practice changes among their healthcare colleagues. Further, as introduced in chapter 3, silence is implicated in numerous high profile aviation disasters including United Airlines flight 173, and friendly fire between US army black hawk helicopters and US Air Force F-15s (Snook, 2002). This study's model, which identifies the conditions for voice, should have direct applicability to overcoming the forms of silence implicated in these aviation disasters.

While transferability to other fields seems reasonable, certain characteristics of the model may not function as they would in healthcare. For example, the affective impact of error found in healthcare might be lessened, or play out differently in other fields, where a patient-doctor relationship is absent, given the known affective interplay which exists between these actors (Bell, Moorman, & Delbanco, 2010).

Practical Implications and Recommendations

Given the theoretical contribution of this research towards the field of patient safety, it seems suitable to also suggest practical implications and recommendations. Second victims are given prime position in this study due to their role enacting positive changes which set the conditions for voice. The enactment of prosocial voice has potentially powerful implications for improving patient safety. If the conditions for voice found this study are emulated in other healthcare settings, a safer climate for voice could follow, enabling healthcare professionals from varying hierarchical positions to

enact prosocial voice. Three recommendations aimed at establishing the conditions for voice are outlined below:

- First, leverage staff who 'thrive' following medical error. Individuals who thrive, such as lead surgeon Mr. K, should be identified and promoted. Mr. K under his own direction has shared his experiences with other surgeons, and operating theatres resulting in the prevention of further never events. While sensitivity should be given to these matters, those individuals who are 'thriving' post incident, should be given a platform to share their experiences with other staff. Emotions are contagious and these individuals are passionate about invigorating a sentiment of care (Kelly & Barsade, 2001). With greater attention to sensitivity, staff who 'survived' should also be given the option to share their experiences. While it may be impossible to harness the potential for improvement from a professional who as 'dropped out', consider offering a form of 'exit interview' with these individuals so that their experiences, regardless of how negative they might have been, can contribute to improving safety processes.
- Second, attempt to foster a group climate which is safer for voice. Remember that climate is formed through the shared perceptions held by group members about policies, procedures, and the behaviours they believe are expected, or what they see supported and rewarded. Voice climate was found to develop from several conditions including high-status professionals setting expectations for voice from the top-down, which was responded to from the bottom-up, where lower-status managers engendered voice, and implemented closer adherence to policy and standard operating procedures (SOP).
    - Higher-status professionals, both specialist doctors in these cases, played an important role in establishing group climate for each of their respective departments. By establishing expectations for communication among inter-disciplinary group members they effectively opened the channel for communication and removed risk associated with speaking up, so that *"no one is not important enough to be listened to ever".* The importance of involving higher hierarchically positioned professionals cannot be overstated, they are in a more powerful position than other staff and must take responsibility for setting expectations.

- The lower-status managers, nurses in these cases, responded to this top-down expectation setting through training their staff how to escalate concerns, introducing 'respectful challenge', and attempting to enforce closer to adherence to policies and SOPs that directed front-line staff to escalate. As such, consider introducing departmental SOPs and policies that reflect work processes which promote speaking up when things are amiss (i.e. missing swab), providing front-line staff something useful as a tool in the event of a 'hierarchical challenge'. Managers must encourage and reward speaking-up behaviour and visibly defend their staff from retaliation.

- Thirdly, while affective experiences are hard to replicate, emotions can spread, and staff should be given opportunities to share their experiences. This is particularly relevant for expressions of compassion which were found to build-up, reinvigorating professional work characterized by a sentiment of caring. Borrowing a practice from the maternity case, consider giving out compassion cards to staff who are seen delivering compassionate care to patients.

Limitations

This study was set within one of the United Kingdom's National Health Service Trusts, consisting of two hospitals. One in an ethnically diverse inner-city area, the other in a predominately white upper-class area, as such the study covers a broad spectrum of demographics. However, it is a relatively small sample size, consisting of only one hospital trust, and as such could benefit from one or two additional comparative hospitals. However, for pragmatic reasons, an in-depth micro-level comparative analysis of several cases within one organisation was chosen by the researcher who conducted the research on his own and within the time constraints of a PhD programme.

Next, an emphasis upon second victims may have left a gap on potential implications for the role first victims of medical error, the patients and their families, might have played in influencing the practice changes of healthcare professionals. Again, for pragmatic, legal, and ethical reasons this route was not selected. Further, it would have been impossible in some cases where a patient had expired. Having a previous career in hospital risk management, this researcher was aware of the fraught sensitivities, and legal implications for contacting patients involved in medical errors, particularly when the filing of legal claims for personal injury, as per the UK's limitation

act of 1980, could occur up to three years after harm was discovered.

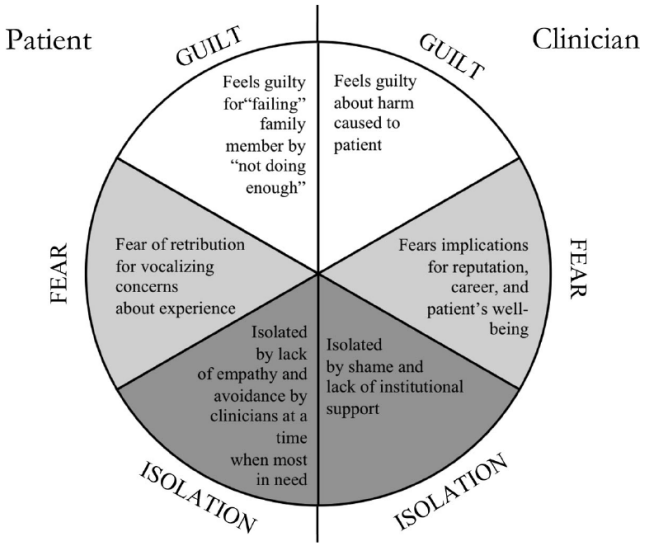
The classification of affective experiences of second victims was assessed qualitatively by the researcher using Lazarus's (1991) core-relational themes. While methodologically sound and utilized by researchers in a highly regarded journal (i.e. Huy, Corley, and Krattz, 2014), this method is still subject to limitations. The researcher made theoretical judgements about affective states from interviews and observations with participants. This was challenging at times, especially when it was not reported directly, for example a participant stating: *"I was incredibly angry"*. This resulted in abstracting affect from what else the participant said, the way they acted (for example crying), or the situational context. This limitation could be improved upon through adopting methods involving sophisticated instruments to study physiological reactions, for example, autonomic nervous system activity, or measuring heart rate. Further, while Lazarus's core-relational themes are thought to be reliable in western nations, different appraisal-emotion relationships exist in other cultures, and as such these findings might not transfer to other non-western nations so easily (Mesquita & Ellsworth, 2001).

Ideas for Future Research

It's known that healthcare professionals involved in medical errors experience many of the same affective experiences as that of first victims, the patients and their families (Wu & Steckelberg, 2012). Unfortunately, silence, guilt, shame, and loss of trust fracture the patient-doctor relationship leaving both parties to suffer separately. This human dimension of medical error acknowledges the shared range of emotions which affect both patient and care givers. As such this researcher infers from Bell et al. (2010) that an interplay exists between the emotional states of both first and second victims, as seen in figure 10.1, the patient-clinician 'wheel of emotions'.

As such, future researchers interested in extending these findings should consider including the first victims of medical error, to see what influence their affective experiences had on the second victims (and vice-versa), with regards to practice change and emotional contagion. While this may present some methodical risks, such as participant recruitment and ethical approval, it should be possible in healthcare organisations which have a patient centred orientation, and where the relevant limitations act would have expired (i.e. in the UK claims cannot be brought forward after 3 years), or with appropriate legal consent.

Figure 10.1 Patient-Clinician 'Wheel of Emotions' (Adapted from Bell et al. (2010).



Further, this study treated affect primarily as an empirical antecedent for voice, as such it's theoretical development was secondary to voice and second victims. Therefore, in line with Sirriyeh et al. (2010), additional consideration should be given for how this research on second victims and patient safety relate back to the literature on affect.

Another related application for this study's findings is a 'learning from excellence' or safety-II type approach. While second victims are the result of a safety-I, reactive investigative approach, which emphasises finding and fixing errors (Hollnagel, 2013). Safety-II attempts to ensure as many successful outcomes as possible by recognising and learning from good practice (Kelly et al., 2016).

Future researchers interested in safety-II might build upon this study's findings to identifying a broader range of positive practices by second victims, particularly those who 'thrive', to identify patterns, effective supports, and share more broadly within a healthcare system. Accentuating the positive practice changes that arise from negative events like medical errors, such as the enactment of practices which establish conditions for voice, should have useful application to improving patient safety. This is particularly relevant where emulating the conditions for voice found in this study could help develop and sustain climates that allow prosocial forms of voice to be enacted, preventing further safety incidents.

Conclusion & Reflection

Evidence has been provided for what positively valenced practices can arise from negatively valenced events like medical errors. Second victims were found to play a key role in moderating the hierarchical challenge in healthcare, setting the conditions for, and leading to the enactment of voice. This study has extending the patient safety literature, specifically adding to our knowledge of the second victims of medical error and the role they play in the enactment of positive practices.

Transferability of this study's model seems reasonable, particularly in other high reliability fields such as aviation. Practical implications were set forth including leveraging second victims, establishing the conditions for voice, and instilling compassionate care.

Limitations of this study were summarised as a lack of comparative hospital trusts, an absence of patients, the first victims of medical error, and methodoligcal limitations for classifying affect. Ideas for future research include sampling first victims for a follow-up study, examining how this research might contribute back to literature on affect, and consideration of how a safety-II approach might align with the positively valenced practices enacted by second victims.

Reflecting on this PhD journey, this researcher feels satisfied in his decision to leave his career as a practicing risk manager. Taking time away from a managerial role, allowed this researcher the space to focus indepth on addressing problems in the field of patient safety, that would not have been possible otherwise.

While numerous follow-up and feedback presentations have been held locally with the NHS trust involved in the study, the researcher plans to disseminate these findings more widely so that other healthcare organisations can learn from them. First, a paper emanating from this PhD was presented at the 11th annual Organizational Behaviour in Health Care Conference in Montreal, Canada on May 14th, 2018. Second, publications arising from this PhD are planned, with a target to focus on patient safety, as well as more general management journals.

It is the goal of this researcher, for this PhD, to serve as a launch pad into an academic career. In working towards this goal, the researcher was part of a successful research bid to the Health Foundation in London, which will see him take-up a funded post-doctoral Research Fellow position at Warwick Business School, in order to continue his work in related healthcare and organisational research.

Appendix

Table A.1 Impact Case Summary Pilot

Impact Case Summary: Pathology (Pilot Study) Department response to 2013 Histopathology backlog
Date of Data Collection: December 2015 Purpose: To consider evidence of learning, and practice change, following SUI & RCA investigation
Data Sources: 10 interviews with staff, professions represented include: Scientists, Consultant Pathologists, Assistants, and Managers. Meeting observations (4 hrs), and documentation Review (SUI Report).
Practice Changes/Improvements following SUI & RCA Investigation
There was consistency among Biomedical Scientists, Consultant Histopathologists and Assistants all **working according to Key Performance Indicators** (daily dashboard) which help ensure that both low and high priority samples get reported prior to six weeks. *"We have a dashboard now where you can easily see exactly which of your cases is outstanding still and how long it's been outstanding for … and can make sure that I prioritise things at the right time." - Consultant Pathologist 1* Also consistent among the different professions was a **heightened sense of situational awareness**. Professionals were more aware about overall departmental workload, the interconnectedness of each other's work activities, generally being active in managing workload, and **proactive** in dealing with issues before a backlog occurs. *"I think one of the biggest changes is we're trying to be proactive with work. If we know all the breast pathologists are in or the neurology pathologists are in we'll try and prioritise their work because we know it's going to go out immediately. So we're trying to prioritise work based on the capacity that we have consultant-wise." – Biomedical Scientist 1* Management described how the process of participating in the RCA investigation enabled them to **become better networked in the Trust**. This increased awareness of departmental issues with Trust management resulting in the department's **ability to bid for and successfully access additional Trust resources**. Other departments in the trust also learned about how their work impacts upon pathology services which has improved interdepartmental communication.
Emotional Impact of SUI & RCA Investigation The affect of medical error on healthcare professionals is generally well documented. However, these incidents seemed to have a noticeable lack of affect on pathology staff. This absence of affectivity could perhaps be due to distance between lab services and patients, as this quote suggests: *"I mean stuff comes in and they stack it on a machine and because the patient is a tube of blood they're somewhat divorced from the patient on the end of that tube of blood" – Consultant Pathologist 2*
Contextual Factors: Concerns were expressed primarily about the **lack of Consultant capacity** (12/15 positions filled) to report samples in the target time frame leading to a fear the department may end up in a similar situation to 2013.

Staff were generally **confident about the daily dashboard/KPI system** installed to stay on top of potential delays, but even with a system in place, the **lack of consultant capacity** stemming from recruitment challenges and vacation time, appeared to make the improvements fragile. **Safety Culture:** The culture was said to have improved following the SUI, it was described as one that is supportive, and promotes communication (escalation) and learning. Culture was previously described as very reactive and slow to change. Learning from this SUI was shared internally with Radiology: endoscopy unit.

Table A.2 Impact Case Summary Surgery

Impact Case Summary: Surgery Department response to 2013 Never Event - Retained Foreign Object Post-Operation
Date of Data Collection: April 2016 Purpose: To consider evidence of learning, and practice change, following SUI & RCA investigation
Data Sources: 15 interviews with staff, professions represented include: Surgeons, Anaesthetists, Radiologists, Nurses, Assistants, and Managers. Meeting observations (4 hours), and documentation Review (SUI Report, Surgical Checklist).
Practice Changes/Improvements: Post Never Event, and RCA investigation, there was evidence of a favourable climate for Employee Voice, the discretionary communication of ideas, suggestions, concerns, or opinions about work-related issues with the intent to improve organizational or unit functioning. Nurses (and healthcare assistants) generally reported changing how they **escalate concerns and challenge hierarchy** in the operating theatre. They are **more assertive** in their communication style when dealing with Surgeons. **Management empowers staff to escalate concerns** so that issues can be resolved before problems arise. *"… I'm not afraid to speak up now. So I'm a little bit more assertive perhaps because of it and that's for a safety reason" –Nurse 1* *"we're trying to empower the staff to challenge the surgeons and if they cannot do that ring the on-call manager. Don't be frightened to do that or ring your general manager or your matron. Don't be frightened to challenge if you're not sure." – Nurse 2* Nurses generally reported **accessing and enforcing the policy** *"Accounting for Swabs, Packs, Sharps and Instruments During Sterile Procedures Policy"* in the theatre. Surgeons described how they are more **vigilant** in their practice. *"After this incident, … I'm becoming more vigilant, so I'm more alert, I'm more conscious about even if you have the system you still can have a problem, which I didn't have first-hand experience [before]" - Surgeon 1* Staff from across professional groups described how they were **more situationally aware and/or mindful of their surroundings** following the SUI,

suggesting they are comfortable to highlight possible safety concerns outside of their own professional responsibility. Professionals seem to have a **shared sense of accountability with other staff** in theatre, especially Surgeons, with Nurses looking after the swab counting process. This suggests some overlapping professional boundaries, for example Surgeons getting more actively involved in the process of swab counts.
Emotional Consequences: There was a general sense that professionals involved in the event were **upset (angry)** including Doctors, Nurses, and Assistants. **Being devastated, traumatised, and a fear of not doing things correctly**, were all attributed to Nursing staff. A link seems to exist between the ease at which professionals make **changes to practice and the degree of emotional impact.** Both Surgeons and Nurses were emotionally affected by the Never Event and found changing practice to be simple, part of normal evolution or progress. **Empathy (compassion) for the patient** was described by professionals from each group, to learn from this event so that future patients are not harmed. Doctors described the event as a **personal negative experience (shame)**, where they internalized and contrasted the event with the quality of care they regularly provide.
Safety Culture: Supportive, Patient Centered, and Open (Blame Free), were all terms used to describe the department's culture. Professionals from each group described how the Never Event, and other incidents in the department, led to improvements in the department's safety culture. Professionals recalled how the culture has progressed to proactive from bureaucratic, and one group, reconstructive surgeons, describing a shift to generative (where safety is integral part of everything they do) ***"****So the culture as people begin to be aware that these incidents are happening on a regular basis and people are learning that you've got to address those issues in terms of your behaviour and your processes... So that's what change is occurring as people are becoming more aware of the safety culture. And I think it's becoming more apparent that the organisation is unwilling to accept unsafe practice" –Surgeon 2*

Table A.3 Impact Case Summary Maternity

Impact Case Summary: Maternity Department response to 2015 Serious Untoward Incident unexpected death of a neonate.
Date of Data Collection: April, May 2016 Purpose: To consider evidence of learning, and practice change, following SUI & RCA investigation
Data Sources: 13 interviews with staff, professions represented include: Consultant Obstetricians, Anaesthetists, Midwives, and Managers. Meeting observations (4 hours), and documentation reviews.
Practice Changes/Improvements: Post SUI, and RCA investigation, there was evidence of a favourable climate for Employee Voice, the discretionary communication of ideas, suggestions, concerns, or opinions about work-related issues with the intent to improve organizational or unit functioning. Midwives generally reported **changing how they escalate concerns and challenge hierarchy** in the department. They are **more assertive** in their communication style when dealing with supervisors and Consultants. This stems from **Management empowering staff to escalate concerns**. *"I'm quite happy to challenge any doctor or consultant decision and sort of justify and go through policy or procedure and get their opinions really. But I think that's at my level that I'm at. I'm not sure that… You know, some of the more senior sixes would feel happy to do that, but I think with the more junior midwives it's having the confidence to come to us as co-ordinators to be able to say "I'm not happy about this. I'm not happy with this decision," - Midwife 1* Both Obstetricians and Midwives reported they are more **situationally aware and mindful**. *"I mean I would expect patient safety to be improved because now I know that if someone comes with bleeding I'll be more mindful of my decision and I'll think about abruption. Delivery will be at the top of my mind." – Consultant 1* *"I'm quite conscious as a co-ordinator as to who's going into where and who I'm allocating. I know my staff quite well as in their level of training and who they can look after. I think it is that awareness of if somebody's out of their depth or somebody's condition deteriorates, then you have to allocate and you have to perhaps move your staff round and allocate accordingly" –Midwife 1*
Emotional Consequences: **Empathy (compassion) for the patient** was described by professionals from each group, to learn from this event so that future patients are not harmed. There was a general sense that professionals involved in the event, and their departmental colleagues, were **upset (angry).** *"So people will be expected to come to work, continue to do their normal job no matter how emotionally affected they may have been by the event and at the same time in their own time they've somehow got to find time to access the notes and write their statement." –Consultant 2* A doctor involved in the incident, found the process of investigation to be rather **stigmatising ,** Midwives felt SUIs could be quite **punitive.**

"And then the consequence of that (the error) was the stigma and I felt that all the good that you've done in the last seven or eight years or whatever was just wiped out with a brush and you were just tainted with being involved in a SUI." – Consultant 1
Contextual Factors: **Safety Culture:** Some Midwives and Consultants reported a **blame culture** which could be **reactive** at times and focused on individuals (punitive) rather than addressing the system. *There's not a positive culture towards safety and I think it's because of the processes, the way governance has been applied and the way the whole investigation process has been applied. ... think there's very much a focus on individual practice and that's why the culture is very negative... We miss opportunities to learn at a systems level because there's such focus on individual. – Midwife 2* There was a sense of **disconnect between the front line and governance** (us vs them) which can hamper improvement initiatives *"it's a little bit about us and them as well. Generally most people on the shop floor on the frontline feel as if governance is a little bit separated or divorced from the rest of us and that always creates some conflict." – Consultant 3*

Table A.4 Impact Case Summary Urology Ward X

Impact Case Summary: Urology / Ward x response to 2015 SUI – patient discharged with elevated potassium levels	
Date of Data Collection: April, May 2016 Purpose: To consider evidence of learning, and practice change, following SUI & RCA investigation	
Data Sources: 12 interviews with staff, professions represented include: Consultant Urologists, Consultant Clinical Scientists, Nurses, and Managers. Meeting observations (4 hours), and documentation Review (SUI Report, Surgical Checklist).	
Practice Changes/Improvements following SUI & RCA Investigation	
Positive Nursing completed implementation of RCA recommendations, these included: a standard operating procedure (SOP) for receiving abnormal results by phone, a sign-up sheet to ensure nursing staff read the new SOP, and laminated crib cards showing normal blood result ranges. These procedures were reviewed at Nursing Handover meetings. Nurses reported being **more consistent in their communication, documentation practices**, including contacting the doctor, and writing 'doctor [name] informed', in the notes, and to follow the new SOP. *"you must document the results and you must inform the doctors. Don't just put it in the notes. You must ring them straightaway and act on it and then obviously write the doctor's name who you spoke to. And refer to your chart for abnormal results" – Nurse 3* Preliminary findings from other cases suggest the importance of SUI as a catalyst for Employee Voice, however in this case, Nurses, already seemed to exhibit voice behaviour, the SUI did not impact their degree of assertiveness with others. Some Urologists reported being **more aware** to look at blood results during the ward round. *"Yes, I think we're more aware to look at the blood during the ward round … If there's no blood result written up we check it on the computer. We're more aware of anything missing and in the process we need to*	**Negative** A couple Nurses reported they could no longer **trust** the work of colleagues, and documentation seemed **like a form of defence**. *"I suppose looking at blood results more and stuff, isn't it? I know that's the doctors job, but to cover myself I think I need to check because it's not always… You know, things happen." – Nurse 3* *"So now I can't trust … so now I have to document everything" – Nurse 1* While some Urologists reported making changes, it appears the specialty is **experiencing challenges implementing their RCA recommendations**, perhaps because recommendations are too broad, and beyond the scope of a single department. *"It strikes me that it's a hospital-wide thing. but as far as I know there is no publicised mechanism for ensuring that doctors have written that they've ordered tests. So that's something where I've probably been lacking in dealing with this." –Urologist 1* *"I'm not sure whether they've been implemented or not. I'll be hoping they are and I think the best way forward to know something about this is that we should chase it up at the next meeting, how far have*

prevent any sort of tragedies like that." - Urologist 2	*we gone with this recommendation." – Urologist 3* There were some **criticisms of the RCA root causes**, suggesting other causes of this incident are 1) shortage of junior doctors, 2) pressure to discharge patients quickly, 3) continuity of doctors, and 4) lack of computer devices available on the ward to check results.
Emotional Impact of SUI & RCA Investigation This incident had an affective impact on Nursing staff who were generally angry and upset. The Senior Sister (ward x manager) played a crucial role in supporting staff in recovery from the medical error. *"I spoke to every single person and when there's an incident everyone knows that the nurse is upset." –nurse 2* *"I did find this a very traumatic experience … So whenever it is called a root cause analysis **I felt like the root of the problem and it just is soul destroying** ... I'm just really in a good situation that **I had such a good line manager**. You know, in fact I don't think if I had her I probably wouldn't… I don't know what I would have done. I don't think I'd be here today. I wouldn't have been able to cope without that support." – Nurse 1*	

Table A.5 Interview Guide

Date / Time:	
Name:	
Role:	
Department:	
Employee Group (select one) :	Governance / Front-line
Themes / Questions	
General	
Tell me about your role on the unit? Governance only: please tell me about the size of the department you are responsible for? (eg # beds, patients, staff, budget).	
Incident Analysis	
Are you aware of the MEDICAL ERROR XYZ that occurred on DATE?	
Were you involved in the investigation for this incident? Do you know what the root cause(s) were?	
Recommendations for Improvement	
Do you know what the recommendation(s) for improvement were from this incident?	
Do you know whether the recommendation(s) for improvement been implemented on your unit?	
Are you confident that similar incidents will be prevented? Are you aware of efforts to share this learning beyond the department?	
Specific Practice Change	
As a result of the recommendation(s) how have your work practices changed? Have you had to change some aspect of the way you work (i.e. practice). Describe:	

The event and circumstance The process Outcomes and consequences …how/where did this change occur? (i.e. policy, clinical order set, computer database)	
Has it been easy or difficult for you to add new practices? Has it been easy or difficult for you to remove past/practices? ... what has made it easier / more difficult?	
Culture	
How would you describe the culture on your unit? Show Manchester Patient Safety Framework: Levels of Culture (National Patient Safety Agency, 2006) What role has your unit's culture played in learning from this incident?	
Outside Influences	
Are there any outside influences (i.e. regulators, government) which impact learning and practice on your unit? Do you think more deeply about how you work as a result of learning from this incident? – did it inspire you to challenge the way you do things?	

Table A.6 Initial First Order Codes (198).

Count	Name	Sources	References
1	Professionals' Response to SUI and RCA	42	320
2	Affective Response	22	123
3	Anger	16	39
4	Compassion	17	39
5	Crying (Context)	3	4
6	Guilt	2	9
7	Involving the Soul (Context)	2	4
8	Shame	7	22
9	Stigmatising (Context)	2	6
10	Practical Response	37	197
11	Closer adherence to policy and SOP	14	33
12	Defensive behaviours	8	21
13	Management engendering voice among staff	11	27
14	More assertive to escalate and challenge hierarchy	20	56
15	Setting expectations for voice	15	60
16	Context	43	611
17	Catalysts for Change	0	0
18	Employee Health & Safety Concern	3	5
19	Management Support	7	10
20	New Classifications (WHO, RCPATH)	4	8

Count	Name	Sources	References
21	New Knowledge	2	8
22	Own Initiative or Personal Change	7	12
23	Role Change	5	8
24	Specific SUI Investigation	17	29
25	SUIs in General	4	4
26	Team endorsement	4	4
27	The benefits of the change were visible	2	2
28	Upsetting	3	4
29	Continual Change	12	26
30	Culture, Climate, Voice	32	60
31	Proactive	17	23
32	Reactive	13	22
33	SUI Improved the Culture	9	11
34	Supportive	4	4
35	Management related to Safety & Quality	24	87
36	Governance	7	13
37	Hybrid Manager	8	10
38	Leadership	2	2
39	Limited Strategic Thinking	1	1
40	Management Investigation Involvement	4	12
41	Manager with Clinical Background	4	6

Count	Name	Sources	References
42	Obstetrics and Maternity Risk Management	5	9
43	Quality Management	9	12
44	Clinical Governance Meeting	3	4
45	Commission a quality review	1	1
46	Confusion over Governance structure (board to ward)	1	4
47	Dashboard	1	2
48	Forward Accountability	3	4
49	Incident Reporting	8	21
50	Classification of SUI	4	5
51	Incident Reporting Delays	2	2
52	Lack of Follow-up	1	1
53	Real time feedback of incident reports	1	1
54	Never Event	5	5
55	Procedures vs Policies	8	11
56	Punitive	8	11
57	Quality and Safety Committee	3	4
58	Report Writing	1	1
59	Risk Assessment	1	2
60	Risk Register	1	5
61	Safety Comparisons to other industries	6	8

Count	Name	Sources	References
62	Time Pressure	1	1
63	us vs them	6	11
64	RCA Investigations	0	0
65	Critical of RCA recommendations, action plan	9	14
66	Criticisms of RCA process	7	14
67	Development of Recommendations	1	2
68	Disagreement with RCA 'root causes'	7	10
69	giving statements	6	13
70	Goodwill	2	3
71	he said she said	4	7
72	Involved in the process of RCA Investigation	24	48
73	Monitoring Action Plans	4	4
74	Putting an RCA label on it	2	2
75	RCA Templates	1	1
76	SUIs expose weakness in the system	2	2
77	Whistleblowing	1	3
78	Recent Changes at Trust	7	12
79	Risk Management	5	7
80	Strategy	3	3
81	Roles	33	103

Count	Name	Sources	References
82	Assistant	1	1
83	Clinical Director	4	7
84	Clinical Lead	4	9
85	Consultant	3	3
86	Departmental Management	3	4
87	Document Management	1	1
88	Educational Lead	1	2
89	General Manager	1	3
90	Governance	3	4
91	Hybrid Manager	14	18
92	Investigator	1	6
93	Lead Midwife	1	1
94	Matron	3	4
95	Matron of clinical quality and safety	1	1
96	Midwife	2	2
97	Role Change	5	17
98	Safety	4	4
99	Scientist	2	3
100	Senior Sister	6	8
101	Staff Nurse	4	5
102	The Patient	8	17

Count	Name	Sources	References
103	Duty of Candour	3	3
104	Honesty	1	1
105	Litigation Process	2	2
106	Malpractice	1	1
107	Patient as an Invisible Person	1	1
108	Patient Complaints	3	8
109	Patient Consent	1	1
110	The System	9	18
111	Ways to Improve Learning	6	11
112	Access to learning from home, mobile	1	4
113	Audits	1	1
114	Constant Reminders	1	2
115	Getting the Story Across	1	1
116	Incentives	1	1
117	Real time feedback of incident reports	1	1
118	Speed up the learning	1	1
119	What caused the incident	36	145
120	a black hole	1	8
121	Backlog	1	2
122	Cognitive Dissonance	2	4
123	Complexity	10	19

Count	Name	Sources	References
124	Delay	7	8
125	Did not follow policy	2	2
126	directly involved	6	6
127	Discharge Checklist	5	8
128	Failure to recognize deteriorating symptoms	4	4
129	Immediate Action Required	5	5
130	Justification	1	1
131	Lack of Assertiveness	8	9
132	lack of continuity of care	2	2
133	lack of knowledge	2	2
134	lackadaisical , blasé practice	1	1
135	miscommunication	11	17
136	Mismatch between capacity and demand	6	20
137	Neglecting low priority samples	1	3
138	Proactive	1	1
139	Skill mismatch (inappropriate allocation)	9	16
140	Tired	2	3
141	uncooperative	1	1
142	Variability in Practice	1	1
143	Weekend Effect	1	1
144	Wrong Judgement	1	1

Count	Name	Sources	References
145	What Influences Patient Safety	32	144
146	Absenteeism	1	2
147	Accreditation	2	2
148	CCGs	2	4
149	Coroner's Inquest	1	2
150	Cost Improvement Programme	1	3
151	CQC	4	4
152	Financial Constraints, Budgeting, Bidding	14	25
153	Immigration	2	11
154	Increasing Workload	7	10
155	Junior Doctors Strike	3	5
156	Lack of Resources, Capacity	10	14
157	Low Morale	3	4
158	NICE (Guidelines)	6	7
159	Pressure to DC patients	2	3
160	Risk Assessments	1	2
161	Royal College of Pathologists	1	2
162	Staffing Shortages	11	20
163	Targets	11	15
164	UKAS	7	9
165	Factors that impede practice change post SUI and RCA	40	179

Count	Name	Sources	References
166	(Management) Stalled Implementation of Recommendations	5	35
167	Blame	4	6
168	Capacity	16	23
169	Complexity	7	9
170	Funding	7	7
171	Gossip	2	3
172	Human Factors	6	10
173	Lacking personal involvement with SUI	1	1
174	New Staff, Changing Staff, Community Staff, Agency Staff	16	31
175	Poor Documentation	4	4
176	RCA Recommendations	7	13
177	Tick Box Exercise	3	3
178	us vs them (Management vs Frontline)	7	13
179	us vs them (Professional Group vs Professional Group)	11	21
180	Factors that support practice change post SUI and RCA	43	372
181	Audits	8	16
182	Checklists	2	4
183	Electronic Communications	16	22
184	Framing SUI in non-threatening way	5	7

Count	Name	Sources	References
185	Learning Curve	5	11
186	Professional Differences	10	18
187	Professional's Proximity to Incident	13	20
188	Reflection	4	5
189	Reviewing policy	4	7
190	Round Table Meeting, Staff Meetings, Team Meetings, Handover Meetings, Governance Meetings	20	38
191	Safety Boards, SUI at a glance, Lesson of the month	14	22
192	Sharing across departments	9	13
193	Sharing with other trusts	8	9
194	Sign-up Sheets for new SOP	4	9
195	The role of experienced staff	8	13
196	The role of the Manager	18	37
197	The role of the team	9	9
198	Training	23	74

References

Abbott, A. (1988). The Claim of Jurisdiction. In *The System of Professions* (pp. 59–85). https://doi.org/10.1037/0735-7044.119.1.78

Allen, D. (1997). The Nursing-medical Boundary: a Negotiated Order? *Sociology of Health and Illness*, *19*(4), 498–520. https://doi.org/10.1111/j.1467-9566.1997.tb00415.x

Allen, D. (2004). Re-reading Nursing and Re-writing Practice: Towards an Empirically Based Reformulation of the Nursing Mandate. *Nursing Inquiry*. https://doi.org/10.1111/j.1440-1800.2004.00234.x

Allen, S. (2004, May 26). With Work, Dana-Farber Learns from ’94 Mistakes. Retrieved May 26, 2017, from http://archive.boston.com/news/local/articles/2004/11/30/with_work_dana_farber_learns_from_94_mistakes/

Altman, L. (1995). Big Doses of Chemotherapy Drug Killed patient, Hurt 2nd. Retrieved May 26, 2017, from http://www.nytimes.com/1995/03/24/us/big-doses-of-chemotherapy-drug-killed-patient-hurt-2d.html?pagewanted=all

Alvesson, M., & Skoldberg, K. (2009). positivism, social constructionism, critical realism: Three reference points in the philosophy of science. *Reflexive methodology: New vistas for qualitative research*, 15-52.

Anderson, C., & Galinsky, A. (2006). Power, Optimism, and Risk-taking. *European Journal of Social Psychology*, *16*, 511–536.

Anonymous. (2000). Looking Back. *British Medical Journal*, *320*(7237), 812.

Anspach, R. R. (1993). *Deciding Who Lives : Fateful Choices in the Intensive-care Nursery*. Berkeley: University of California Press. Retrieved from http://www.worldcat.org/title/deciding-who-lives-fateful-choices-in-the-intensive-care-nursery/oclc/38340520&referer=brief_results

Apesoa-Varano, E. C., & Varano, C. S. (2014). *Conflicted Health Care: Professionalism and Caring in an Urban Hospital*. Nashville, Tennessee: Vanderbilt University Press.

Ashford, S. J., Rothbard, N. P., Piderit, S. K., & Dutton, J. E. (1998). Out on a Limb: The Role of Context and Impression Management in Selling Gender-Equity Issues. *Administrative Science Quarterly*, *43*(1), 23.

https://doi.org/10.2307/2393590

Ashford, S. J., Sutcliffe, K. M., & Christianson, M. K. (2009). Speaking Up and Speaking Out: The Leadership Dynamics of Voice in Organizations. In *Voice and silence in organizations* (pp. 175–201). https://doi.org/10.1016/S0376-7361(09)70018-4

Ashforth, B. E., & Humphrey, R. H. (1995). Emotion in the Workplace: A Reappraisal. *Human Relations*, *48*(2), 97–125. https://doi.org/10.1177/001872679504800201

Astley, W. G., & Sachdeva, P. S. (1984). Structural Sources of Intraorganizational Power: A Theoretical Synthesis. *Academy of Management Review*, *9*(1), 104–113. https://doi.org/10.5465/AMR.1984.4278071

Athanassiades, J. C. (1973). The Distortion of Upward Communication in Hierarchical Organizations. *Academy of Management Journal*, *16*, 207–226.

Ayd, M. (2004). A Remedy of Errors. *Hopkins Medicine*. Retrieved from http://esgweb1.nts.jhu.edu/hmn/S04/feature1.cfm

Baker, R. (2001). Healthcare Managers in the Complex World of Healthcare. *Frontiers of Health Services Management*, *18*(2).

Baker, R., Norton, P. G., Flintoft, V., Blais, R., Brown, A., Cox, J., … Tamblyn, R. (2004). The Canadian Adverse Events Study: The Incidence of Adverse Events among Hospital Patients in Canada. *CMAJ : Canadian Medical Association Journal = Journal de l'Association Medicale Canadienne*, *170*(11), 1678–1686. https://doi.org/10.1503/cmaj.1040498

Banerjee, A. V, & Somanathan, R. (2001). A Simple Model of Voice. *Quarterly Journal of Economics*, *116*(1), 189–227. https://doi.org/10.1162/003355301556383

Barsade, S. G., Brief, A. P., & Spataro, S. E. (2003). The Affective Revolution in Organizational Behavior: The Emergence of a Paradigm. In J. Greenberg (Ed.), *Organizational Behavior: The State of the Science* (Vol. 2, pp. 3–52). Retrieved from http://library.ecce.me/09051603.pdf

Barsade, S. G., & Knight, A. P. (2015). Group Affect. *The Annual Review of Organizational Psychology and Organizational Behavior*, *2*(2), 21–46. https://doi.org/10.1177/0963721412438352

Baumeister RF, Bratslavsky E, Finkenauer C, et al. (2001). Bad is stronger than good. *Rev Gen Psychol*; 5:323–70.

Bell, S. K., Moorman, D. W., & Delbanco, T. (2010). Improving the Patient, Family, and Clinician Experience after Harmful Events: The “When Things go Wrong” Curriculum. *Academic Medicine*, *85*(6), 1010–1017. https://doi.org/10.1097/ACM.0b013e3181dbedd7

Berdahl, J. L., & Martorana, P. (2006). Effects of Power on Emotion and Expression During a Controversial Group Discussion. In *European Journal of Social Psychology* (Vol. 36, pp. 497–509). https://doi.org/10.1002/ejsp.354

Berlinger, N. (2005). *After Harm: Medical Error and the Ethics of Forgiveness*. Johns Hopkins University Press.

Bewtra, C. (2002). Uses of Error: Learning Experiences. *Lancet*, *35*(9300), 22.

Bleakley, A. (2014). *Patient-Centred Medicine in Transition: The Heart of the Matter* (Vol. 3). Springer Science & Business Media.

Bleakley, A., Allard, J., & Hobbs, A. (2013). ‘Achieving ensemble’: Communication in orthopaedic surgical teams and the development of situation awareness—An observational study using live videotaped examples. *Advances in Health Sciences Education: Theory and Practice*, 18 ,33–56.

Bosk, C. (1986). Professional Responsibility and Medical Error. *Applications of Social Science to Clinical Medicine and Health Policy*, 460–477.

Brennan, T. A., Leape, L. L., Laird, N. M., Hebert, L., Localio, A. R., Lawthers, A. G., … Hiatt, H. H. (1991). Incidence of Adverse Events and Negligence in Hospitalized Patients. *New England Journal of Medicine*, *324*(6), 370–376. https://doi.org/10.1056/NEJM199102073240604

Brink, S. (1995). Tragedy at Dana-Farber. *U.S. News & World Report*, p. 53.

Brinsfield, C. T., Edwards, M. S., & Greenberg, J. (2009). Voice and Silence in Organizations: Historical Review and Current Conceptualizations. In *Voice and Silence in Organizations* (pp. 3–33). Bingley, UK: Emerald.

Brint, S. (2015). Professional Responsibility in an Age of Experts and large Organizations Causing Problems. In D. E. Mitchell & R. . Ream (Eds.), *Professional responsibility: The Fundamental Issue in Education and Health*

Reform (pp. 89–112). Switzerland: Springer International Publishing.

Butler, P. (2002). The Bristol Royal Infirmary Inquiry: The Issue Explained. Retrieved May 31, 2017, from https://www.theguardian.com/society/2002/jan/17/5

Campbell, D. (2013). Mid Staffs Hospital Scandal: the Essential Guide. Retrieved May 31, 2017, from https://www.theguardian.com/society/2013/feb/06/mid-staffs-hospital-scandal-guide#108

Carr-Saunders, A. M., & Wilson, P. A. (1933). *The Professions*. *Daedalus* (Vol. 92). Oxford: Clarendon Press.

Carroll, J. (1998). Organizational Learning Activities in High Hazard Industries: The Logics Underlying Self-Analysis. *Journal of Management Studies*, *35*, 699–717.

Carroll, J., Rudolph, J., & Hatakenaka, S. (2002). Lessons Learned from Non-medical Industries: Root Cause Analysis as Culture Change at a Chemical plant. *Quality & Safety in Health Care*, *11*, 266–269.

Catino, M., & Patriotta, G. (2013). Learning from Errors: Cognition, Emotions and Safety Culture in the Italian Air Force. *Organization Studies*, *34*(4), 437–467. https://doi.org/10.1177/0170840612467156

Chell, E. (2004). Critical Incident Technique. In C. Cassel & G. Symon (Eds.), *Essential Guide to Quantitative Methods in Organizational Research* (pp. 45–60). London: Sage.

Clark, K. B., & Wheelwright, S. C. (1995). Leading Product Development. *New York*.

Conway, J., & Weingart, S. (2005). Organizational Change in the Face of Highly Public Errors –I. The Dana-Farber Cancer Institute Experience. *Perspectives on Safety*. Retrieved from https://psnet.ahrq.gov/perspectives/perspective/3/organizational-change-in-the-face-of-highly-public-errori-the-dana-farber-cancer-institute-experience

Coombs, M. (2003). Power and Conflict in Intensive Care Clinical Decision Making. *Intensive and Critical Care Nursing*. https://doi.org/10.1016/S0964-3397(03)00040-5

Cosby, K. S., & Croskerry, P. (2004). Profiles in Patient Safety: Authority Gradients in Medical Error. *Academic Emergency Medicine*. https://doi.org/10.1197/j.aem.2004.07.005

Crane, M. (2001). Who Caused This Tragic Medication Mistake? *Medical Economics*, *78*(19), 49–63.

Croskerry, P., Abbass, A., & Wu, A. W. (2010). Emotional Influences in Patient Safety. *Journal of Patient Safety*, *6*(4), 199–205. https://doi.org/10.1097/PTS.0b013e3181f6c01a

Cunliffe, A. L., & Eriksen, M. (2011). Relational Leadership. *Human Relations*, *64*(11), 1425–1449. https://doi.org/10.1177/0018726711418388

Currie, G., Burgess, N., White, L., Lockett, A., Gladman, J., & Waring, J. (2014). A Qualitative Study of the Knowledge-brokering Role of Middle-level Managers in Service Innovation: Managing the Translation Gap in Patient Safety for Older Persons' Care. *Health Services and Delivery Research*, *2*(32), 1–118. https://doi.org/10.3310/hsdr02320

Department of Health. (2000). *An Organisation with a Memory - Report of an Expert Group on Learning from Adverse Events in the NHS*. *Stationary Office* (Vol. 2). London. https://doi.org/10.7861/clinmedicine.2-5-452

Department of Health. (2001). Building a Safer NHS for patients: Implementing an Organisation with a Memory. Retrieved May 31, 2017, from http://webarchive.nationalarchives.gov.uk/20130107105354/http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/PublicationsPolicyAndGuidance/Browsable/DH_4916275

Department of Veteran Affairs. (2008). *VHA National Patient Safety Improvement Handbook*. Washington, D.C.

Detert, J. R., & Burris, E. R. (2007). Leadership Behavior and Employee Voice: Is the Door Really Open? *Academy of Management Journal*, *50*(4), 869–884. https://doi.org/10.5465/AMJ.2007.26279183

Detert, J. R., & Edmondson, A. C. (2011). Implicit Voice Theories: Taken-for-granted Rules of Self-censorship at Work. *Academy of Management Journal*, *54*(3), 461–488. https://doi.org/10.5465/AMJ.2011.61967925

Detert, J. R., & Treviño, L. K. (2010). Speaking Up to Higher-Ups: How Supervisors and Skip-Level Leaders Influence Employee Voice. *Organization Science*, *21*(1), 249–270. https://doi.org/10.1287/orsc.1080.0405

Dewey, J. (1980). The Need for a Recovery of Philosophy. In J. A. Boydston (Ed.),***Middle Works 10.*** Carbondale & Edwardsville: Southern Illinois University Press.

Dewey, J. (1981). Experience and Nature. In J. A. Boydston (Ed.), ***Later Works 1.***Carbondale and Edwardsville: Southern Illinois University Press.

Dewey, J. (1987). Art as Experience. In J. A. Boydston (Ed.), ***Later Works 10.***Carbondale and Edwardsville: Southern Illinois University Press.

Dewey, J. (1988). Experience and Education. In J. A. Boydston (Ed.), ***Later Works13.*** Carbondale and Edwardsville: Southern Illinois University Press.

Domhoff, W. (1998). *Who Rules America*. Mountain View, CA: Mayfield Publishing.

Dougherty, D. (1992). Interpretive Barriers to Successful Product Innovation in Large Firms. *Organization Science*, *3*(2), 179–202. https://doi.org/10.1287/orsc.3.2.179

Dreyfus, H. (1995). *Being-in-the-world: A Commentary on Heidegger's Being and Time*. Cambridge, MA: MIT Press.

Dyer, C. (2001). There's No Incentive to Admit Error, Only to Cover Up. Retrieved May 31, 2017, from https://www.theguardian.com/society/2001/jul/24/1

Edmondson, A. C. (1996). Learning from Mistakes Easier Said than Done: Group and Organizational Influences on the Detection and Correction of Human Error. *Journal of Applied Behavioral Science*.

Edmondson, A. C. (1999). Psychological Safety and Learning Behavior in Work Teams. *Administrative Science Quarterly*, *44*(2), 350. https://doi.org/10.2307/2666999

Edmondson, A. C. (2003). Speaking Up in the Operating Room: How Team Leaders Promote Learning in Interdisciplinary Action Teams. *Journal of Management Studies*, *40*(6), 1419–1452. https://doi.org/10.1111/1467-6486.00386

Edwards, M. S., & Greenberg, J. (2009). Sounding Off on Voice and Silence. In J. Greenberg & M. S. Edwards (Eds.), *Voice and Silence in Organizations* (pp. 275–291). Bingley, UK: Emerald.

Eisenhardt, K. (1989). Building Theories from Case Study Research. *Academy of*

Management Review, *14*(4), 532–550. https://doi.org/10.2307/258557

Eisenhardt, K. M., & Graebner, M. E. (2007). Theory Building from Cases: Opportunities and Challenges. *The Academy of Management Journal*, *50*(1), 25–32. https://doi.org/10.2307/20159839

Elfenbein, H. A. (2007). Emotion in Organizations: a Review and Theoretical Integration. *Academy of Management Annals*, (1), 315–386.

Emerson, R. M. (1962). Power Dependence Relations. *American Sociological Review*, *27(1)*(1), 31–40. https://doi.org/10.2307/2089716

Finn, R. (2008). The Language of Teamwork: Reproducing Professional Divisions in the Operating Theatre. *Human Relations*, *61*(1), 103–130. https://doi.org/10.1177/0018726707085947

Fiske, S. T. (1993). Controlling other People: The Impact of Power on Stereotyping. *The American Psychologist*, *48*(6), 621–628. https://doi.org/10.1037/0003-066X.48.6.621

Fox, R. (1979). *Essays in Medical Sociology: Journeys into the Field*. New York: Wiley.

Francis, R. Q. (2013). *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry*. London: The Stationery Office. Retrieved from http://webarchive.nationalarchives.gov.uk/20150407084003/http://www.midstaffspublicinquiry.com/report

Francis, R. Q. (2015). Freedom to Speak Up: an Independent Review into Creating an Open and Honest Reporting Culture in the NHS. Retrieved June 21, 2017, from http://webarchive.nationalarchives.gov.uk/20150218150343/http://freedomtospeakup.org.uk/the-report/

Freidson, E. (1970). Dominant Professions, Bureaucracy, and Client Services. *Organizations and Clients*, *74*.

Freidson, E. (1974). *Professional Dominance: The Social Structure of Medical Care*. Transaction Publishers. Retrieved from https://books.google.co.uk/books?id=yl6DMv0lTNwC&dq=professional+dominance+1970&source=gbs_navlinks_s

Freidson, E. (1988). *Profession of Medicine: A Study of the Sociology of Applied*

Knowledge. Chicago: University of Chicago Press. Retrieved from https://books.google.co.uk/books?id=G7vhOk_bYlsC&printsec=frontcover&dq=the+profession+of+medicine&hl=en&sa=X&ved=0ahUKEwiuhNSw8pXVAhVsIsAKHUjqDA8Q6AEIKDAA#v=onepage&q=the profession of medicine&f=false

French, J., & Raven, B. (1959). The Bases of Social Power. In D. Cartwright (Ed.), *Studies in Social Power* (pp. 150–167). Ann Arbor, MI: Institute for Social Research.

Galinsky, A. D., Gruenfeld, D. H., & Magee, J. C. (2003). From Power to Action. *Journal of Personality and Social Psychology*, *85*(3), 453. https://doi.org/10.1037/0022-3514.85.3.453

Gawande, A. (2007). *A Surgeon's Notes on Performance*. New York: Metropolitan.

Glauser, M. J. (1984). Upward Information Flow in Organizations: Review and Conceptual Analysis. *Human Relations*, *37*(8), 613–643. https://doi.org/10.1177/001872678403700804

Greenberg, J., & Edwards, M. (Eds.). (2009). *Voice and Silence in Organizations* (First Edit). Bingley, UK: Emerald.

Hafferty, F. W. (1988). Cadaver Stories and the Emotional Socialization of Medical Students. *Journal of Health and Social Behavior*, *29*(4), 344–356. https://doi.org/10.2307/2136868

Harrison, R., Lawton, R., & Stewart, K. (2014). Doctors' Experiences of Adverse Events in Secondary Care: the Professional and Personal Impact. *Clinical Medicine*, *14*(6), 585–590.

Harrison, S. (2010). Crash Landing. Why Pilots Can Only Teach us So Much. *Financial Times*, 50.

Hecht, M., & LaFrance, M. (1998). License or Obligation to Smile: the Effects of Power and Sex on Amount and Type of Smiling. *Personality and Social Psychological Bulletin*, *24*, 1332–1342.

Heget, J. R., Bagian, J. P., Lee, C. Z., & Gosbee, J. W. (2002). System Innovation: Veterans Health Administration National Center for Patient Safety. *The Joint Commission Journal on Quality Improvement*, *28*(12), 660–665. https://doi.org/https://doi.org/10.1016/S1070-3241(02)28071-2

Heyhoe, J., Birks, Y., Harrison, R., O'Hara, J. K., Cracknell, A., & Lawton, R. (2016).

The Role of Emotion in Patient Safety: Are we Brave Enough to Scratch Beneath the Surface? *Journal of the Royal Society of Medicine*, *109*(2), 52–58. https://doi.org/10.1177/0141076815620614

Hirschman, A. O. (1970). Exit, Voice and Loyalty Responses to Declines in Firms, Organizations and States. *Harvard University Press.*, 1970.

Hollnagel, E., Woods, D., Leveson, N. (2007). Resilience engineering: concepts and precepts. *Ashgate Publishing Ltd*.

Hollnagel, E. (2013). Making Health Care Resilient: From Safety-I to Safety-II. In E. Hollnagel, J. Braithwaite, & R. Wears (Eds.), *Resilient Healthcare. Vol. 1* (pp. 3–17). Farnham, Surrey: Ashgate.

Hunt, J. (2015). Making Healthcare More Human-centred and not System-centred. Retrieved December 7, 2016, from https://www.gov.uk/government/speeches/making-healthcare-more-human-centred-and-not-system-centred

Huy, Q., Corley, K. G., & Kraatz, M. (2014). From Support To Mutiny: Shifting Legitimacy Judgments and Emotional Reactions Impacting the Implementation of Radical Change. *Academy of Management Journal*, *57*(6), 1650–1680. https://doi.org/10.5465/amj.2012.0074

Iedema, R., Jorm, C., & Braithwaite, J. (2008). Managing the Scope and Impact of Root Cause Analysis Recommendations. *Journal of Health Organization and Management*, *22*(6), 569–585. https://doi.org/10.1108/14777260810916551

Iedema, R., Jorm, C., Long, D., Braithwaite, J., Travaglia, J., & Westbrook, M. (2006). Turning the Medical Gaze in Upon Itself: Root Cause Analysis and the Investigation of Clinical Error. *Social Science & Medicine*, *62*(7), 1605–1615. https://doi.org/10.1016/J.SOCSCIMED.2005.08.049

Iedema, R., Jorm, C., & Lum, M. (2009). Affect is Central to Patient Safety: The Horror Stories of Young Anaesthetists. *Social Science and Medicine*, *69*(12), 1750–1756. https://doi.org/10.1016/j.socscimed.2009.09.043

Incident Analysis Collaborating Parties. (2012). *Canadian Incident Analysis Framework*. Edmonton, AB.

Jacobs, L. A., DiMattio, M. J., Bishop, T. L., & Fields, S. D. (1998). The Baccalaureate Degree in Nursing as an Entry-level Requirement for

Professional Nursing Practice. *Journal of Professional Nursing : Official Journal of the American Association of Colleges of Nursing*, *14*(4), 225–233. https://doi.org/http://dx.doi.org/10.1016/S8755-7223(98)80063-X

Kalb, C. (2006). The Goal is to Communicate. *Newsweek*, *148*(16).

Kelly, J., & Barsade, S. (2001). Mood and Emotions in Small Groups and Work Teams. *Organizational Behavior and Human Decision Processes*, *86*(1), 99–130. https://doi.org/10.1006/obhd.2001.2974

Kelly, N., Blake, S., & Plunkett, A. (2016). Learning from Excellence in Healthcare: A New Approach to Incident Reporting. *Archives of Disease in Childhood*, *101*(9), 788–791. https://doi.org/10.1136/archdischild-2015-310021

Keltner, D., Gruenfeld, D. H., & Anderson. (2003). Power Approach and Inhibition. *Psychological Review*, *110*(2), 265–284. https://doi.org/http://dx.doi.org/10.1037/0033-295X.110.2.265

Kemppainen, J. K. (2000). The Critical Incident Technique and Nursing Care Quality Research. *Journal of Advanced Nursing*, *32*(5), 1264–1271. https://doi.org/10.1046/j.1365-2648.2000.01597.x

Kennedy, I. (2001). Learning from Bristol: The Bristol Royal Infirmary Inquiry. Retrieved from http://webarchive.nationalarchives.gov.uk/20090811143745/http:/www.bristol-inquiry.org.uk/final_report/the_report.pdf

Ketokivi, M., & Choi, T. (2014). Renaissance of Case Research as a Scientific Method. *Journal of Operations Management*, *32*(5), 232–240. https://doi.org/10.1016/j.jom.2014.03.004

Kish-Gephart, J. J., Detert, J. R., Trevino, L. K., & Edmondson, A. C. (2009). Silenced by fear:. The Nature, Sources, and Consequences of Fear at Work. *Research in Organizational Behavior*. https://doi.org/10.1016/j.riob.2009.07.002

Klein, K. J., Ziegert, J. C., Knight, A. P., & Xiao, Y. (2006). Dynamic Delegation: Shared, Hierarchical, and Deindividualized Leadership in Extreme Action Teams. *Administrative Science Quarterly*, *51*, 590–621. https://doi.org/10.2189/asqu.51.4.590

Kneafsey, R., & Long, A. (2002). Multidisciplinary Rehabilitation Teams: the Nurse's role. *British Journal of Therapy & Rehabilitation*, *9*(1), 24–29.

https://doi.org/10.12968/bjtr.2002.9.1.13595

Kohn, L. T., Corrigan, J. M., & Donaldson, M. S. (2000). *To Err Is Human*. Washington, D.C.: National Academy Press. https://doi.org/10.17226/9728

Landrigan, C. P., Parry, G. J., Bones, C. B., Hackbarth, A. D., Goldmann, D. A., & Sharek, P. J. (2010). Temporal Trends in Rates of Patient Harm Resulting from Medical Care. *New England Journal of Medicine*, *363*(22), 2124–2134. https://doi.org/10.1056/NEJMsa1004404

Landro, L. (2009). A Fight Against Fatal Error. *Wall Street Journal*.

Larson, M. S. (1977). *The Rise of Professionalism : A Sociological Analysis*. University of California Press. Retrieved from https://books.google.co.uk/books/about/The_Rise_of_Professionalism.html?id=0xCO08zrJncC&redir_esc=y

Lawton, R., Taylor, N., Clay-Williams, R., et al. (2014). Positive deviance: a different approach to achieving patient safety. *BMJ Qual Saf*, 23:880–3.

Lazarus, R. (1991). *Emotion & Adaptation*. New York: Oxford University Press.

Lazarus, R. (1993). From Psychological Stress to the Emotions: A History of Changing Outlooks. *Annual Review of Psychology*, (44), 1–21.

Lazarus, R., & Cohen-Charash, Y. (2001). Discrete Emotions in Organizational Life. In R. Payne & C. Cooper (Eds.), *Emotions at Work: Theory, Research and Applications for Management* (pp. 45–81). Chichester: John Wiley & Sons, Ltd. Retrieved from https://books.google.co.nz/books?hl=en&lr=&id=a0azIPHoj6QC&oi=fnd&pg=PA45&dq=Lazarus+%26+Cohen-Charash+(2001)&ots=HANHAQo4AA&sig=nJgp8KZDaUaNfmY_I3DxAe2pFwI#v=onepage&q=Lazarus %26 Cohen-Charash (2001)&f=false

Leape, L. (1994). Error in Medicine. *Journal of the American Medical Association*, *272*(23), 1851–1857.

Leape, L. L. (1994). The Preventability of Medical Injury. In *Human Error in Medicine* (pp. 13–25).

Leape, L., Woods, D., Hatlie, M., Kizer, K., Schroeder, S., & Lundberg, G. (1998). Promoting Patient Safety by Preventing Medical Error. *JAMA*, *280*(16), 1444–1447.

Lee, F., & Tiedens, L. Z. (2001). Who's Being Served? " Self-Serving " Attributions in Social Hierarchies. *Organizational Behavior and Human Decision Processes*, *84*(2), 254–287. https://doi.org/10.1006

Lee, G. L., Diefendorff, J. M., Kim, T. Y., & Bian, L. (2014). Personality and Participative Climate: Antecedents of Distinct Voice Behaviors. *Human Performance*, *27*(1), 25–43. https://doi.org/10.1080/08959285.2013.854363

Leveson, N. G., Allen, P., & Storey, M. A. (2002). The Analysis of a Friendly Fire Accident Using a Systems Model of Accidents. *Proceedings of the 20th International System Safety Conference*, 345–357.

Lindell, M. K., & Brandt, C. J. (2000). Climate Quality and Climate Consensus as Mediators of the Relationship Between Organizational Antecedents and Outcomes. *Journal of Applied Psychology*, *85*(3), 331–348. https://doi.org/10.1037/0021-9010.85.3.331

Liu, W., Song, Z., Li, X., & Liao, Z. (2017). Why and When Leaders' Affective States Influence Employee Upward Voice. *Academy of Management Journal*, *60*(1), 238–263. https://doi.org/10.5465/amj.2013.1082

Makary, M. A., & Daniel, M. (2016). Medical Error The Third Leading Cause of Death in the US. *BMJ (Clinical Research Ed.)*, *353*, i2139. https://doi.org/10.1136/BMJ.I2139

Martin, G. P., Aveling, E.-L., Campbell, A., Tarrant, C., Pronovost, P. J., Mitchell, I., … Dixon-Woods, M. (2018). Making Soft Intelligence Hard: a Multi-site Qualitative Study of Challenges Relating to Voice about Safety Concerns. *BMJ Quality & Safety*, (February), bmjqs-2017-007579. https://doi.org/10.1136/bmjqs-2017-007579

Maynes, T. D., & Podsakoff, P. M. (2014). Speaking More Broadly: An Examination of the Nature, Antecedents, and Consequences of an Expanded Set of Employee Voice Behaviors. *Journal of Applied Psychology*, *99*(1), 87–112. https://doi.org/10.1037/a0034284

Maxfield, D., Grenny, J., McMillan, R., Patterson, K., & Switzler, A. (2005). Silence kills. *Vital Smarts, Crucial Conversations*.

Melia, K. M. (1979). A Sociological Approach to the Analysis of Nursing Work. *Journal of Advanced Nursing*, *4*, 57–67.

Melia, K. M. (1984). Student Nurses' Construction of Occupational Socialisation. *Sociology of Health & Illness*, *6*(2), 132–151. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/10268830

Melia, K. M. (1987). *Learning and Working : the Occupational Socialization of Nurses*. Tavistock. Retrieved from https://books.google.co.uk/books/about/Learning_and_Working.html?id=xGEOAAAAQAAJ&redir_esc=y

Melosh, B. (1989). "Not Merely a Profession." *American Behavioral Scientist*, *32*(6), 668–679. https://doi.org/10.1177/0002764289032006007

Meredith, J. (1998). Building Operations Management Theory through Case and Field Research. *Journal of Operations Management*, *16*(4), 441–454. https://doi.org/10.1016/S0272-6963(98)00023-0

Mesquita, B., & Ellsworth, P. C. (2001). The Role of Culture in Appraisal. In K. Scherer, A. Schorr, & T. Johnston (Eds.), *Appraisal Processes in emotion: Theory, Methods, Research.* (pp. 232–249). https://doi.org/10.1037/0022-3514.73.5.902

Miceli, M. P., Near, J. P., & Dworkin, T. M. (2008). *Whistleblowing in Organizations*. New York: Routledge.

Miles, H., & Huberman, M. (1994). *Qualitative Data Analysis: A Sourcebook*. Beverly Hills, CA: SAGE.

Milliken, F. J., & Morrison, E. W. (2003). Shades of Silence: Emerging Themes and Future Directions for Research on Silence in Organizations. *Journal of Management Studies*, *40*(6), 1563–1568. https://doi.org/10.1111/1467-6486.00391

Milliken, F. J., Morrison, E. W., & Hewlin, P. F. (2003). An Exploratory Study of Employee Silence: Issues that Employees Don't Communicate Upward and Why. *Journal of Management Studies*, *40*(6), 1453–1476. https://doi.org/10.1111/1467-6486.00387

Morath, J. (2010). Dispatches from the Front Line of the Patient Safety Movement. *Health Affairs*, *29*(12), 2350–2352.

Morran, K., Stockton, R., & Bond, L. (1991). Delivery of Positive and Corrective Feedback in Counseling Groups. *Journal of Counseling Psychology*, *38*(4),

410–414. Retrieved from http://psycnet.apa.org/index.cfm?fa=buy.optionToBuy&id=1992-06413-001

Morrison, E. (2011). Employee Voice Behavior: Integration and Directions for Future Research. *The Academy of Management Annals*, *5*(1), 373–412. https://doi.org/10.1080/19416520.2011.574506

Morrison, E., & Milliken, F. (2000). Organizational Silence: A Barrier to Change and Development in a Pluralistic World. *Academy of Management Review*, *25*(4), 706–725. https://doi.org/10.5465/AMR.2000.3707697

Morrison, E., & Rothman, N. B. (2009). Silence and the Dynamics of Power. In J. Greenberg & M. Edwards (Eds.), *Voice and Silence in Organizations* (pp. 111–133).

Morrison, E. W., & Milliken, F. J. (Eds). (2003). Journal of Management Studies. *Special Issue: Speaking Up, Remaining Silent: The Dynamics of Voice and Silence in Organizations*, *40*(6), 1353–1568.

Morrison, E. W., Wheeler-Smith, S. L., & Kamdar, D. (2011). Speaking up in Groups: A Cross-level Study of Group Voice Climate and Voice. *Journal of Applied Psychology*, *96*(1), 183–191. https://doi.org/10.1037/a0020744

National Aeronautics and Space Administration. (2003). *Columbia: Accident Investigation Board*. *October*.

National Patient Safety Agency. (2004). *Seven Steps to Patient Safety The Full Reference Guide*. https://doi.org/Date accessed 30/03/14

National Patient Safety Agency. (2006). Manchester Patient Safety Framework (MaPSaF). Acute. Facilitator guidance. *The University of Manchester. National Patient Safety Agency*, 1–15. Retrieved from http://www.nrls.npsa.nhs.uk/resources/?entryid45=59796

Naumann, S. E., & Bennett, N. (2000). A Case for Procedural Justice Climate: Development and Test of a Multilevel Model. *Academy of Management Journal*, *43*(5), 881–889. https://doi.org/10.2307/1556416

Near, J. P., & Miceli, M. P. (1985). Organizational Dissidence: The Case of Whistle-blowing. *Journal of Business Ethics*, *4*(1), 1–16. https://doi.org/10.1007/BF00382668

Nelson, S., & Gordon, S. (2006). *The Complexities of Care : Nursing Reconsidered*.

ILR Press. Retrieved from https://books.google.co.uk/books/about/The_Complexities_of_Care.html?id=F8wQAQAAMAAJ&redir_esc=y

NHS England. (2015). Revised Never Events Policy and Framework. Retrieved from https://www.england.nhs.uk/patientsafety/wp-content/uploads/sites/32/2015/04/never-evnts-pol-framwrk-apr2.pdf%5Cnhttps://www.england.nhs.uk/patientsafety/never-events/

Nicolini, D. (2013). *Practice Theory, Work, & Organisation: An Introduction*. Oxford: Oxford University Press.

Nicolini, D., Mengis, J., Meacheam, D., Waring, J., & Swan, J. (2016). Recovering the Performative Role of Innovations in the Global Travel of Healthcare Practices. In *Mobilizing Knowledge in Healthcare* (pp. 19–35). Oxford: University Press. https://doi.org/10.1093/acprof:oso/9780198738237.003.0009

Nicolini, D., Waring, J., & Mengis, J. (2011). Policy and Practice in the use of Root Cause Analysis to Investigate Clinical Adverse Events: Mind the Gap. *Social Science & Medicine*, *73*(2), 217–225. https://doi.org/10.1016/j.socscimed.2011.05.010

NTSB. (1979). Aircraft Accident Report United Airlines. Retrieved May 22, 2017, from https://www.ntsb.gov/investigations/AccidentReports/Reports/AAR7907.pdf

Nursing & Midwifery Council. (2015). Professional Duty of Candour. Retrieved December 7, 2016, from https://www.nmc.org.uk/standards/guidance/the-professional-duty-of-candour/

Okuyama, A., Wagner, C., & Bijnen, B. (2014). Speaking up for Patient Safety by Hospital-based Health Care Professionals: A Literature Review. *BMC Health Services Research*, *14*(1), 61. https://doi.org/10.1186/1472-6963-14-61

Ostroff, C., Kinicki, J., & Tamkins, M. (2003). Organizational Culture and Climate. In W. Borman, D. Ilgen, & R. Klimoski (Eds.), *Handbook of Psychology: Industrial and Organizational Psychology* (pp. 565–593). New York: Wiley.

Parse, R. (1981). *Man-living-health: A Theory of Nursing*. New York: Wiley.

Parsons, T. (1951). *The Social System*. Glencoe, IL: Free Press.

Patterson, M. G., West, M. A., Shackleton, V. J., Dawson, J. F., Lawthom, R.,

Maitlis, S., … Wallace, A. M. (2005). Validating the Organizational Climate Measure: Links to Managerial Practices, Productivity and Innovation. *Journal of Organizational Behavior*, *26*(4), 379–408. https://doi.org/10.1002/job.312

Patton, M. Q. (2015). *Qualitative research and evaluation methods.* Thousand Oaks, Calif.: Sage Publications.

Peerally, M. F., Carr, S., Waring, J., & Dixon-Woods, M. (2016). The Problem with Root Cause Analysis. *BMJ Quality & Safety*, (June), bmjqs-2016-005511. https://doi.org/10.1136/bmjqs-2016-005511

Peirce, E., Smolinski, C. a., & Rosen, B. (1998). Why Sexual Harassment Complaints Fall on Deaf Ears. *Academy of Management Perspectives*, *12*(3), 41–54. https://doi.org/10.5465/AME.1998.1109049

Pinder, C. C., & Harlos, K. P. (2001). Employee Silence: Quiescence and Acquiescence as Responses to Perceived Injustice. *Research in Personnel and Human Resources Management*, *20*, 331–369. https://doi.org/10.1016/S0742-7301(01)20007-3

Porter, S. (1995). *Nursing's Relationship with Medicine : a Critical Realist Ethnography*. Aldershot; Brookfield USA: Avebury. Retrieved from http://www.worldcat.org/title/nursings-relationship-with-medicine-a-critical-realist-ethnography/oclc/34413262

Prasad, R., & Butler, P. (2002). Timeline: Bristol Royal Infirmary Inquiry. Retrieved May 31, 2017, from https://www.theguardian.com/society/2002/jan/17/7

Pratt, M. (2009). From the Editors: The Lack of a Boilerplate: Tips on Writing Up (and Rewriting) Qualitative Research. *Academy of Management Journal*, *52*(5), 856–862. https://doi.org/10.5465/AMJ.2009.44632557

Pronovost, P. J. (2010). Learning Accountability for Patient Outcomes. *JAMA*, *304*(2), 204. https://doi.org/10.1001/jama.2010.979

Rapley, T. (2001). The Art(fullness) of Open-ended Interviewing: some Considerations on Analysing Interviews. *Qualitative Research*, *1*(3), 303–323.

Reason, J. (1993). The Human Factor in Medical Accidents. In C. Vincent, M. Ennis, & R. Audley (Eds.), *Medical Accidents* (pp. 1–16). Oxford: Oxford University Press.

Reason, J. (2000). Human Error: Models and Management. *British Medical Journal*,

320, 768–770.

Reason, J. T., Carthey, J., & De Leval, M. R. (2001). Diagnosing “vulnerable system syndrome”: an essential prerequisite to effective risk management. BMJ Quality & Safety, 10(suppl 2), ii21-ii25.

Richmond, J. (2018). Unlearning and Patient Safety. In A. McDermott, M. Kitchener, & M. Exworthy (Eds.), *Managing Improvement in Healthcare: Attaining, Sustaining, and Spreading Quality* (pp. 117–134). Cham, Switzerland: Palgrave Macmillan.

Roberts, K. H., & O’Reilly, C. A. (1974). Failures in Upward Communication in Organizations: Three Possible Culprits. *Academy of Management Journal*, *17*(2), 205–215. https://doi.org/10.2307/254974

Rodwin, M. A. (1993). *Medicine, Money, and Morals: Physicians’ Conflicts of Interests*. New York: Oxford University Press.

Rodwin, M. A. (2011). *Conflicts of Interest and the Future of Medicine: The United States, France, and Japan*. New York: Oxford University Press.

Rosen, S., & Tesser, A. (1970). On Reluctance to Communicate Undesirable Information: The MUM Effect. *Sociometry*, *33*(3), 253. https://doi.org/10.2307/2786156

Rozin, P., & Royzman, E. (2001). Negativity bias, negativity dominance, and contagion. *Pers Soc Psychol Rev*, 5:296–320.

Rushmer, R., & Davies, H. T. O. (2004). Unlearning in health care. *Quality and Safety in Health Care*, *13*(suppl_2), ii10-ii15. https://doi.org/10.1136/qshc.2003.009506

Salancik, G. R., & Pfeffer, J. (1977). Who Gets Power-And How They Hold on to It: A Strategic-Contingency Model of Power. *Organizational Dynamics*, *5*(3), 3–21. https://doi.org/10.1016/0090-2616(77)90028-6

Sandberg, J., & Tsoukas, H. (2011). Grasping the Logic of Practice: Theorizing through Practical Rationality. *Academy of Management Review*, *36*(2), 338–360. https://doi.org/10.5465/AMR.2011.59330942

Savage, J. (1995). *Nursing Intimacy : an Ethnographic Approach to Nurse-patient Interaction*. London: Scutari. Retrieved from http://www.worldcat.org/title/nursing-intimacy-an-ethnographic-approach-to-

nurse-patient-interaction/oclc/909621633&referer=brief_results

Sbaih, L. C. (2002). Meanings of Immediate: the Practical Use of the Patient's Charter in the Accident and Emergency Department. *Social Science & Medicine*, *54*(9), 1345–1355. https://doi.org/10.1016/S0277-9536(01)00100-9

Schneider, B., Ehrhart, M. G., & Macey, W. H. (2013). Organizational Climate and Culture. *Annual Review of Psychology*, *64*(1), 361–388. https://doi.org/10.1146/annurev-psych-113011-143809

Schneider, B., Ehrhart, M., & Macey, W. (2011). Perspectives on Organizational Climate and Culture. In S. Zedeck (Ed.), *APA Handbook of Industrial and Organizational Psychology: Vol. 1. Building and Developing the Organization* (pp. 373–414). Washington, DC: Am. Psychol. Assoc.

Schneider, B., & Reichers, A. E. (1983). On the Etiology of Climates. *Personnel Psychology*, *36*(1934), 19–39. https://doi.org/10.1111/j.1744-6570.1983.tb00500.x

Scott, S. D., Hirschinger, L. E., Cox, K. R., McCoig, M., Brandt, J., & Hall, L. W. (2009a). The Natural History of Recovery for the Healthcare Provider "Second Victim" After Adverse Patient Events. *Quality and Safety in Health Care*, *18*(5), 325–330. https://doi.org/10.1136/qshc.2009.032870

Scott, S. D., Hirschinger, L. E., Cox, K. R., McCoig, M., Brandt, J., & Hall, L. W. (2009b). The Natural History of Recovery for the Healthcare Provider "Second Victim" After Adverse Patient Events. *Quality and Safety in Health Care*, *18*(5), 325–330. https://doi.org/10.1136/qshc.2009.032870

Senot, C., Chandrasekaran, A., & Ward, P. T. (2016). Collaboration Between Service Professionals During the Delivery of Health Care: Evidence from a Multiple-case Study in U.S. hospitals. *Journal of Operations Management*, *42–43*, 67–79. https://doi.org/10.1016/j.jom.2016.03.004

Serou, N., Sahota, L., Husband, A. K., Forrest, S. P., Moorthy, K., Vincent, C., … Slight, S. P. (2017). Systematic Review of Psychological, Emotional and Behavioural Impacts of Surgical Incidents on Operating Theatre Staff. *BJS Open*, 106–113. https://doi.org/10.1002/bjs5.21

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2010). Coping with Medical Error: A Systematic Review of Papers to Assess the Effects of Involvement in Medical Errors on Healthcare Professionals' Psychological Well-being. *Quality*

& Safety in Health Care, *19*(6), e43. https://doi.org/10.1136/qshc.2009.035253

Snook, S. (2002). *Friendly Fire: The Accidental Shootdown of US Black Hawks over Northern Iraq* (New Ed edi). Princeton, NJ: Princeton University Press.

Sommer, K. L., Williams, K. D., Ciarocco, N. J., & Baumeister, R. F. (2001). When Silence Speaks Louder than Words: Explorations into the Intrapsychic and Interpersonal Consequences of Social Ostracism. *Basic and Applied Social Psychology*, *23*(4), 225–243. https://doi.org/10.1207/153248301753225694

Stamper, C. L., & Van Dyne, L. (2001). Work Status and Organizational Citizenship Behavior: A Field Study of Restaurant Employees. *Journal of Organizational Behavior*, *22*(5), 517–536. https://doi.org/10.1002/job.100

Starr, P. (1982). *The Social Transformation of American Medicine*. New York: Basic Books.

Steele, C. M., & Aronson, J. (1995). Stereotype Threat and the Intellectual Test Performance of African Americans. *Journal of Personality and Social Psychology*, *69*(5), 797–811. https://doi.org/10.1037/0022-3514.69.5.797

Stelfox, H. T., Palmisani, S., Scurlock, C., Orav, E. J., & Bates, D. W. (2006). The “To Err is Human” Report and the Patient Safety Literature, *15*(3). https://doi.org/10.1136/qshc.2006.017947

Strauss, A. L., Fagerhaugh, S., & Suczet, B. (1985). *Social Organisation of Medical Work*. Chicago: University of Chicago Press.

Strauss, A. L., Schatzman, L., Bucher, R., Erlich, D., & Sashin, M. (1963). The Hospital and its Negotiated Order. In *The hospital in modern society* (pp. 147–169).

Sundstrom, E., De Meuse, K. P., & Futrell, D. (1990). Work Teams: Applications and Effectiveness. *American Psychologist*, *45*(2), 120–133. https://doi.org/10.1037/0003-066X.45.2.120

Tarrant, C., Leslie, M., Bion, J., & Dixon-Woods, M. (2017). A Qualitative Study of Speaking Out about Patient Safety Concerns in Intensive Care Units. *Social Science & Medicine*, *193*, 8–15. https://doi.org/10.1016/j.socscimed.2017.09.036

Thiels, C. A., Lal, T. M., Nienow, J. M., Pasupathy, K. S., Blocker, R. C., Aho, J. M., … Bingener, J. (2015). Surgical Never Events and Contributing Human

Factors. *Surgery (United States)*, *158*(2), 515–521. https://doi.org/10.1016/j.surg.2015.03.053

Thompson, R. F., & Spencer, W. A. (1966). Habituation: a model phenomenon for the study of neuronal substrates of behavior. Psychological review, 73(1), 16.

Toft, B., & Reynolds, S. (1997). Disasters as System Failures. In *Learning from Disasters: a management approach* (pp. 13–26).

Tucker, A. L., & Edmondson, A. C. (2003). Why Hospitals Don't Learn from Failures: Organizational and Psycholoigcal Dynamics that Inhibit System Change. *California Management Review*, *45*(2).

Van Dyne, L., Ang, S., & Botero, I. C. (2003). Conceptualizing Employee Silence and Employee Voice as Multidimensional Constructs. *Journal of Management Studies*, *40*(6), 1359–1392. https://doi.org/10.1111/1467-6486.00384

Van Dyne, L., & LePine, J. A. (1998). Helping and Voice Extra-role Behaviors: Evidence of Construct and Predictive Validity. *Academy of Management Journal*, *41*(1), 108–119. https://doi.org/10.2307/256902

Vashdi, D. R., Bamberger, P. A., & Erez, M. (2013). Can Surgical Teams Ever Learn? the Role of Coordination, Complexity, and Transitivity in Action Team Learning. *Academy of Management Journal*, *56*(4), 945–971. https://doi.org/10.5465/amj.2010.0501

Vaughan, D. (1999). The Dark Side of Organizations: Mistake, Misconduct, and Disaster. *Annual Review of Sociology*, *25*(271).

Vince, R. (2001). Power and emotion in organizational learning. *Human Relations*, *54*(10), 1325-1351.

Vincent, C. (2000). Reducing Error in Medicine. In *Presentation at BMJ Conference*. London.

Vincent, C. (2003). Understanding and Responding to Adverse Events. *The New England Journal of Medicine*, *348*(11). Retrieved from http://www.marylandpatientsafety.org/html/collaboratives/perinatal/workshop_jan_25_2007/presentations/jeniferfaheychartreviewhandout.pdf

Vincent, C. (2010). *Patient Safety* (2nd editio). West Sussex: BMJ Publishing Group. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/9781444323856.ch12/summary

Vincent, C., & Amalberti, R. (2016). *Safer Healthcare: Strategies for the Real World*. Cham, Switzerland: Springer Open. https://doi.org/10.1007/978-3-319-25559-0

Voss, C., Johnson, M., & Godsell, J. (2016). Case Research in Operations Management. In C. Karlsson (Ed.), *Research Methods for Operations Management* (pp. 165–197). Abingdon: Routledge.

Waring, J. (2005). Beyond Blame: Cultural Barriers to Medical Incident Reporting. *Social Science & Medicine*, *60*, 1927–1935.

Waring, J. (2013). What Safety-II Might Learn from the Socio-cultural Critique of Safety-I. In E. Hollnagel, J. Braithwaite, & R. Wears (Eds.), *Resilient Healthcare. Vol. 1* (pp. 39–48). Farnham, Surrey: Ashgate.

Waring, J., & Bishop, S. (2010). “Water cooler” Learning. *Journal of Health Organization and Management*, *24*(4), 325–342. https://doi.org/10.1108/14777261011064968

Waring, J., & Currie, G. (2009). Managing Expert Knowledge: Organizational Challenges and Managerial Futures for the UK Medical Profession. *Organization Studies*, *30*(7), 755–778. https://doi.org/10.1177/0170840609104819

Waring, J., & Currie, G. (2011). The Politics of Learning: The Dilemma for Patient Safety. In E. Rowley & J. Waring (Eds.), *A Socio-cultural Perspective on Patient Safety* (pp. 133–150). Farnham: Ashgate.

Waring, J., Harrison, S., & McDonald, R. (2007). A Culture of Safety or Coping? Ritualistic Behaviours in the Operating Theatres. *Journal of Health Services Research and Policy*, *12*(1), 3–9.

Watson J. (1988). Nursing: Human Science and Human Care. A Theory of Nursing. *National League for Nursing Publications*, *15*(2236), 1–111.

Weick, K. E., & Sutcliffe, K. M. (2003). Hospitals as Cultures of Entrapment: A Re-analysis of the Bristol Royal Infirmary. *California Management Review*, *45*(2), 73–84. https://doi.org/10.2146/news110053

Weiss, M., Kolbe, M., Grote, G., Spahn, D. R., & Grande, B. (2016). Why Didn’t you Say Something? Effects of After-event Reviews on Voice Behaviour and Hierarchy Beliefs in Multi-professional Action Teams. *European Journal of Work and Organizational Psychology*, *26*(1), 66–80.

https://doi.org/10.1080/1359432X.2016.1208652

West, C. P., Huschka, M. M., Novotny, P. J., Sloan, J. A., Kolars, J. C., Habermann, T. M., & Shanafelt, T. D. (2016). Association of Perceived Medical Errors A Prospective Longitudinal Study. *JAMA*, *296*(9), 1071–1078. https://doi.org/10.1001/jama.296.9.1071

Wicks, D. (1998). *Nurses and Doctors at Work : Rethinking Professional Boundaries*. Buckingham; Philadelphia PA: Open University Press. Retrieved from http://www.worldcat.org/title/nurses-and-doctors-at-work-rethinking-professional-boundaries/oclc/439239414&referer=brief_results

Williams, K. D. (2007). Ostracism. *Annual Review of Psychology*, *58*(1), 425–452. https://doi.org/10.1146/annurev.psych.58.110405.085641

Williams, K. D., Shore, W. J., & Grahe, J. E. (1998). The Silent Treatment: Perceptions of its Behaviors and Associated Feelings. *Group Processes and Intergroup Relations*, *1*(2), 117–141. https://doi.org/10.1177/1368430298012002

Williams, R. G., Silverman, R., Schwind, C., Fortune, J. B., Sutyak, J., Horvath, K. D., … Dunnington, G. L. (2007). Surgeon Information Transfer and Communication: Factors Affecting Quality and Efficiency of Inpatient Care. *Annals of Surgery*, *245*(2), 159–169. https://doi.org/10.1097/01.sla.0000242709.28760.56

Wilson, R. M., Runciman, W. B., Gibberd, R. W., Harrison, B. T., Newby, L., & Hamilton, J. D. (1995). The Quality in Australian Health Care Study. *The Medical Journal of Australia*, *163*(9), 458–471. Retrieved from http://eutils.ncbi.nlm.nih.gov/entrez/eutils/elink.fcgi?dbfrom=pubmed&id=7476634&retmode=ref&cmd=prlinks%5Cnpapers3://publication/uuid/82A70B92-AB8B-4AD2-A44F-F45DC132B93A

Withey, M. J., & Cooper, W. H. (1989). Predicting Exit, Voice, Loyalty, and Neglect. *Administrative Science Quarterly*, *34*(4), 521. https://doi.org/10.2307/2393565

Wolinsky, Howard, & Brune, T. (1994). *The Serpent on the Staff: The Unhealthy Politics of the American Medical Association*. New York: Putnam.

World Health Organization (WHO). (2007). Communication During Patient Hand-Overs. *Patient Safety Solutions*, *1*(3), 1–4.

Wu, A. (2000). Medical Error: The Second Victim. *British Medical Journal*, *320*(7237), 726–727. https://doi.org/10.1136/ewjm.172.6.358

Wu, A., Lipshutz, A. K. M., & Pronovost, P. J. (2008). Effectiveness and Efficiency of Root Cause Analysis in Medicine. *JAMA*, *2992996*(6), 685–687. https://doi.org/10.1001/jama.299.6.685

Wu, A. W., & Steckelberg, R. C. (2012). Medical Error, Incident Investigation and the Second Victim: Doing Better but Feeling Worse? *BMJ Quality & Safety*, *21*(4), 267–270. https://doi.org/10.1136/bmjqs-2011-000605

Yin, R. (1994). *Case Study Research*. Beverly Hills, CA: SAGE Publications.

Zerubavel, E. (1979). *Patterns of Time in Hospital Life*. Chicago: Chicago University Press.