

EARLY WARNING SYSTEMS
AND
THE ORGANISATIONAL DYNAMICS OF STANDARDISATION

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by

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ABSTRACT

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Early warning systems and the organisational dynamics of standardisation

This thesis adopts a combined sociological and health services research approach to examining the implementation of standardised risk assessment tools, ‘early warning systems’, in medical wards. The data collection involved, over a three-year period from 2006 to 2008, ethnographic observations and 37 semi-structured interviews with staff in four UK hospitals that participated in the Health Foundation’s *Safer Patients Initiative*.

Critical illness in hospitalised patients can be a predictable event preceded by observable physiological abnormalities, but research suggests that general wards may experience difficulty in detecting and responding to patient deterioration. As a result, growing numbers of acute hospitals are implementing early warning systems designed to detect and respond to early signs of patient deterioration. These systems involve track-and-trigger and rapid response mechanisms which seek to achieve accountability for standard risk management practices among doctors and nurses.

The study found that accountability in relation to bedside observations was constituted through a combination of hierarchical accountability for fulfilling formal responsibilities, and horizontal accountability which encouraged sensible use of formal rules and responsiveness to calls for help and assistance. Although staff views on early warning systems were very positive, the findings also suggested that these systems may lead to undesirable practice and fail to manage certain aspects of risk. Problems identified with early warning systems included false reassurance, unnecessary alerts and ritualistic compliance, which could create unnecessary work and cause discomfort to patients. Among staff, reciprocal senses of obligation and responsibility helped to manage such problems, but could be obstructed by poor team work. The thesis suggests that focus on the alert system overshadowed accountability for the day-to-day management of early warning systems within teams. Managing the mundane may help both organisations and their staff to prevent and prepare for emergency situations, and reduce the fear of being implicated in poor management of risk.

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LIST OF ABBREVIATIONS

| | |
|---------------|--|
| APACHE | Acute Physiology and Chronic Health Evaluation |
| CCO | Critical Care Outreach |
| CMO | Chief Medical Officer |
| COPD | Chronic obstructive pulmonary disease |
| COREC | Central Office of Research Committees |
| DoH | Department of Health |
| EBM | Evidence-based medicine |
| EWS | Early warning System |
| GMC | General Medical Council |
| HAN | Hospital-at-Night |
| HCA | Healthcare Assistant |
| HMPS | Harvard Medical Practice Study |
| IHI | Institute for Healthcare Improvement |
| IoM | Institute of Medicine |
| ITU | Intensive treatment/therapy unit |
| JHO | Junior House Officer |
| KTE | Knowledge Transfer and Exchange |
| MET | Medical Emergency Team |
| MEWS | Medical Early Warning System |
| NCEPOD | National Confidential Enquiry into Patient Outcome and Death |
| NGO | Non-governmental organisation |
| NHSLA | NHS Litigation Authority |
| NICE | National Institute for Health and Clinical Excellence |
| NISRA | Northern Ireland Statistics and Research Agency |
| NMC | Nursing and Midwifery Council |

| | |
|--------------------|--|
| NPM | New Public Management |
| NPSA | National Patient Safety Agency |
| NVQ | National Vocational Qualification |
| OBS (chart) | Bedside observation chart |
| PART | Patient at Risk |
| RCN | Royal College of Nursing |
| RQIA | Regulation and Quality Improvement Authority |
| SAPS | Simplified Acute Physiology Score |
| SATS | Blood oxygen saturations |
| SBAR | Situation-Background-Assessment-Recommendation |
| SHO | Senior House Officer |
| SPI | Safer Patients Initiative |
| TPR (chart) | Temperature-Pulse-Respirations chart |
| WHO | World Health Organization |

CHAPTER 1: Introduction

1.1 Overview

This thesis is concerned with the ways in which procedural standards, such as those set out in protocols and guidelines, function in healthcare organisations. ‘Procedural standards’ are written instructions that can be used to standardise the conduct of clinical care processes. Unlike design or terminological standards, or performance standards that define the outcomes of the activity, procedural standards are distinctive in providing the means against which the actual performance of tasks can be assessed and made accountable (Timmermans & Berg, 2003). Such standards have become increasingly a feature of healthcare practice and policy following the introduction of clinical governance. A prominent example is the use of written protocols to prevent and manage hospital acquired infections. My interest in this thesis is in procedural standards that are used in an attempt to manage risk to the quality and safety of care in clinical practice. I focus in particular on standards to detect and manage acute patient deterioration in hospitals.

In this thesis I aim to present a theoretically informed perspective on procedural standards that I believe offers fresh and important insights. My approach, which is transdisciplinary, views health services research through a sociological lens, examining why healthcare organisations implement procedural standards and what happens as a result. I suggest that the use of procedural standards has increased because of changes in healthcare governance and regulation, and the associated efforts to educate managers and practitioners about their risk management responsibilities. Empirical research has

not, however, kept up with this development. Research tends to focus on issues of clinical effectiveness and knowledge-transfer, and relatively few studies have examined and theorised how formal responsibilities and expectations created by procedural standards are dealt with in organisations.

I develop this perspective using an ethnographic study of a procedural standard that many acute NHS trusts have adopted: an ‘early warning system’ that seeks to manage risks of patient deterioration. Early warning systems define the key vital signs (e.g. blood pressure, heart rate and respiratory rate) to be managed in patients, and indicate how to detect and act upon abnormalities. Drawing on participant observation in four medical wards and 37 interviews with nurses, doctors, and staff from patient safety and risk management, I seek to describe and conceptualise an organisational process that involves construction, execution and contestation of the procedural standards prescribed by early warning systems to detect and manage the deteriorating patient.

The thesis is based on a study of four acute hospitals that took part in the pilot phase of the Health Foundation’s *Safer Patients Initiative* (SPI). I contributed to the evaluation of this pilot phase as a PhD student, conducting 91 staff interviews, writing 65 000 words of ethnographic field notes, and preparing and co-facilitating 15 focus/feedback groups, in the four study hospitals between April 2006 and July 2008. Thirty-seven of the interviews focused on early warning systems, and drew on an interview schedule which I produced while developing the epistemological and conceptual foundations of my PhD study (Section 5.9). The ethnographic field notes from the evaluation study were single-authored and consisted of my description, analysis, and personal reflection of events I observed in the study areas.

1.2 Broad aims and approach adopted

The broad aims of the thesis are:

- a. To develop a deeper understanding of the functioning of early warning systems by approaching them as a regulatory technique (and not just a clinical intervention) that creates expectations of accountability in organisations.
- b. To offer a theoretically informed analysis of how early warning systems are actioned, how they govern practice in organisations, and what happens as a result of that process.
- c. To draw on the concept of accountability to guide the analysis, and to interpret the empirical data.

To achieve these aims, I begin by reviewing literature on procedural standards, healthcare governance, and early warning systems. I discuss the rationale behind the adoption of procedural standards, and draw on studies of governance and risk to clarify what accountability means in healthcare organisations, and develop a conceptualisation to guide my study. I use this broad focus, and social constructionist theoretical considerations, to develop specific research questions in my empirical study.

Conclusions are drawn both deductively from the underlying theory and conceptualisation, and inductively from the empirical data.

1.3 Outline of the thesis

This thesis has eleven chapters, including this introductory chapter. Chapter 2 explains why I chose to examine procedural standards from an accountability perspective, and

Chapter 3 presents the conceptual framework that will guide the analysis. Chapter 4 summarises the argument and provides a focus for the empirical study.

Chapter 5 gives a detailed description of the methods in this study. I discuss the qualitative, ethnographic methodology, and my epistemological framework that draws on social constructionism. The chapter also provides an account of the analysis of the interview and observational data.

Chapters 6-10 report the findings from the study. Chapter 6 describes the daily work and the nature of risk on the study wards. Chapter 7 examines how early warning systems were set up in the study hospitals, and how accounts were sought and compliance was measured using these systems. Chapter 8 contemplates both internal needs and external influences that provided justification for the implementation of early warning systems. Despite widespread acceptance and recognition of improvements with vital sign monitoring, staff on the wards adjusted early warning systems to suit local risk management needs. Chapter 9 examines how these adjustments were made on the wards, and Chapter 10 reports on the challenges of risk management as a team activity.

Finally, Chapter 11 offers an overview of the research approach and a summary of the findings. I discuss the implications of the research, and reflect on the methods and ethical challenges of my ethnographic study of medical wards. I conclude by discussing the limitations of the study and the need for further research.

CHAPTER 2: Context

2.1 Introduction

In this chapter I examine procedural standards in healthcare organisations, and contemplate the growth in the use of these tools which appears to be related to public sector reform and demands for greater accountability. The concept of accountability will be discussed in detail later, but a brief definition for the purposes of this study is to describe it as '*answerability for one's actions or behaviour*' (Dunn, 2003, p. 61). Generally, standards can be used to define what individuals and organisations are accountable for, and how practice may be assessed and judged (Davies, 2001). The purpose of this chapter is to describe and consider the role of procedural standards in a general movement towards the management of quality and efficiency in healthcare. My interest in the concept of accountability developed gradually after I finished participant observation and interviewing, and was simultaneously analysing the data and reading policy and academic literature on standardisation. In my review of literature I began to detect parallel developments in the public sector with efforts to reform, and to standardise, healthcare. This led to a transdisciplinary review of literature on health policy, health services research and sociology, which explores developments leading up to the current emphasis on accountability in clinical governance. In carrying out the context review presented in this chapter, my intention was to develop a better contextual understanding of procedural standards, and seek guidance and direction for the empirical study of early warning systems which forms the main body of this thesis.

I begin by examining the definition and extent of procedural standards in the National Health Service (NHS). I briefly discuss early efforts to improve the quality and efficiency of care, which involved professionalisation of care, public health interventions, and emergence of ‘scientific medicine’ which can be described as biomedicine, i.e. ‘*medicine based on the application of the principles of the natural sciences*’ (‘Biomedicine’, Merriam Webster’s Medical Dictionary). All these developments contributed to practice standardisation and prepared the ground for procedural standards. However, the momentum for a significant spread was created by the evidence-based healthcare movement. The movement initially sought to strengthen the evidence-base of medical practice, but it has become widely adopted by professional groups, policy-makers and managers in the care sector. Crises in public finance, practice variability, and growing awareness of sub-standard practice introduced further motives to control the quality and efficiency of care. I conclude that this has coincided with a gradual shift from a professional notion of accountability towards organisational and structural forms of accountability, and with a growth of regulatory advice-giving and procedural standards in healthcare. I then introduce early warning systems as an example of procedural standards, and examine to what extent they may be related to regulatory advice-giving and accountability in organisations. This raises a number of questions that support the adoption of an accountability perspective to early warning systems.

Such an approach will, however, require clarification of what is meant by the concept of accountability that has often been described as elusive and ambiguous (Bovens, 2005; Bovens, 2007; Jacobs, 2004; Sinclair, 1995). This can be seen as an advantage, rather than an obstacle, as it provides an opportunity to explore the process of accountability in

organisations, and to identify conceptualisation (Miles & Huberman, 1994) that can be used to guide and inform the analysis. The conceptual framework will be developed in Chapter 3.

2.2 The definition and extent of procedural standards

I use the term ‘procedural standards’ to include a broad range of written instructions that define clinical care processes. The volume of such instructions has increased in recent years, and the public sector has made a significant contribution to this development.

2.2.1 The concept of procedural standards

I define ‘procedural standards’ as practice guidelines, clinical protocols, care pathways, forms, algorithms, check lists, and any kind of written instructions that prescribe the content and sequence of clinical care processes (Timmermans & Berg, 2003). Currently there is no consistent terminology for such tools, and in policy and academic literature they are often defined as protocols and guidelines. This definition, however, does not reflect the diversity of such written instructions currently in use. Further, the terms ‘protocol’ and ‘guideline’ are often used interchangeably even though there are differences in the way they are interpreted (Ilott, Rick, Patterson, Turgoose, & Lacey, 2006; Lawton & Parker, 1999; Parker & Lawton, 2000). Guidelines can be defined as *‘systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances’* (Field & Lohr, 1990, p. 38) while protocols are typically seen as more prescriptive (Ilott et al., 2006; McDonald, Waring, & Harrison, 2005; Parker & Lawton, 2000). An alternative term for procedural standards is ‘protocol-based care’ used in some NHS policy documents (Ilott et al.,

2006), but the word protocol may again give an impression of prescriptive instructions. Therefore I have chosen to use the term ‘procedural standards’ as an umbrella term for all written instructions that prescribe how clinical care processes should be carried out. A number of motives can be distinguished for the introduction of procedural standards: quality control; risk management; integration of research into practice; and cost-effectiveness of services (Lawton & Parker, 1999; Weisz, 2007). Some suggest that procedural standards have also been used to preserve and strengthen professional autonomy (Weisz, 2007). For example, guidelines can be used to position professionals as experts who can control the use of certain procedures (Timmermans & Berg, 2003).

2.2.2 The extent of procedural standards in the NHS

The number of procedural standards formally endorsed by the Department of Health (DoH) has rapidly increased since the late 1990s. The government organisations that support the development and distribution of procedural standards include the National Institute for Health and Clinical Excellence (NICE), the National Patient Safety Agency (NPSA), and the web-based NHS Evidence information service. I will discuss this infrastructure later (Sections 2.5 and 2.7) in context with regulatory advice-giving. Procedural standards are also produced by a large number of other organisations including professional societies (e.g. the Royal College of Physicians) and expert organisations (e.g. the Resuscitation Council). The National Library of Guidelines (NHS Evidence) website currently holds over 3000 care guidelines and pathways, of which less than one-quarter were published by NICE. Government involvement and the high volume of documents suggest that procedural standards are an integral part of healthcare delivery and policy. In the sections that follow, I examine developments that have contributed to this outcome.

2.3 The early years of standardisation

The growth of procedural standards is part of a long-term trend towards standardisation in healthcare. Standardisation, which has typically emerged in conjunction with the institutionalisation and specialisation of care, was accelerated by public sector involvement.

2.3.1 Early developments in standardisation of healthcare

A number of organisational and scientific developments in the late 19th and early 20th century Western world contributed to standardisation of care (Weisz, 2007). These include certification and licensing arrangements; development of medical and nursing education; organisation of hospital care; progress made with scientific medicine; and public health interventions (McCullough, 2002; Sharpe, 2000; Weisz, 2007).

Prior to these developments, services were offered by both trained and untrained practitioners in a poorly regulated 'medical marketplace' (Weisz, 2007). In Britain this consisted of nurses, midwives, apothecaries, physicians and surgeons, and 'irregulars' who lacked formal training (McCullough, 2002). Hospital care was provided by municipal and voluntary hospitals, and hospitals funded by industrialists for their own workforce (McCullough, 2002; Weisz, 2007). Patients had little protection against poor practice, and accountability was shaped by 'consumer exit' information (Sharpe, 2000) relating to those who could afford to pay for care and choose their provider. Fear of losing paying customers therefore increased answerability for the quality of care. The establishment of 19th century professional societies formalised physician accountability by setting the minimum standards for membership, and rules were introduced and

counsel offered for professional disputes (McCullough, 2002; Sharpe, 2000). The strong status and autonomy of the medical profession were established during these early years, and physicians' societies endorsed practitioners' moral autonomy to scrutinise and judge their own practice (McCullough, 2002; Sharpe, 2000; Weisz, 2007).

Poor standards of care became a public health concern which contributed to licensing arrangements and professionalisation of care (Weisz, 2007). In Britain, the legislation for state registration of physicians and surgeons was passed in 1858, and of nurses and midwives in 1919 (Rivett, 2010). The government granted self-regulatory status to the General Medical Council, and to a number of nursing councils that eventually in 2002 formed the Nursing and Midwifery Council. Progress was made with reforms in medical and nursing education, and setting the standards of professional competence based on the curriculum (Keating, 2005; Youngson, 1989).

Major changes to care provision also included the emergence of scientific medicine in mainstream practice and the rise of hospitals in the mid- and late 19th century Britain. According to Romano (2002) a campaign for scientific medicine was triggered by the industrial revolution and rooted in Victorian beliefs that progress depended on the application of scientific methods. While industrial revolution was perhaps useful in encouraging further achievements in science, it also prompted action to tackle the spread of diseases in overcrowded industrial cities and towns. Interventions that followed progress made with germ theory, such as water sanitation and prevention of diseases through vaccination, are good examples of how laboratory research contributed to medical advances. Scientific medicine gained support among the growing, increasingly influential professional middle class of physicians, though some felt that

scientific medicine challenged experiential clinical knowledge and doctors' authority at the bedside (Romano, 2002). As the number of hospitals increased, poor patient outcomes, such as high death rates from hospital-acquired infections, created a need to develop clinical practice. The large-scale institutional setting of hospitals was useful in that it facilitated the standardisation of classifications, measures and procedures in healthcare (Sharpe, 2000; Weisz, 2007). Outside hospital settings, the 1911 National Insurance Act introduced a contract for general practitioners to provide medical services for insured patients (Kmietowicz, 2006). Investment in public health, including measures to prevent and treat endemic diseases such as tuberculosis, equally highlighted the need for standard practices and data collection (Weisz, 2007).

Growth in regulation and organisational structures contributed to the institutionalisation of care provision, i.e. care that was provided increasingly in institutional settings and according to certain organisational rules and standards. Nevertheless, self-regulatory status strengthened the medical and nursing professions' control over practice standards, and answerability for the quality of care was established primarily by, and within, professional groups and hierarchies. Protocol and guideline development was modest, and early centralised procedural standards in Britain included government standards set for radiological diagnostics and therapy in 1929 (Weisz, 2007).

2.3.2 Post-war expansion of publicly funded and provided care

After the Second World War, publicly funded and governed health services began to expand rapidly and the organisation of healthcare shifted from local to national level. The UK government introduced the NHS which took control of 480,000 hospital beds in 3000 municipal and voluntary hospitals (Tweddell, 2008). Creation of a centrally

managed service sector focused attention on the standards and consistency of care, and the underlying welfare state ideology (Rivett, 2010) created a whole new impetus for public and political accountability which was later accelerated by political radicalisation and reform movements. This initiated a gradual process from weak managerial structures and strong professional groups that endorsed clinical autonomy (Walshe, 2003), towards organisational practices of account giving (Brinkerhoff, 2004) responding to political, legal, financial and social obligations to the funders, regulators and users of healthcare.

In terms of standardisation, such developments progressed at different speeds within nursing and medicine. In contrast to nursing, which has traditionally demonstrated a strong tendency to routinise care work (Allen, 2001; Strange, 2001), standardisation of medical practice developed more slowly. In the 1960s and 1970s advances in biomedical research and the introduction of randomised controlled trials helped to develop standard procedures that were adopted in mainstream practice (Weisz, 2007). For example, scientifically validated procedures originally developed as research protocols, such as chemotherapy, became routine practice in hospitals (Weisz, 2007). Progress made with procedural standards was nevertheless modest until efforts to influence physicians' autonomy to manage medical care intensified in the 1970s (Sharpe, 2000). This was prompted by influences such as the patients' rights movement; changing perceptions of medical ethics; crises in public finance; scandals following malpractice cases; and subsequent reforms that took place in the public sector (Foster & Wilding, 2000; Sharpe, 2000).

2.4 Health sector reform

The adoption of procedural standards was influenced by reform movements that gradually changed perceptions of accountability in the care sector, and led to the introduction of clinical governance policy in the late 1990s.

2.4.1 The evidence-based healthcare movement

From the late 1980s the development and spread of procedural standards was significantly facilitated by the evidence-based healthcare movement (Timmermans & Berg, 2003). Though initially the movement was known as ‘evidence-based medicine’ (EBM), later additions include ‘evidence-based nursing’ and the more generic term ‘evidence-based practice’ that often appears in policy literature. EBM has been defined as *‘the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients’* (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996, p. 71), or as *‘a set of tools and resources for finding and applying current best evidence from research for the care of individual patients’* (Haynes, 2002, p. 4).

EBM emerged in medicine as a powerful social movement seeking to base clinical decision-making on scientific evidence rather than personal practice and experience (Pope, 2003; Timmermans & Berg, 2003). It responded to evidence of unnecessary practice variation, i.e. *‘care that is not consistent with a patient's preference or related to a patient's underlying illness’* (Wennberg & Wennberg, 2003, p. 614) which was associated with risk, errors, and disparities in the outcomes of care (Lutfey & Freese, 2007; Morris, 2004a; Morris, 2004b). The movement was unique in that it challenged,

albeit often unsuccessfully, the ability of individual practitioners to decide on the conduct and choice of clinical procedures.

EBM makes an explicit argument for the integration of best research evidence into practice, also described as *knowledge transfer* between the producers and users of research. Knowledge transfer implies that the quality of care can be improved by disseminating research findings more efficiently to doctors and nurses who should learn to interpret and apply this evidence in day-to-day practice (Redmond, 2000; Reynolds, 2000). The evidence base is created by systematically reviewing and synthesising studies that fulfil the criteria for scientific evidence (Reynolds, 2000). The reviews are accessible to practitioners in databases such as the Cochrane Library (<http://cochrane.co.uk>). The ‘gold standard’ level of proof is the synthesis of evidence from randomised controlled trials (RCTs) although the inclusion criteria have later expanded to include observational studies. More recently methods have been developed to synthesise evidence from studies using qualitative research designs (Dixon-Woods et al., 2006). Findings from the reviews provide guidance that can be communicated in the format of procedural standards, including practice guidelines, check lists, and care pathways (Reynolds, 2000). Such guidance can be used to promote diffusion of innovation, i.e. health technologies and practices supported by research evidence (Greenhalgh, Robert, Macfarlane, Bate, & Kyriakidou, 2004).

Promotion of EBM created pressures to make practices, and thus the cost of clinical care, more consistent across geographical areas, healthcare organisations and practitioners. Some argued that demand for greater consistency undermined clinicians’ ability to decide what was best for each patient, and EBM was criticised as ‘cookbook’

and ‘cost-cutting’ medicine. David Sackett, one of the founders of the movement, nevertheless argued that scientific evidence is meant only to inform clinical judgment, and the application of the ‘*most efficacious interventions*’ should be made by clinicians and not by managers or purchasers of services (Sackett et al., 1996, p. 72). Thus, according to Sackett, decisions to apply procedural standards should still be made by individual clinicians on a case-by-case basis. In the early 1990s, accountability for the quality and efficiency of care was predominantly seen as the concern of individual clinicians, which reflects traditional understandings of professional accountability (Heath, 2004).

2.4.2 Public sector reform and demands for greater accountability

The highly individualised approach to decision-making in EBM as described by Sackett has not been shared by the government and healthcare organisations. Despite claims that EBM should not be ‘hijacked’ (Sackett et al., 1996) by managerial and political concerns, evidence-based practice and procedural standards have been endorsed by managers, purchasers and policy-makers (Dopson, Locock, Gabbay, Ferlie, & Fitzgerald, 2003; Pope, 2003). Potential explanations for such support include a genuine wish to change clinical practice and improve the quality of care; cost-cutting while preserving standards of care; and attempts to reduce clinical autonomy and medical professional dominance (Dopson et al., 2003). These goals stemmed from a public sector reform that first adopted managerial approaches and later the concept of evidence-based practice.

The reform has been described as a movement called the ‘new public management’ (NPM) which includes a range of policy patterns in different countries (Ferlie,

Ashburne, Fitzgerald, & Pettigrew, 1996; Hood, 1991). In the post-war years the public sector welfare services in the UK expanded and policy making, resource allocation and frontline service provision were increasingly influenced by professional groups such as teachers and doctors (Foster & Wilding, 2000). Attitudes towards professionally-led welfare services began to change in the 1970s following a number of incidents revealing poor performance and inconsistencies in service provision (Foster & Wilding, 2000). Self-regulating professions were perceived by some as unaccountable and their central role in both policy making and service provision was criticised (Ferlie et al., 1996). Alleged lack of transparency concerned both financial and professional performance and created distrust regarding the quality and efficiency of service provision (Foster & Wilding, 2000).

The new managerial approach was introduced under the Conservative Government's 'efficiency drive' which included tighter financial controls; target setting and performance monitoring; standardisation and benchmarking; consumerism; hybrid forms of professional-managerial power; and new forms of corporate governance (Ferlie et al., 1996). In the UK the public sector reform made an attempt to reduce professional autonomy (Jacobs, 2004). Changes were introduced following the 1983 Griffiths report which established general management and structures for quality assurance in the NHS (Shaw, 2005). In the 1980s guidance on clinical practice was produced by organisations such as the research and audit units at the Royal Colleges, which originated in the development of clinical audit and the quality movement (Walshe, 2003). In the 1990s the dissemination of guidance became more driven by the principles of evidence-based practice, leading, for example, to the establishment of the NHS Centre for Reviews and Dissemination (Walshe, 2003). Nevertheless, some argued that efforts to change and

scrutinise practice were impeded by hierarchical organisational structures and the strong tradition of autonomy and self-regulation in the medical profession (BRI Inquiry Secretariat, 1999). Two topics in particular have raised concerns about the difficulty in calling individuals and organisations to account for their practice: medical error and professional misconduct.

2.4.3 Medical error and the patient safety movement

The patient safety movement has been highly influential in changing healthcare policy and governance with regard to standards and accountability. *To Err is Human*, a report published by the Institute of Medicine (IoM, 2000), is frequently cited as the catalyst that launched a global patient safety movement. The report was based on the first large-scale study into medical error, The Harvard Medical Practice Study (HMPS) which explored the nature of adverse events, i.e. unintentional injuries that are caused by medical management rather than by disease or condition itself, in hospitalised patients (Brennan et al., 1991; Leape et al., 1991). Authors of the HMPS study argued that the debate over the rising medical malpractice litigation concentrated too much on financial and legal issues, and ignored the epidemiology of poor quality care (Brennan et al., 1991; Leape et al., 1991). The HMPS reviewed retrospectively over 30,000 randomly selected records from acute, non-psychiatric, hospitals in New York in 1984. The study concluded that adverse events occurred in 3.7% of hospitalisations and that 27.6% of the events were caused by negligence (Brennan et al., 1991). The HMPS was influential in two ways: first, by revealing how common adverse events are in hospitals and second, by providing an example that encouraged similar studies in other countries.

Methods similar to the HMPS have been used in the USA, Australia, the UK, Denmark, New Zealand and Canada (Baker et al., 2004). However, these studies have given somewhat inconsistent results and their approach to case record review has not been uniform. The Utah-Colorado study (Thomas, Studdert, Burstin, Orav, Zeena et al., 2000) reported that adverse events could be linked to 2.9% of hospitalisations. An Australian study (Thomas, Studdert, Runciman, Webb, Sexton et al., 2000) suggested a figure of 16.6% which is significantly higher than in the Utah-Colorado study. Researchers from both teams compared the two studies, and concluded that the Australian study used slightly different methodology and included a wider range of less severe adverse events (Thomas, Studdert, Runciman et al., 2000; Vincent, Neale, & Woloshynowych, 2001). Other possible explanations were differences in medical record content, reviewer behaviour, and quality of care (Thomas, Studdert, Runciman et al., 2000). When the Australian data were analysed using the Utah-Colorado methods, the adjusted rate was 10.6%.

The studies above measured adverse events that were discovered during hospitalisation, including those that occurred before the patient was admitted (Baker et al., 2004). A Canadian study (Forster et al., 2004) looked at the timing of the adverse events and concluded that the overall rate of adverse events was 12.7%. However, excluding events that took place before hospitalisation brought the rate closer to 5%. The rate of adverse events in a study in New Zealand (Davis et al., 2001) was 12.9%, but this study also concluded that nearly one-fifth of those events happened before the patient was admitted. Another Canadian study (Baker et al., 2004) found that 7.5% of patients experienced an adverse event during index hospitalisation and the corresponding figure from a British study (Vincent et al., 2001) was 10.8%.

Some studies have estimated the proportion of adverse events that were preventable, and the figures range from 37% to 51% (G. R. Baker, 2004). The studies were consistent in concluding that most patients suffered no or only minor impairment or disability and recovered within one to six months after the event (Baker et al., 2004; Vincent et al., 2004). All studies took into account patients' age and found that older people were disproportionately affected by adverse events (Brennan et al., 1991; Davis et al., 2001; Forster et al., 2004; Vincent et al., 2001). A significant finding was that adverse events extend the length of stay and thus have an impact on hospital workload (Baker et al., 2004; Davis et al., 2001) which in turn is likely to increase hospital costs.

The Institute of Medicine used the HMPS and the Utah-Colorado study (Thomas, Studdert, Burstin et al., 2000) in their *To Err is Human* (IoM, 2000) report to estimate the prevalence of adverse events leading to death in hospitals in the USA. Extrapolation of the results produced an estimate of 98,000 preventable deaths every year, which raised a vigorous debate on the quality and safety of healthcare (G. R. Baker, 2004). Although the accuracy of these calculations has been questioned (McDonald, Weiner, & Hui, 2000), *To Err is Human* set the agenda for healthcare reform and reiterated the role of standardisation as a method of improvement (Timmermans & Berg, 2003). The report has influenced health policy in many countries, including key NHS strategies *An Organisation with a Memory* (DoH, 2000a, p. 73) and *Building a Safer NHS* (DoH, 2001, pp. 15-16) which argued for 'clear lines' and 'frameworks' of accountability, and prevention of failures by improving incident reporting and learning from adverse events. *To Err is Human* (IoM, 2000) was influential in promoting a systems approach in healthcare, which meant that similar to high-risk industries (e.g. aviation and nuclear

industry) work processes and the environment could be designed to improve patient safety. Procedural standards, such as checklists to prevent wrong-site surgery, have been used to create such systems.

2.4.4 Medical scandals and public condemnation

In addition to evidence of unacceptable error rates, highly publicised individual cases involving professional malpractice have contributed to demands for greater accountability for the quality and safety of care. Such incidents include ‘botched up’ surgical operations carried out by Richard Neale (Secretary of State for Health, 2004) and Rodney Ledward (Secretary of State for Health, 2000), and inadequate standards of paediatric cardiac surgery at the Bristol Royal Infirmary (Secretary of State for Health, 2001). All three cases were subject to inquiries which identified institutional failures to prevent harm to patients.

The Neale and Ledward inquiries concluded that the incidents had occurred over a period of several years, and although some of them raised staff concerns or led to patient complaints at the time, no significant action followed. Based on the Rodney Ledward Inquiry, the Chief Medical Officer (DoH, 2006a) concluded that the case had revealed ‘*an inappropriate tolerance of aberrant conduct and deviant practice as well as a culture of deference towards senior doctors and their reputations*’ (p. 2). The Bristol Royal Infirmary Inquiry estimated that 30 to 35 children undergoing open-heart surgery in the paediatric surgical unit might have survived if treated in another hospital (BRI Inquiry, 2001). The Bristol inquiry revealed long-standing issues with poor standards and efforts to conceal evidence of high mortality rates.

Investigations of professional malpractice in the NHS have therefore provided evidence of a working culture that tolerates sub-standard practice and creates fear or reluctance to address risk and errors. Malpractice cases also led to negative media attention and public condemnation, and created pressure to increase the transparency and accountability of the health service (Alaszewski, 2002; Alaszewski & Brown, 2007). The Bristol inquiry has been described as a ‘watershed’ in health and social care governance because it revealed not only organisational, but also individual and professional failures which suggested that the medical profession could not be trusted to regulate itself and the quality of care (Alaszewski, 2002).

Perhaps even more damaging was the case of Dr Harold Shipman, a general practitioner who is believed to have murdered about 250 of his patients over 25 years (Shipman Inquiry, 2005). Harold Shipman’s case is different from the above malpractice cases in that he was a serial killer whose actions were intentional. The difficulty in detecting and preventing this type of serious criminal activity nevertheless added to concerns that the medical profession appeared to be in a highly privileged position and above scrutiny. The Shipman Inquiry indicated that highly trusting and respectful attitudes towards, and among, the medical profession hinder an objective assessment of doctors’ activities (R. Baker, 2004). Similar conclusions emerged from the Rodney Ledward inquiry (Secretary of State for Health, 2000) which criticised the ‘god-like’ treatment of consultant physicians that made it difficult for patients and staff to voice their concerns (Davies, 2007).

2.4.5 Clinical governance and ‘new’ accountability

Public sector reform took a different direction after 1997 under the Labour Government’s modernising agenda, and it introduced a stronger policy focus on risk and accountability. This change was highly significant because it emphasised that the management of healthcare organisations was accountable not only for financial performance but also the quality of care (Bunch, 2001). In the NHS this duty is explicitly expressed as part of clinical governance (DoH, 2000a) which was introduced in 1998 as a statutory duty and in response to the above-mentioned medical scandals, errors, variations in practice, and changes in public attitudes towards healthcare institutions and professionals (Heath, 2004; Jacobs, 2004; Rowe & Calnan, 2006). The clinical governance agenda has three main components: the establishment of national quality standards including national service frameworks and evidence-based guidelines; implementation of clinical audit and lifelong learning; and performance monitoring through regulatory activities and patient surveys (Jacobs, 2004). Though NHS clinical governance policies concern the health service in England, Scotland and Wales, similar principles are implemented in Northern Ireland, but the term used is ‘health and social care governance’ (Royal College of Nursing, 2003).

Clinical governance has been described as a system of accountability with a special focus on quality improvement, risk management and performance management, and with clear organisational lines of accountability and responsibility that run through each NHS trust from individual practitioners to the chief executive and the board of directors (Jacobs, 2004; Royal College of Nursing, 2003; Savage & Moore, 2005; Secretary of State for Health, 1998). Claims that accountability in the NHS has changed are

corroborated by the Chief Medical Officer (CMO) for England who has argued that clinical governance captures a new definition of accountability which consists of:

the individual's professional accountability for the quality of his or her own work; the accountability of health professionals within the organisations in which they work; accountability (with others), as a senior member of staff, for the organisation's performance and more widely for its provision of local services. (Donaldson, 2001, p. 65)

Accountability and responsibility in clinical governance are typically grounded in expectations to adhere to standards, evidence-based practice, and new ways of working (DoH, 2000a). Even though the following quotation refers only to doctors, similar claims are made in respect of nurses and allied health professionals.

'Tomorrow's doctor will be working within a much more extensive framework of accountability than yesterday's. Some of the transition has already been made over the last few years as doctors have responded to and accepted the more explicit professional standards which now exist and the commitment to the NHS quality agenda. Discharging this more diverse form of accountability brings with it responsibility to a new style of practice - more multidisciplinary, more patient participation and more evidence based.' (Donaldson, 2001, p. 66)

Clinical governance makes an explicit link between quality and standards, and it has introduced formal structures (e.g. NICE and NHS Evidence) for the development and distribution of documents such as protocols, guidelines, and systematic reviews of evidence (DoH, 2000a). Overall, NHS policies and strategies emphasise accountability for standards not only at the level of the individual practitioner, but across the organisation. Accountability in this context can be described as 'structural', as a form of hierarchical control, as opposed to individual accountability through which individuals examine, reflect upon and account for their actions as professionals and co-workers (Jacobs, 2004). The 'new' accountability promotes organisational and managerial,

rather than professional, frameworks of accounting to demonstrate that frontline practice meets external expectations (Chan, 1999).

It appears that this new accountability in the NHS has increased the use of procedural standards that are set outside professional bodies and hierarchies. For example, hospital wards frequently implement standards that are not introduced by clinicians or their professional societies. Thus procedural standards impose controls that reflect good practice as defined by parties outside the professions, including managers, healthcare organisations, the government, and expert groups. They also govern practice in ways that exceed their original goals of knowledge transfer at the level of the individual practitioner, by introducing expectations of performance and accountability within organisations. One key component of NHS governance that bears significance for the spread and adoption of procedural standards is regulation.

2.5 Regulation, advice-giving, and procedural standards

Healthcare regulation can be understood as the infrastructure that supports the production, distribution and enforcement of procedural standards. Regulation can facilitate the adoption of both mandatory and discretionary standards, and the focus of this section will be on regulatory advice-giving because many procedural standards are not enforced by the government.

2.5.1 The concept of regulation

‘Regulation’ provides a broad topic for conceptualisation. A basic definition of regulation can be presented by distinguishing between two polar opposites of regulation: deterrence and compliance models (Ayriss & Braithwaite, 1992; Walshe, 2003). In the deterrence model, regulators make use of formal standards, inspections and enforcement powers to control regulatees whose behaviour is assumed to be self-interested and opportunistic. In the compliance model, the regulator adopts a collaborative approach in which regulatees are generally seen as compliant, and worthy of trust and support even if their performance needs improving. Typically, most regulatory systems involve both compliance and deterrence strategies.

Regulation can, however, be understood more broadly than simply as deterrence and compliance strategies. According to Black (2002), regulation can be defined as an exercise of control in any area of social activity and by all kinds of forums, including state and non-state institutions, firms, networks, and ‘social forces’ such as language and culture. This provides a useful point of departure for my thesis because of the multitude of formal and social controls that exist in the ‘regulatory space’ (Parker, 2000) of hospitals. The concept of regulatory space suggests, for example, that state regulation coexists with institutional, professional and social rules, both formal and informal, that govern practice in healthcare organisations. As I will show later, early warning systems are not a mandatory requirement, and their adoption has been facilitated by numerous factors ranging from government recommendations to expert opinion and internal risk management needs. It is therefore analytically more rewarding to take a broad view of regulation.

In this thesis I will focus on one particular aspect of regulation, the advice-giving function (Brady, 2007), which regulators can use to educate regulatees to understand their risk management responsibilities. This function is of particular interest to my thesis because of the significance of advice-giving in contributing to the spread of early warning systems. It could be argued that regulatory constituencies are increasingly using advice-giving to make claims about the tasks and duties for which NHS organisations are responsible. Procedural standards play an important role by providing the means by which these tasks and duties can be both described and operationalised. For example, by including examples of physiological trigger systems in the guidance, regulators can explain what kind of interventions they expect from acute hospital trusts and how these systems can be put into practice.

2.5.2 Regulation as a quality improvement strategy

2.5.2.1 The goals of regulatory activity

According to Walshe (2003) the primary goal of healthcare regulation is to improve the quality, efficiency and effectiveness of services. Unsatisfactory practices targeted by regulators include inappropriate choice of interventions, medical error and cases of professional misconduct. All three have drawn attention to risks associated with practice variability and substandard care, and led to recommendations on greater consistency and standardisation of procedures (CMO, 2006; DoH 2000a; DoH, 2001, DoH 2006). Procedural standards have offered the means to introduce standard risk management practices, and therefore to create consistency.

Quality improvement strategies in healthcare typically respond to this by encouraging knowledge transfer and diffusion of innovation. For example, early warning systems can be perceived as an innovative technique because they seek to transform the routine monitoring of vital signs by introducing systematic methods that enable more accurate prediction of patient deterioration. By adopting such techniques the healthcare organisations can demonstrate that they are delivering their commitments to manage risk, and to improve the care of acutely ill patients.

2.5.2.2 Efforts to improve quality by regulatory advice-giving functions

Accountability for the quality of care is typically sought from organisations by regulatory and quasi-regulatory government agencies. Under the Labour Government's modernisation agenda, central government control of local public bodies, including NHS organisations, has increased significantly (Hood, James, & Scott, 2000). In the health sector this has involved a number of new regulatory bodies that, compared with their predecessors, are better resourced, hold a broader mandate to oversee NHS organisations, and have a stronger focus on the clinical quality of healthcare (Walshe, 2003). One of the key features of regulatory reform has been the growth of discretionary guidance which I define as advice-giving. Such advice is offered by a number of influential quasi-regulatory agencies that support the strategies and standards set by the government. I will briefly describe some of these bodies, and how they contribute to advice-giving about risk and patient safety.

NICE is a quasi-regulator involved in the regulatory direction, but not in the scrutiny, of healthcare organisations (Hood et al., 2000; Walshe, 2003). NICE promotes compliance with effective and cost-effective practices by producing technology appraisals, clinical

guidelines, and guidance on interventional procedures. Only the technology appraisals are mandatory for NHS organisations, and the rest of the guidance is discretionary (NICE, 2008). However, compliance can be monitored by the strategic health authorities (Walshe, 2003) and the independent regulator, the Care Quality Commission (formerly the Healthcare Commission), which oversees clinical governance, carries out inspections and deals with poor performers (Care Quality Commission). Therefore NHS organisations may find it difficult to refuse or ignore the guidance offered by NICE even when it is not mandatory.

The NHS Litigation Authority (NHSLA) deals with claims of clinical negligence and operates a voluntary accreditation scheme in risk management (NHSLA, 2008; NHSLA, 2009a; NHSLA, 2009b). The scheme sets standards for acceptable risk management practices, and the participating organisations have access to advice and support. The organisations must take part in the risk management assessment process, and, according to the NHSLA, in 2005 all NHS trusts were members of the scheme.

Other quasi-regulatory bodies include the National Patient Safety Agency, which operates a voluntary incident reporting system and provides discretionary guidance on patient safety. One of the most long-standing regulatory bodies, the Audit Commission, carries out local studies in NHS organisations on selected topics. It has no formal enforcement power but the reports receive media attention which puts pressure on healthcare organisations to act upon findings (Walshe, 2003). Guidance is also provided in various publications by the Department of Health that discuss health policy and service delivery. If we maintain a broad view and include other influential organisations in the 'regulatory space' of hospitals, relevant procedural standards are provided by

professional societies (the Royal Colleges and the British Medical Association) and expert organisations (e.g. the Intensive Care Society).

The government has continued its reform of healthcare regulation. Based on recommendations made by the Arm's Length Bodies Review (DoH, 2004a) and the Hampton Review of Regulatory Inspections and Enforcement (HM Treasury, 2005), the Department of Health announced plans (DoH, 2008) to reduce the number of regulators and the regulatory burden in health and social care. Some scholars have reported that the tone of the reform is indicative of dialogue-based approaches to regulation which rely more on negotiation than a threat of punishment. For example, Brady (2007) provides an interesting review of the Hampton report and subsequent government publications on regulatory reform. He concludes that reformers propose advice-giving and education to improve compliance and to help regulatees to understand their responsibilities. According to Brady (2007), 'advice' in these documents suggests a kind of information that enables regulatees to take '*specific actions in specific situations*' (p. 11). He also mentions NICE guidelines as an example of advice-giving, and proposes guideline development as a method that may contribute to advice-giving functions in regulation.

Early warning systems provide an example of procedural standards that have been part of the advice provided by government agencies, professional societies and expert organisations. The advice recommends that hospitals should prevent sudden and dramatic patient deterioration on hospital wards by introducing 'track-and-trigger' systems and rapid response teams.

2.6 Early warning systems as an example of a procedural standard

The deteriorating patient is a useful concept for exploring the introduction and use of procedural standards that target risk management in organisations. In the section that follows, I discuss how growing awareness of failures to manage the risks of patient deterioration gradually led to the development and adoption of early warning systems. Even though the evidence on the clinical effectiveness of these systems is limited, they have been widely adopted among the acute NHS hospital trusts. Such enthusiasm may appear unfounded, but it may be a mistake to understand early warning systems simply as a clinical intervention at the sharp end of practice. An alternative approach is to examine them as an effort to educate hospitals and practitioners regarding their risk management responsibilities.

The section has four parts. I discuss the problem of the deteriorating patient, and how early warning systems were developed to improve the management of bedside observations. I briefly review evidence on the effectiveness of early warning systems, and contemplate what acute trusts might wish to achieve by implementing these systems.

2.6.1 The problem of the deteriorating patient

Critical illness in hospitalised patients can be a predictable event preceded by physiological abnormalities that can be observed, detected and acted upon (Cooper, 2001; Cuthbertson, Boroujerdi, McKie, Aucott, & Prescott, 2007; National Confidential Inquiry into Patient Outcome and Death [NCEPOD], 2005). Intervening at an early

stage reduces adverse patient outcomes, including cardiac arrests. However, there is evidence that hospitals often experience difficulty in detecting and responding to early signs of patient deterioration, leading to late intensive care referrals, excess mortality and morbidity, and increased hospital costs (Cuthbertson et al., 2007; Johnstone, Rattray, & Myers, 2007). The independent review into the death of Janine Murtagh (Regulation and Quality Improvement Authority [RQIA], 2005) following a routine surgical operation in a Belfast hospital, for example, identified a lack of routine measurement of vital signs after the operation as a factor that contributed to her death (RQIA, 2005). The Confidential Inquiry into the Quality of Care before Admission to Intensive Care suggested that:

‘the management of airway, breathing, and circulation, and oxygen therapy and monitoring in severely ill patients before admission to intensive care units may frequently be suboptimal’ (McQuillan et al., 1998, p. 1853).

According to the Inquiry, mortality rates were significantly higher among patients who received sub-optimal care prior to admission to intensive care. It concluded that hospital wards experienced difficulty in detecting, interpreting and managing the early signs of patient deterioration, and many patients were admitted to intensive care late in their illness. Though the Inquiry’s findings were questioned because of weaknesses in the study design (Gorard, 1999; Walshe, 1999), other studies (Goldhill, Worthington, Mulcahy, Tarling, & Sumner, 1999; McGloin, Adam, & Singer, 1999; NCEPOD, 2005) have reached similar conclusions. The early detection of patient deterioration is supported by regular bedside observations, but research has repeatedly suggested that monitoring and charting of patients’ vital signs may not be satisfactory on hospital wards (Chatterjee, Moon, Murphy, & McCrea, 2005; NCEPOD, 2005; NPSA, 2007). Serious patient safety incidents have been attributed to lack of systematic observations,

staff not recognising the importance of the deterioration, and delays in the patient receiving medical attention even when deterioration is detected and recognised (NPSA, 2007). Problems surrounding rescue response include difficulty in obtaining access to medical intervention and low staff/patient ratios. Inability to seek advice or poor record keeping may also contribute to the problems in detecting and managing the deteriorating patient (NCEPOD, 2005).

Such problems raise the question of how bedside observations should be managed in order to manage the risk of patient deterioration. Policy-makers, healthcare regulators, researchers and experts in critical care and patient safety have all proposed improving the monitoring practices and response mechanisms. These include recommendations on early warning systems that involve physiological triggers and a graded response mechanism (DoH, 2000b; DoH, 2005b; NHS Modernisation Agency, 2003; NHSLA, 2009; NICE, 2007). However, the guidance is discretionary and acute hospital trusts can choose whether or not they wish to introduce such systems. It appears that efforts to improve the detection and management of patient deterioration have been based on voluntary measures by acute hospital trusts to implement an early warning system, and that there is a need to examine how these complex systems are supposed to manage risk and improve practice in organisations. Next I examine the concept and development of these systems, and the scientific evidence for their effectiveness.

2.6.2 The concept of early warning systems

Many acute NHS trusts have sought to manage the risks of patient deterioration by adopting a combination of *a physiological track-and-trigger system* and *a rapid response mechanism*, which I define in this thesis as an ‘early warning system’.

Physiological track-and-trigger systems consist of a standard *bedside observation chart* and criteria for summoning medical or specialised assistance (Parissopoulos & Kotzabassaki, 2005). The purpose of these systems is to track signs of patient deterioration and to trigger a response by issuing an alert. The criteria in bedside observation charts set thresholds that indicate when a patient's vital signs reach a value outside the normal range. The criteria may be based upon one or several vital signs that typically include respiratory rate, heart rate and blood pressure. NICE (2007) has identified four main types of track-and-trigger systems (Table 2.1).

Table 2.1 Types of track and trigger systems (NICE, 2007, p. 24)

| System | Characteristics |
|------------------------------|---|
| 1. Single parameter system | Periodic observation of selected vital signs that are compared with a simple set of criteria with predefined thresholds, with a response algorithm being activated when any criterion is met. |
| 2. Multiple parameter system | Response algorithm requires more than one criterion to be met, or differs according to number of criteria met. |
| 3. Aggregate scoring system | Weighted scores are assigned to physiological values and compared with predefined trigger thresholds |
| 4. Combination system | Single or multiple parameter systems used in combination with aggregate weighted scoring systems. |

2.6.2.1 Early development of physiological trigger tools

Risk assessment techniques are an established part of healthcare provision, and the development of track-and-trigger systems commenced over two decades ago. Evidence of inappropriate intensive care referrals was being reported by the early 1980s, and researchers acknowledged a need to develop prognostic criteria for identifying high-risk

patients who needed a bed in an intensive care unit (Sax & Charlson, 1987). The prognostic criteria were typically developed for physician assessment, monitoring and referral of patients between intensive care units and the wards (Sax & Charlson, 1987; Subbe, Kruger, Rutherford, & Gemmel, 2001). Scoring systems such as the Acute Physiology and Chronic Health Evaluation (APACHE) system and the Simplified Acute Physiology Score (SAPS) began to be developed for patient assessment, but these were deemed too complex and time-consuming for routine measurement of vital signs carried out by ward nurses (Subbe et al., 2001).

2.6.2.2 Spread of track-and-trigger systems and response mechanisms

Both clinicians and the scientific community increasingly recognised the need for simple physiological triggers suitable for routine bedside observations, and a number of systems were introduced in the 1990s. These included Medical Emergency Team (MET) calling criteria, the Early Warning Scoring (EWS) system, the Modified Early Warning Scoring (MEWS) system, and Patient at Risk (PART) scores (Gardner-Thorpe, Love, Wrightson, Walsh, & Keeling, 2006; McArthur-Rouse, 2001; Subbe et al., 2001). While the earlier assessment criteria (e.g. SAPS and APACHE) were used mainly by medical staff, the new systems were developed for routine bedside observations carried out by qualified nurses (Subbe et al., 2001). The new systems also included a bedside observation chart and a written referral guideline. Currently a wide variety of track-and-trigger systems is in use. Gao et al. (2007) reviewed 25 distinct systems involving single parameter, multiple parameter and aggregate scoring systems. They also found that many hospitals have developed their own systems or modified existing track-and-trigger systems.

One of the most popular systems has been EWS, a system that is based on an aggregate of weighted scores for physiological variables. By the early 2000s several variations of this system had been developed by other teams, and EWS and MEWS were increasingly used as generic terms for a range of different physiological trigger systems (Morgan & Wright, 2007). In an effort to make terminology more consistent, the National Outreach Forum adopted the term ‘physiological track and trigger system’ to refer to all systems with set thresholds for assistance (Morgan & Wright, 2007).

Rapid response mechanisms for assistance also vary. In Australia, most track-and-trigger systems are used as a means to alert a medical emergency team (MET), and in the UK to alert a critical care outreach team (Gao et al, 2007). More recently, the Institute for Healthcare Improvement in the USA introduced the concept of the ‘rapid response team’ (Simmonds, 2005) which is a generic term and does not refer to any specific trigger system or team format. It appears that the range of trigger and response mechanisms has expanded rapidly and that hospitals use terminology, such as an ‘early warning system’, that can in fact refer to a variety of different chart designs, referral guidelines and team arrangements. In this thesis, arrangements that involve both a track-and-trigger system and a rapid response mechanism are defined as an *early warning system*, regardless of the type of physiological triggers and rapid responders chosen by an acute hospital trust.

2.6.3 Limited evidence of clinical effectiveness

The usefulness of procedural standards is typically measured against their ability to improve the quality of clinical care. The introduction of early warning systems should therefore result in better patient outcomes, and the outcome measures include timely

referrals to intensive care units, and a reduction in cardiac arrests, re-admissions and in-hospital morbidity and mortality (Cuthbertson et al., 2007).

Research, however, suggests that the scientific evidence for the benefits of physiological triggers and response mechanisms appears to be rather limited. Findings from numerous studies can be summed up by quoting Cuthbertson et al. (2007) who argue that although the physiological variables included in early warning scoring systems '*seem clinically intuitive and rational, they include best-guess physiological variable ranges and cut points and lack clinical validation*' (p. 403). Studies indicate that some of the most long-standing and established scoring systems including EWS, MEWS and PART are reasonably reliable in identifying patients at risk of deterioration (Cuthbertson et al., 2007; Subbe et al., 2001; Subbe, Davies, Williams, Rutherford, & Gemmell, 2003). Nevertheless, research has repeatedly suggested that the composition, design and performance of scoring systems vary, and that hospitals have developed their own systems that lack evidence of reliability, validity and utility (Gao et al., 2007). A systematic review of 25 published track-and-trigger systems reported that the specificities and negative predictive values of these systems were found to be acceptable, which means that the systems were fairly good at identifying patients who were not at risk of deterioration (Gao et al., 2007). In contrast, sensitivities and the positive predictive values – i.e. the ability to detect deterioration reliably – were unacceptably low. A systematic review by NICE (2007) reported that aggregate scoring systems gave a range of sensitivities and specificities depending on the threshold set for the alerts of patient deterioration, and the sensitivity and specificity of multiple parameter systems depended on the number of vital signs providing triggers. Perhaps even more importantly, some have argued that track-and-trigger systems are poor

predictors of hospital mortality, cardiac arrest, and admission to critical care (Gao et al., 2007; Johnstone et al., 2007; Oakey & Slade, 2006; Subbe et al., 2003). NICE (2007) concluded that the performance of track-and-trigger systems is variable and depends on the type of system evaluated, choice of trigger, and the patient outcome considered.

Similarly, it has been difficult to assess the effectiveness of outreach services and their impact on response times and clinical outcomes (Johnstone et al., 2007). NICE (2007) reported that the evidence of effectiveness of response strategies was limited and found only two studies (Hillman, 2005; Priestley et al., 2004) that were of acceptable quality. Both studies included a mortality rate but only one of them (Priestley et al., 2004) found a significant reduction in this outcome measure. No changes were detected in cardiac arrest rates or an outcome measure based on ‘unplanned intensive care unit admissions’ included in the other study (Hillman, 2005).

2.6.4 Widespread adoption of early warning systems in the NHS

To fully appreciate the significance of the above findings, it is necessary to examine the implementation of early warning systems against recent developments within the NHS. Research suggests that early warning systems have become a popular risk management technique, and that track-and-trigger systems and response mechanisms have been widely adopted in the NHS. A 2003 organisational survey, the National Confidential Enquiry into Patient Outcome and Death (NCEPOD), found that 73% of hospitals in the UK used some form of track-and-trigger system, and 56% operated an outreach service (NCEPOD, 2005). The NCEPOD study targeted all 261 acute hospitals with an adult general intensive care unit in the UK excluding Scotland, and the response rate was 81%.

Considering the limited evidence of the benefits of early warning systems, and the absence of mandatory requirements to implement these systems, such an enthusiastic response among acute NHS trusts raises a question regarding the reasons for this enthusiasm. I will seek answers to this question by examining early warning systems in their policy and regulatory context.

2.7 Regulation and early warning systems

Early warning systems are a good example of how policy imperatives, regulation and advice-giving functions have been used to educate acute hospital trusts about their responsibilities for tackling the problems identified with patient deterioration on hospital wards. In this section I draw on relevant background literature on early warning systems, to consider and discuss the external imperatives that impose expectations of organisational accountability and responsibility for the management of patient deterioration. These include government policy and advice-giving by stakeholder organisations and quasi-regulators.

2.7.1 Policy imperatives and networked governance

Early warning systems have been effectively promoted by a consistent ‘policy push’ by the Government, and a broad coalition of influential organisations with an interest in critical care.

2.7.1.1 *Government strategies for proactive and integrated risk management*

The implementation of early warning systems can be understood as evidence of a regulatory technique whereby organisations are given advice on how to develop their own risk management solutions. One sign of this is that, at the turn of the millennium, the evidence of sub-optimal care on hospital wards, and the inclusion of track-and-trigger systems and response mechanisms, began to appear in strategies to modernise critical care services. The timing of these developments appears to match the government's modernisation agenda discussed earlier (Section 2.5.2.2). The earliest recommendations on physiological triggers and response mechanisms by a quasi-regulatory agency were made in the Audit Commission's (1999) review of critical care services. The report drew up a comprehensive action plan for hospital trusts to review and configure their critical care services. It examined problems experienced on hospital wards, and supported agreeing 'danger signs' of patient deterioration and introducing an 'outreach' service from critical care. It also proposed a 'decision flow-chart' for assessing an individual patient's need for care. The report gave examples of patient-at-risk and outreach teams involving both doctors and specialist nurses who visit wards either routinely or when triggered by calling criteria.

The Audit Commission was far from being the only high-profile organisation to influence acute hospital trusts. Its report was soon followed by a more concentrated effort to modernise critical care, bringing together a number of public sector and expert bodies. In 2000 the Department of Health published *Comprehensive Critical Care*, outlining a modernisation programme of adult critical care services that was expected to take three to five years to implement (DoH, 2000b). The plan was developed by an Expert Group that included, amongst others, the Intensive Care Society, The Royal

College of Nursing, and the British Association for Accident and Emergency Medicine. The report recommended that NHS trusts should establish a multi-disciplinary physician-led critical care outreach team, and it mentioned Early Warning and Patient at Risk Scores as examples of track-and-trigger systems (DoH, 2000b). *Comprehensive Critical Care* was followed by additional funding for critical care services, which led to a large number of outreach services being established within a short space of time (Goldhill & McNarry, 2002). The Scottish Executive (2000) also carried out a review of health services and recommended further development of existing patient-at-risk guidelines and scoring systems. The Scottish Executive, however, concluded that a critical care outreach service was not likely to reduce intensive care workload or improve patient care, and did not recommend this service.

Comprehensive Critical Care was followed in 2003 by the NHS Modernisation Agency's (2003) progress report on critical care outreach. This report stated that the Secretary of State for Health had emphasised in his letter to all Chief Executives of NHS trusts, strategic health authorities and local councils that '*we should see outreach services developing in every hospital*' (Secretary of State for Health, 2003). It reiterated the importance of multi-disciplinary outreach teams and track-and-trigger systems, as did the next strategy document published in 2005, *Quality Critical Care* (DoH, 2005b). This document was written by the Critical Care Stakeholders' Forum that followed the Expert Group in 2004 to:

'Mobilise stakeholder involvement in the strategic development and delivery of critical care services and to provide a communications link between a wide variety of professional, operational and managerial groups delivering critical care.' (DoH, 2005b, p. 5)

The Stakeholders' Forum includes nearly 30 organisations including the Patients Association, several professional societies, universities, expert organisations in critical care, and government agencies. Such collaborative partnership is highly significant because it enabled the government to demonstrate that large numbers of high-profile organisations in patient safety and critical care were in favour of acute hospital trusts implementing the proposed risk management measures. I would suggest that this approach has helped to increase awareness and acceptance of early warning systems.

2.7.1.2 Networked governance

The collaborative partnership in the modernisation of critical care services can be usefully explained as 'networked governance' (Braithwaite, Healey, & Dwan, 2005). Networked governance has been influential in promoting early warning systems for two reasons. First, networked governance involves a broad coalition of parties with strong credentials and credibility in critical care. Second, these parties have not only contributed to government strategy and guidance, but some of them have also produced their own guidance that supports the adoption of early warning systems.

Such a 'cross-party' effort can be seen as evidence of a new type of regulation. Braithwaite et al. (2005) argue that the contemporary model of regulatory state involves networked governance and '*more flexible, participatory and devolved forms of regulation*' (p. 6). Networked governance involves strategic planning in collaboration with consumer groups and non-government and private sector organisations, and its purpose is to create more democratic models of governance and monitoring. A sign of flexibility is that none of the strategies or guidance on early warning systems seeks to establish a mandatory system or service model which all healthcare organisations

should adopt. Instead, they outline an organisational strategy for modernising critical care, or provide practical examples and contact details of organisations and NHS staff who can provide further advice.

Networked governance represents tripartism, in which stakeholder groups with an interest in the regulated organisation's performance can influence the regulatory process. This can be also referred to as the 'stakeholder model' of accountability (Walshe, 2003). The importance of stakeholder organisations is based not only on their expert role but also on their capacity to operate at national level to influence policy development and implementation in healthcare. My definition of a 'stakeholder organisation' is similar to public interest groups (Ayriss & Braithwaite, 1992) which include professional associations, non-government organisations (NGOs), trade unions, industry associations, citizen groups, and any other types of group that have a stake in a particular regulatory activity.

2.7.2 Advice-giving

Government policy and networked governance have been influential in increasing awareness of early warning systems, and the detailed implementation of these systems has been facilitated by a number of different organisations.

2.7.2.1 The patient safety movement

Initiatives to improve patient safety have raised awareness of the principles of early recognition and rapid response, and contributed to the spread of early warning systems. An example of this is the Health Foundation's Safer Patients Initiative (SPI). The Health Foundation is an independent charity which, through working together with

people in the health service, runs improvement programmes to test innovative ideas and learning, as well as commissioning research, influencing policy makers and the practice of those working in healthcare, and supporting leaders and networks of individuals, teams and organisations. The common cause that brought healthcare organisations to the SPI was patient safety. The hospital trusts that participated in the SPI were trained to become *'exemplars of patient safety, to bridge the gap between evidence-base and clinical practice, and to spread innovation'* (Benning, unpublished). The SPI commenced in January 2005 and involved a two-year period of training and programme implementation, followed by a further two years of spreading the interventions within and outside the participating hospital trusts. The principles of the SPI were parallel to the government's quality and safety agenda as presented in key strategies including *An Organisation with a Memory* and *Building a Safer NHS for Patients* (Benning, unpublished). The policy relevance of the SPI is reflected in the following quotation by the Chief Medical Officer (CMO) for England:

'I welcome this substantial investment from The Health Foundation to improve patient safety. It is critical that the UK's health service learns from its experiences so that the risk of avoidable harm to patients is minimised. Ensuring that the modern NHS is as safe a place as possible for patients is a key priority for the Government.' (Health in Wales, 2004)

The Health Foundation's announcement of this initiative also coincided with the launch of the WHO World Alliance for Patient Safety. The chair of the Alliance, the CMO for England, welcomed the Health Foundation *'as a key partner in addressing the global challenge of patient safety'* (Health in Wales, 2004). In addition, the hospital trusts selected to participate in the SPI would work with internationally known expert organisations in patient safety, the Health Foundation and the Institute for Healthcare Improvement, and *'noted patient safety experts from all over the world'* (Health in

Wales, 2004). It could be argued that the SPI provided a networking environment that acute trusts found policy-relevant and prestigious.

The SPI was designed to deliver a multi-component organisational patient safety programme in partnership by the Health Foundation and the Institute for Healthcare Improvement (Benning, Ghaleb, Suokas, Dixon-Woods, Dawson, Barber et al., 2010). The purpose of the programme was to build leadership in patient safety, support safety culture, and to implement patient safety interventions in frontline practice. The Health Foundation and the Institute for Healthcare Improvement selected four acute hospital trusts from a UK-wide competition. The selection criteria for these trusts are described as including:

‘a strong commitment from senior management to patient safety; an organisational track record of improving quality and safety of healthcare; and openness with staff and patients about safety issues’ (Benning, unpublished).

The participating trusts received funding from the Health Foundation, and the Institute for Healthcare Improvement provided mentoring, learning sessions and networking. The SPI interventions were based on broad specifications and the trusts were expected to take responsibility for local implementation. In terms of early warning systems, the SPI recommended developing ‘outreach services’, setting the criteria for calling the team, providing staff training, and carrying out audits and evaluation of the outcomes of the service (Benning, unpublished). Advice was provided in four SPI learning sessions in 2005 and 2006. The method of implementation was similar to the principles of risk-based regulation whereby organisations are given responsibility for setting up their own systems and standards.

The SPI and other networking initiatives could influence practice in organisations at two levels. The knowledge and resources gained from the patient safety movement supported the same principles already promoted by the Department of Health, quasi-regulators and expert organisations. Therefore networking activities contributed to the existing self-regulatory mechanisms and also increased the external expectations of planning and rule-making activities. Networking activities and exchange of ideas could also provide more detailed guidance on how to draw plans and rules that generate the desired mechanisms and outcomes. Thus, while policy imperatives showed the right direction, expert groups and networking partners were helpful in showing how the required interventions could be implemented in practice.

2.7.2.2 *Written guidance by stakeholders and NICE*

Stakeholder organisations have contributed to government guidance and some have offered additional written advice. In 2002 the Intensive Care Society published guidelines for the introduction of critical care outreach services. This initiative was defined as:

‘a multidisciplinary approach to the identification of patients, at risk of developing critical illness, and those patients recovering from a period of critical illness, to enable early intervention or transfer (if appropriate) to an area suitable to care for that patient’s individual needs. Outreach should be a collaboration and partnership between the critical care department and other departments [...]. In summary, outreach care is a partnership aimed at prevention by education and action.’ (Intensive Care Society, 2002, p. 3)

This guideline also discussed Early Warning and Patient-at-Risk scores and gave examples of trigger thresholds and referral guidelines. Further guidance was provided by the Resuscitation Council, which recommends that organisations should have the

following arrangements in place: an early warning scoring system; a rapid response team; a patient charting system; and clear criteria for referral to rapid response teams (Resuscitation Council, 2005; Resuscitation Council, 2008). Two coalition groups of stakeholders, the Critical Care Stakeholders Forum and the National Outreach Forum (2007), have jointly promoted the use of track and trigger systems and critical care outreach.

Professional societies have contributed to strategic planning and advice-giving. The Royal College of Physicians supported the use of Early Warning Scoring Systems, staff training in the use of these systems, and a dedicated on-call system of consultant physicians to support the evaluation and management of acutely ill patients (Baudouin, & Evans, 2002). The Royal College of Nursing has not provided guidance on early warning systems, but their web resources (Royal College of Nursing, 2009c) include, for example, the NICE (2007) guideline on acutely ill patients in hospitals. Both royal colleges are members of the Critical Care Stakeholders' Forum.

Guidance that finally 'mainstreamed' track-and-trigger systems and graded response mechanisms into the recommended standards at national level was provided by NICE in 2007. As discussed earlier (Section 2.6.3), the evidence for the effectiveness of early warning systems could be regarded as weak. This was acknowledged in some of the documents discussed earlier, including the guidelines produced by the Intensive Care Society (2002) and the Resuscitation Council (2005). NICE concludes in their guidance that the ability of track-and trigger systems to predict cardiac arrests, ICU referrals and hospital mortality is variable, and it makes suggestions about how to improve the sensitivity of these systems to detect patient deterioration. It also concludes that there is

no firm evidence for the effectiveness or cost-effectiveness of critical care outreach services. It recommends a graded response strategy but does not recommend any particular team arrangement for outreach.

The apparent lack of an evidence base for early warning systems is perhaps surprising considering how much clinical governance and the evidence-based healthcare movement emphasise ‘bridging the gap’ between science and frontline practice. A lack of evidence about the effectiveness could suggest that early warning systems have no impact on staff performance. Alternatively, it could be argued that that these systems may improve detection skills and response, but that it is difficult to link process improvements with clinical outcomes such as mortality, morbidity, timely referrals to critical care, or hospital costs. Some studies suggest that physiological triggers and outreach services can assist ward staff in the detection and management of patient deterioration, which appear in the policy recommendations and guidance to be desirable outcomes in their own right.

The NICE guideline (2007) accepts that ‘*physiological abnormalities are a marker for clinical deterioration*’ (p. 27), and recommends the use of track-and-trigger systems because they have been shown to increase the number of observations made by healthcare professionals. The guideline concludes that by increasing the number of observations the systems will increase the likelihood of staff detecting and acting upon abnormal observations. This conclusion is highly relevant because it suggests that the definition of ‘evidence’, as in evidence-based practice, is broad and can include evidence on the quality of processes while the evidence of clinical outcomes is lacking. Similar to NICE, the Resuscitation Council (2005) has argued that ‘*the sensitivity,*

specificity, and accuracy of EWS or calling-criteria systems to identify sick patients have yet to be validated' (p. 28). Nevertheless, they conclude that '*gaps in vital sign data recording are common*', and that '*the use of physiological systems can increase the frequency of vital sign monitoring*' (p. 28).

A similar approach can be found with regard to outreach services. The Intensive Care Society (2002) concludes that '*the way in which [critical care outreach] has been implemented varies widely and the evidence to support the most effective approach is lacking*' (p. 14). However, as the earlier quotation from their guidance (2002) suggests, '*outreach care is a partnership aimed at prevention by education and action*' (p. 3). Therefore evidence-based practice in this context can be understood as educating staff and providing technical, 'science-based', risk assessment tools for use in clinical practice.

2.7.2.3 Voluntary risk accreditation

Apart from written guidelines, advice can be offered by introducing a voluntary risk accreditation scheme, which members of the organisations are likely to find attractive and beneficial. Such a development occurred when early warning systems were included in the NHS Litigation Authority's (NHSLA's) clinical risk management standards. The requirement to have early warning systems in place was first identified in the pilot manual in 2006 although it was not explicitly detailed at that stage as an early warning system. The terminology used at the time was '*recognition of patients at risk of, prevention, and treatment of cardio-respiratory arrest*' (NHSLA, personal communication, 25 March 2009). The current terminology of '*early warning systems in place for the recognition of patients at risk of cardio-respiratory arrest*' was formally

introduced into the NHSLA risk management handbook released in April 2007.

Currently the requirement is that acute hospital trusts' approved documentation must include a description of their early warning systems; the duties; post-resuscitation care; do-not-attempt-resuscitation-orders; equipment; training; and the process of monitoring compliance (NHSLA, 2009b). This means that organisations should measure, monitor and evaluate compliance internally. Early warning systems have thus become part of the voluntary NHSLA risk accreditation scheme, although the scheme does not impose any detailed written requirements for the systems. NHSLA indemnifies NHS bodies against negligence claims, and good compliance with risk management standards is rewarded through a discounted membership fee (NHSLA, 2009a). Thus by reaching a good accreditation status through NHSLA inspections, NHS organisations gain a better level of cover against negligence claims and they pay less towards the scheme. At the same time, organisations can demonstrate adherence to good risk management standards as defined by a quasi-regulatory body.

2.7.3 Seeking and achieving answerability for risk management standards

As discussed earlier (Section 2.6.4), according to 2003 survey results, 73% of acute hospital trusts implement some kind of track-and-trigger system, and 56% have introduced an outreach service (NCEPOD, 2005). Therefore it can be argued that the government, quasi-regulators, and stakeholder organisations have been successful in making acute hospital trusts understand their responsibilities as described in advice and recommendations. Early warning systems have become an established risk management technique in acute hospitals, including our four study hospitals. Risk in this context appears to refer to both risks to patients, and risks that relate to weaknesses and failures

in organisational processes. This could suggest that improvement in clinical outcomes is not the only desirable outcome, but that an additional benefit would be the creation of standard practices which show exactly how staff detect and act upon patient deterioration. Standardisation creates transparency and opens up practice for scrutiny, therefore making mistakes and misconduct preventable and controllable.

It would, however, be simplistic to assume that efforts to educate organisations and staff about their responsibilities are always effective. Despite the recommendations that early warning systems can improve working practices, research suggests that clinical practice has not always changed as a result (Johnstone et al., 2007). Studies have reported problems with appropriate response to alerts (Subbe et al., 2003) and compliance problems in obtaining a full set of observations and aggregated scores (Oakey & Slade, 2006). This has been attributed in part to problems in educating ward staff in the recognition of early signs of patient deterioration and use of track-and-trigger systems (McArthur-Rouse, 2001; Sharpley & Holden, 2004). A recent study by the NPSA drew together a multitude of factors including resource issues (e.g. time pressures, poor equipment) and continuing problems with communication and teamwork (NPSA, 2007). Research also suggests that physiological triggers may fail to detect deterioration (Goldhill et al., 1999), which may explain why studies have found that staff continue to rely on subjective recognition of patient deterioration. For example, Andrews and Waterman (2005) carried out a study of the Early Warning Score on one medical and one surgical ward in the UK. The authors reported that while ward nurses found the system useful, they often relied on 'intuitive knowing' of subjective and visual signs of deterioration. Further, two Australian studies concluded that nurses do not always follow the calling criteria, and identified patient distress and 'gut feeling' as significant

triggers to call a rapid response team (Cioffi, 2000; Daffurn, Hillman, Bishop, & Bauman, 1994).

The above studies suggest that early warning systems may not always succeed in what they are set out to achieve. This may happen if staff prioritise tacit understandings of risk including the subjective and visual signs of deterioration. The functioning of early warning systems may also be impeded by resource issues, including poor monitoring equipment and a lack of training on how to measure and record the vital signs. Further, the implementation of these systems may not be enough to raise awareness of the risks of patient deterioration, and to create behavioural change.

Thus early warning systems have not always been successful in achieving adherence to formal rules. Such findings are not, however, entirely unexpected, and they should be examined in the context of a long-standing critique of standardisation in healthcare.

2.8 Resistance to standardisation

So far I have suggested that procedural standards are increasingly grounded in government policy and regulation, and that they provide potential for making staff answerable for their daily conduct. Research, however, suggests that a gap still exists between clinical practice and desirable or ‘evidence-based’ practice as prescribed by procedural standards such as protocols and guidelines (Berwick, 2003; Cochrane et al., 2007; Liang, 2007; Straus & Jones, 2004; Thomson, Angus, & Scott, 2000; Timmermans & Mauck, 2005). This gap can be usefully explained by examining the critique of standardisation which concentrates on the alleged shortcomings of EBM;

encoded knowledge and bureaucratisation of medicine; deprofessionalisation and proletarianisation of medicine; and surveillance culture.

Reviews by Cohen, Stavri and Hersh (2004) and Lambert (2006) of the major criticisms of EBM identified a number of recurring themes. It has been argued that EBM favours evidence from experimental studies over other kinds of knowledge, and thus offers a poor philosophic basis for medicine. The definition of evidence is said to be narrow because it excludes important information such as professional experience, patient specific factors, and the understanding of physiology and disease processes. Further, the evidence gained through randomised controlled trials and large population-based studies is not necessarily applicable to individual patients, and results in 'formulaic' guidelines that reduce the autonomy of the doctor/patient relationship. Some claim that knowledge transfer in EBM is based on overtly simplistic assumptions of behavioural change, and that translating evidence into clinical practice is in fact a difficult process. A body of critical commentary has also emerged in the social sciences which focuses on EBM's positivist research conventions, and the narrow ways of knowing that undermine alternatives such as qualitative research designs (Mykhalovskiy et al., 2008).

Similarly, clinical governance has been criticised for its focus on evidence-based practice which is said to limit doctors' and nurses' opportunities to develop valuable experiential knowledge (Alaszewski & Brown, 2007). Procedural standards such as NICE guidelines and National Service Frameworks have been described as 'encoded knowledge' that fails to capture and preserve the tacit knowledge held by professionals (Alaszewski & Brown, 2007; Flynn, 2002; Lam, 2000; Ruston, 2006). Clinical governance policies allegedly enforce encoded knowledge by holding staff accountable

for evidence-based practice through audit, appraisal and professional development (Alaszewski & Brown, 2007; Ruston, 2006). Ruston (2006) has argued that the NHS has moved towards 'scientific-bureaucratic medicine' which limits practitioners' ability to manage clinical action, and that this threat to professional autonomy is a source of risk in itself. Further, Checkland, Marshall and Harrison (2004) suggest that clinical governance has introduced a notion of accountability that is based on rules and surveillance, rather than an idea of professionalism and individual reflection. The purpose of surveillance is to seek reassurance that practice meets formal standards as opposed to trusting that staff provide good quality care.

In general, standardisation has raised resistance and practitioners have claimed that it interferes with professional autonomy and the intuitive and interpretative nature of care provision (SmithBattle & Diekemper, 2001; Woolf, 1993). A number of sociological studies have argued against external control, claiming that uncertainty is an intrinsic aspect of medical action and that standard patients and illnesses do not exist (for discussion see Strauss, Fagerhaugh, Suczek, & Wiener, 1985 and Timmermans & Berg, 2003). Furthermore, professional norms in both medicine and nursing have traditionally emphasised individual capacity and responsibility (Leape, 1994) to prevent risks and errors that healthcare organisations may seek to tackle by introducing protocols and guidelines. Replacing professional judgment with bureaucratic criteria has been described as 'proletarianisation' of professional work (Britten, 2001), and the managerial approaches discussed earlier in this chapter (for example performance targets, financial controls, benchmarking and consumerism) represent the type of intervention that is said to have eroded clinical freedom. Such approaches have been seen to lead to deprofessionalisation, which means a loss of professional authority and

status (Britten, 2001). Standardisation has therefore been rejected because it has been seen as a threat to professional practice, autonomy and power.

Views about the impact of standardisation on professional judgment and practice do, however, vary. Research suggests that professions have adapted to changes, and become more involved in healthcare governance and thus able to protect their autonomy (Britten, 2001). For example, Dent (2003) has pointed out that managerial and professional roles overlap, and that professionals acquire and value entrepreneurial and managerial skills. Further, it has been suggested that new regulatory tools, such as managerialism, performance measures, EBM and guidelines, have helped to reassert professional power in the NHS, and that these measures do not necessarily increase the accountability of professionals and the safety of the public (Burau & Fenton, 2009; Kuhlman & Burau, 2008). This is because professional knowledge and expertise are increasingly becoming a part of modern healthcare governance and, as a result, professional groups are able to exert their own norms and values in areas such as performance measurement.

2.9 Procedural standards through an ‘accountability lens’

The review of practice and policy literature suggests that early warning systems should not be examined only as a clinical intervention at the sharp end of practice, but rather as a regulatory technique that conveys expectations of answerability for risk management in organisations. There are a number of reasons that place early warning systems firmly in an institutional, managerial and regulatory context and which need to be taken into account when examining these systems.

First, early warning systems address an important source of risk that concerns both clinical practice and organisations: the difficulty in detecting and responding to early signs of patient deterioration in hospital wards. As discussed earlier, failure to manage deterioration appropriately may lead to late referrals to intensive care units and increased morbidity, mortality and hospital costs. Therefore it can be argued that organisations have a legitimate interest in controlling clinical behaviour.

Second, early warning systems are linked to managerial and regulatory frameworks expressed in government policy and standard setting, and they are supported by a large number of stakeholder groups in critical care and patient safety. These frameworks put pressure on organisations to demonstrate that their care provision meets the expectations of good practice. With early warning systems, the proposed standards are voluntary and expressed through advice-giving functions that encourage organisations to standardise bedside observations and response to early signs of deterioration.

Third, the local implementation of early warning systems requires significant organisational input in terms of setting up track-and-trigger and rapid response systems. Therefore early warning systems are not just acted upon in situations that involve direct care; they are resource-intensive and include activities such as guideline development, training and auditing. Adoption of early warning systems shows significant commitment on hospital trusts' part to implement discretionary guidance, and highlights the potential significance of the 'regulatory space' (Parker, 2000) of hospitals, i.e. the combination of formal, social and cultural orderings of healthcare organisations, as explanatory factors for procedural standards.

Finally, research suggests that the implementation of early warning systems can be problematic in organisations. Studies suggest that early warning systems may fail to detect deterioration, and that staff may adjust these systems or use them selectively. Under such circumstances it is reasonable to assume that early warning systems have not led to transparent practice, or made staff answerable for good quality care in the way that organisations or regulators would define this.

Research on procedural standards in organisations, however, tends to focus on issues of Knowledge Transfer and Exchange (KTE) and diffusion of innovation. Such studies examine how best to generate and spread knowledge (e.g. evidence and new technologies) that can have a practical impact on the health system. These studies span a range of academic disciplines including sociology, psychology, anthropology, clinical epidemiology and management studies (Greenhalgh et al., 2004; Mitton, Adair, McKenzie, Patten, & Perry, 2007). Some of the key topic areas include spread strategies, barriers and facilitators, and methods of impact measurement (Mitton et al., 2007). Studies of KTE and diffusion of innovation involve a range of different methods and theoretical approaches, though some of the work is purely empirical.

While KTE and diffusion of innovation have increased our understanding of procedural standards, they rarely examine and theorise such standards in organisations from an accountability perspective. Only a handful of empirical studies have examined and theorised procedural standards from this perspective. These include Berg's and Timmermans's (2003) study of guidelines in insurance medicine; research by Winthereik, van der Ploeg and Berg (2007) on electronic patient records; and Yakel's

(2001) work on radiologists' record-keeping practices. Such work typically involves sociologically informed studies in the fields of medicine, archiving, and science and technology, and they offer important and fresh insights into procedural standards in organisations. There is a shortage of this type of research in healthcare, and yet procedural standards have typically emerged in conjunction with organisational reforms that have sought to make care provision more transparent and accountable.

To address this gap within research, this thesis considers procedural standards as organisational frameworks of accountability, thus expanding the promising stream of work within sociology and related disciplines. However, in order to examine procedural standards from an 'accountability perspective', I need to clarify what accountability means and involves in organisations. Accountability has been described as meaning different things to different people, though generally we tend to agree that a sense of accountability is a desirable characteristic (Bovens, 2005; Bovens, 2007; Jacobs, 2004; Sinclair, 1995). In the chapter that follows, I examine the concept and meaning of accountability in organisations.

CHAPTER 3: Conceptual framework

My interest in accountability developed gradually during my PhD study as I made progress with data analysis and the review of academic and policy literature. Scholarly literature on the ‘new’ accountability (Chan, 1999; Jacobs, 2004) in the public sector reflected developments in the NHS and the introduction of clinical governance. Further, the introduction of early warning systems appeared to be consistent with the aspirations set out in clinical governance to manage risk and prevent failures in standards of care. My data analysis, which was initially more focused on the detection and management of early signs of patient deterioration, became increasingly influenced by questions surrounding the goals of early warning systems, the organisation of work, formal responsibilities, and the impact on daily practices. The interplay between the empirical data and the relevant literature did not alter my focus on procedural standards and risk, but it incorporated a broader organisational perspective with a special focus on accountability.

In this chapter I suggest that we can further our understanding of the purpose and functioning of procedural standards by exploring theory on accountability in organisations and public administration. These areas of scholarly work offer a good foundation because much of the theorisation of accountability has concerned public (Davies, 2001; Day & Klein, 1987; Romzek, 2000; Romzek & Dubnick, 1987) and private (Munro, 1996; Roberts, 2001; Roberts & Scapens, 1985) sector organisations. They also draw on a number of different disciplines such as sociology and political science, and sub-disciplines that include science and technology studies, and studies of risk, regulation and accounting. My intention is not to cover all these disciplines and

offer a comprehensive review of theory, but rather to identify one conceptualisation that helps us to understand how accountability is processed in organisations: how it is set up, sought and achieved in practice. This process in organisations I define as an ‘accountability framework’.

A process-based perspective on accountability is useful in identifying the *actors, forums, practices and purposes* of accountability as they emerge through the organisation of work which, in this study, is prescribed by a procedural standard. Relevant issues covered in scholarly literature include organisational goals and needs; reciprocal dependence; formal responsibilities; and discretionary behaviour in lateral working relationships. Such an array of topics immediately transforms the functioning of procedural standards from knowledge transfer and innovation to something more comprehensive.

In this chapter I review theory to clarify the meaning, importance and the process of *accountability in organisations*. I draw on Boven’s (1998; 2005; 2007) and Davies’s (2001) work to map what the process of accountability involves, and indicate how this process may be applied to consider some aspects of procedural standards. A process perspective helps to clarify how accountability is sought in organisations, but is less useful in explaining *for what* people feel accountable when they carry out their daily work. I examine the concept of responsibility, and suggest that it offers a way to examine the content of accountability and to bring substance and depth to it. I conclude by discussing the purposes of accountability in organisations.

3.1 The origin and definition of accountability

Accountability has been described as a sought after and cherished, but at the same time elusive, concept with a ‘chameleon’ quality (Sinclair, 1995, p. 219). It raises the questions of accountability ‘to whom’ and ‘for what’. Of interest is also the actual process of accountability - how it can be sought and achieved – and what organisations and individuals might wish to achieve by seeking accountability. In an institutional context, accountability has been described as a strategy for managing and matching the diverse expectations generated both within and outside the organisation (Romzek & Dubnick, 1987). The origins of the word ‘accountability’ can be traced back to the medieval practices of revenue collection, bookkeeping and financial administration in Anglo-Norman England (Dubnick, 1998). Accountability originates from the Latin *accomputare*, to compute, and the French *à conter*, to tell a story, and *compte à render*, the rendering of accounts (Dubnick, 1998; Yakel, 2001). Basic modern meanings given to accountability include ‘*answerability for one’s actions or behaviour*’ (Dunn, 2003, p. 61) and ‘*a relationship in which an individual or agency is held to answer for performance that involves some delegation of authority to act*’ (Dubnick, 2008, p. 2). Typically, accountability is perceived in terms of a combination of answerability and transparency. Answerability means that those who are accountable are required to answer for their actions (Romzek & Dubnick, 1987). Transparency, on the other hand, refers to the aim of accountability to make decision-making, work, and activities visible (Gregory & Hicks, 1999).

Following Dubnick (1998) I acknowledge two related perspectives on accountability. First, organisations engage in the *conduct of accountability* by setting formal structures, rules and procedures in an attempt to render account giving. Second, those who are

under obligation to give an account may need to explain their actions either formally, for example, with record keeping, or informally in casual conversation, both of which can be defined as *accountability of conduct*. Thus accountability clearly involves a relationship between two or more parties. Among the many competing definitions of ‘accountability’, the one most useful for the purposes of this thesis describes it as a social relationship,

‘between an actor and a forum, in which the actor has an obligation to explain and to justify his or her conduct, the forum can pose questions and pass judgement, and the actor may face consequences’ (Bovens, 2007, p. 450).

In public sector service provision, such as healthcare, accountability relationships are typically imposed by external constituencies that make claims on the tasks and duties for which organisations are responsible. Such constituencies include the government, regulators, and stakeholder groups that have an interest in a regulatory activity. As organisations are faced with multiple and often conflicting claims, their response depends on how they assess the legitimacy of those claims and how they prioritise them (Black, 2008). Similarly, accountability inside organisations is established by making claims on tasks and duties for which individuals, teams and units are responsible, and such arrangements typically follow the management hierarchy.

Generally, an accountability relationship can be established when an actor is responsible for a specific task in the performance of which the forum has a legitimate interest (Davies, 2001). Once an accountability relationship has been established, the forum or the actor, or both parties together, set the scope of duties involved and the standards of acceptable performance. Issuing of procedural standards is one way to establish the tasks and duties for which the organisations and individuals are responsible. The actors

are under obligation to provide an account of their actions if the forum requests it, and they may face consequences based on the judgment passed by the forum (Bovens, 2007). The concept of accountability involves a process (Box 3.1) that is meant to invoke a sense of accountability, which means that the actor accepts the standards that have been set and performs them in an open and transparent way (Bovens, 2007). Described in this way the essence of accountability is a genuine and profound behavioural change which, it could be suggested, goes beyond compliance that can be achieved through strict expectations of rule obedience and a threat of punishment.

Box 3.1 Accountability as a process (adapted from Bovens, 2007, pp. 451-452, and Davies, 2001, pp. 81-87)

Accountability involves

1. establishing a relationship between an actor and a forum
2. in which the standards of formal responsibilities define acceptable performance and
3. in which the actor is under obligation
4. to explain and justify
5. his/her conduct
6. the forum may pose questions and it may pass judgement
7. and the actor may face consequences

The purpose is to invoke a sense of accountability = a willingness to act as prescribed by set standards and to be open to scrutiny.

I will examine the concept of accountability according to the above process (Box 3.1) and discuss:

1. actors and forums: accountability as a relationship
2. responsibilities
3. standard setting
4. obligation to give an account; judging and sanctioning
5. the purpose of accountability.

The first four items concentrate on practices surrounding the conduct of accountability, i.e. how organisations seek accountability. The fifth, the purpose of accountability, describes the desired outcomes whilst generating a significant body of critical theory approaches to accountability. I will briefly discuss the critical approaches and explain how my study is positioned in relation to them.

Box 3.2 Types of accountability (adapted from Bovens, 2007, p. 461)

Based on the nature of the **conduct**

- Procedural
- Performance outcomes (results)

Based on the nature of the **actor**

- Corporate accountability
- Hierarchical accountability
- Collective accountability
- Individual accountability

Based on the nature of the **forum**

- Administrative
- Professional accountability
- Legal accountability
- Political accountability
- Social accountability

Based on the nature of the **obligation**

- Vertical
- Horizontal

3.2 Actors and forums

This section takes a closer look at accountability as a relationship. The purpose is to demonstrate the range and diversity of affiliations that may involve the adoption of

procedural standards to clarify the relevant duties and tasks that the actors are expected to perform. Generally speaking, accountability provides a useful analytical perspective to any situation that involves a social relationship (Dubnick, 2008) between at least two parties and an expectation of account-giving. Bovens (2007) provides a summary of different types of accountability (Box 3.2) which can be described in terms of the social relationships between the parties involved in account-seeking and giving. Two main types of conduct can be distinguished: accountability for the process or procedure (the manner in which tasks and duties are carried out) and accountability for performance outcomes (results). Each party may be subject to several accountability relationships that can be based on the nature of the actor, forum, and obligation.

3.2.1 Relationships based on the nature of the actor

Based on the nature of the actor, the relationship may concern corporate, hierarchical, collective or individual accountability. Corporate accountability means that organisations such as NHS trusts can be held liable for failures or offences under civil, administrative and criminal law without a need to identify and verify the responsible individuals (Bovens, 2007; Ministry of Justice, 2007). Organisational hierarchies, on the other hand, assign accountability, assume responsibility and attribute blame internally according to a hierarchical ‘chain of command’ (Bovens, 2007). This typically involves managerial accountability for checking that a given course of action has been taken, appropriate outputs have been produced, and that the right resources have been spent (Day & Klein, 1987). Accountability can be shared collectively, in which case any member of the organisation can be held accountable for the conduct of the organisation, or it may be judged individually based on each person’s actual contribution (Bovens, 2007).

3.2.2 Relationships based on the nature of the forum

Based on the nature of the forum, accountability entails relationships that may concern administrative, professional, legal, political, or social accountability. Administrative accountability is sought by auditors, inspectors and controllers, and it includes state regulation (Bovens, 2007). NHS hospitals trusts are accountable to the Department of Health and are regulated by the independent Care Quality Commission. A new type of NHS trust in England, the foundation hospital, is an independent public-benefit corporation accountable to their members who include the local community and staff employed by the trust (DoH, 2005a). Foundation hospitals are regulated by an independent Monitor (<http://www.monitor-nhsft.gov.uk/>) that reports directly to Parliament.

Professional accountability emphasises competence and ethical and legal conduct, and it is usually established between an individual practitioner and his/her employer, licensing body, professional association, colleagues and patients (Emanuel & Emanuel, 1996). Professional licensing bodies have traditionally defined levels of competence and codes of conduct, and they have the power to investigate and discipline their members. In the UK, the General Medical Council (GMC) and the Nursing and Midwifery Council (NMC) regulate entry to, and removal from, the professions. However, public and patient trust in professionalism as a guarantor of high standards of care and competence is believed to have declined (Rowe & Calnan, 2006). This is typically explained by an overall decline of trust in experts and institutions, and by medical consumerism and better informed patients (Sharpe, 2000). In recent years, trust appears to have been further eroded by the highly publicised cases of professional misconduct discussed in Section 2.4.4. This decline has prompted a debate regarding the accountability of

clinicians, and a search for modes of governance that hold both institutions and professionals accountable (Maynard & Bloor, 2003; Rowe & Calnan, 2006).

Legal accountability is defined by the law and the courts, and political accountability means that those with delegated powers in the public sector are answerable for their actions to their superiors, parliament, and the citizens to whom they provide services (Jacobs, 2004; Sinclair, 1995). Finally, the type of forum that expects social accountability includes interest groups such as non-governmental organisations, the media, service users, and the general public (Bovens, 2007). Compared with political accountability that is established from public agencies via the government and political parties to citizens, social accountability seeks a more direct and explicit accountability between public agencies and citizens. Another concept, public accountability, has been given a similar definition of less formal, but more direct, accountability to the public (Jacobs, 2004). Citizens can seek social/public accountability through forums such as public panels and consultations, public enquiries, and the media. Such forums may, however, lack the authority to call to account and discipline public agencies.

3.2.3 The notion of ‘multiple accountabilities’

The above variety of forums and relationships shows that NHS trusts and their staff are accountable to a large number of organisations and individuals. First, care provision in organisations is still governed by professional accountability. Professional accountability emphasises competence and ethical and legal conduct, and it is usually established between an individual practitioner and his/her employer, professional association, colleagues, and patients (Emanuel & Emanuel, 1996). Second, a managerial line of accountability is established through organisational hierarchies from

professionals to the managers who represent the organisation (Jacobs, 2004). As professionals are increasingly involved in management (e.g. clinical directors, lead nurses, and risk managers), the managerial and professional roles in healthcare organisations often overlap (Dent, 2003). Third, a political line of accountability is drawn from the management, represented by the chief executive and the board of directors, to the 'healthcare community' that includes citizens, the government, political parties and interest groups (Emanuel & Emanuel, 1996; Jacobs, 2004). The community may seek political accountability for health system performance including good decision making, service quality and efficiency. Political accountability is often sought using licensing and funding arrangements and state regulation. Finally, both professionals and organisations are legally accountable to the court of law, which according to Bovens (2007) is the most unambiguous type of accountability based on detailed legal standards.

The combination of different accountability models has been seen to create 'multiple' accountabilities by increasing the number of stakeholder groups to whom clinical practitioners are accountable (Checkland et al., 2004). For example, NHS doctors and nurses in England are accountable not only to their patients, peers and professional licensing bodies, but, through their managers, also to the public and the funders of healthcare who are represented by the government, the Department of Health, and the strategic health authorities. As discussed earlier, of specific interest is the growing importance of structural and hierarchical forms of accountability following the reforms that have taken place in the health sector, including managerial approaches and clinical governance.

3.2.4 Socialising processes of accountability

According to the above descriptions, accountability is usually established in hierarchical relationships or in relation to external forums, and it can be described as ‘vertical’.

Scholars have, however, also examined accountability in ‘horizontal’ working relationships that involve individuals of relatively equal power, and they have emphasised the importance of mutual understandings and interdependencies that constitute socialising processes of accountability (Roberts, 2001; Roberts, 2002; Yakel, 2001). Power is nevertheless an integral part of the relationship as it will influence how accountabilities are defined and valued (Yakel, 2001). Socialising forms of accountability are fostered by regular face-to-face contact and absence of formal power differences (Roberts, 2001). The concept of ‘mutual accountability’ (Bardach & Lesser, 1996) is equally based upon reciprocal expectations of accountability, but is broader and acknowledges also unequal power-relationships. Accountability within teams and in lateral working relationships is part of the day-to-day work in all organisations, and it helps to build reciprocal senses of obligation and responsibility (Roberts, 2001). Munro (1996) has argued that everyday conversation consists of informal exchanges of stories and explanations which are an important aspect of account-giving. The notions of mutual and socialising forms of accountability are useful for the purposes of this study because they capture the accounts given and received during the course of daily work. They also highlight that accountability can be understood as a generic property (Neyland & Woolgar, 2002) of all everyday activities.

3.3 Responsibility

Scholarly literature on accountability tends to focus most frequently on the relationship between forums and actors. This section will focus on a related and equally important topic - the activities that are under scrutiny – and employs the concept of responsibility (Box 3.3) to seek a deeper understanding of the meaning of accountability. According to Uhr (as cited in Dunn & Legge, 2001, p. 75) accountability ‘*defines the boundaries within which official responsibilities are acted out*’. Official, or formal, responsibilities are defined by accountability forums, such as employers, regulators and professional societies, and these responsibilities may vary depending on the forum. Those who are under obligation to provide an account should have a sufficient definition of what is expected from them (Dunn & Legge, 2001), and they may need to weigh and prioritise the formal responsibilities imposed by different forums. For this thesis, *formal responsibilities* are defined as the external charge of duties and tasks. However, apart from the external charge of duties and tasks, responsibilities are also derived from subjective perceptions of ‘for what’, and ‘to whom’, people feel responsible (Dunn, 2003). I define these subjective perceptions as *a sense of responsibility* and limit the scope to ‘for what’ people feel responsible. I use this narrow definition for analysing the nature of any work-related activity for which staff personally feel responsible. I suggest that accountability frameworks seek to invoke a sense responsibility – a willingness to accept responsibility – for formal duties and tasks.

It is useful to focus on the subjective notion of responsibility because it enables us to distinguish a sense of accountability from unquestioning obedience to rules, or acting under coercive (Nys, 2009) threat. As Dunn and Legge argue (2001), accountability is ‘*the price citizens extract for conferring substantial administrative discretion and policy*

responsibility on both elected and appointed government personnel' (p. 74). Under such circumstances, actors have some choice and the accountability forums expect wise and conscientious use of discretionary powers within the limits of delegated authority. An authorisation to use discretion is typically granted to professional groups with special expertise, and such groups include civil servants, doctors, nurses, social workers and police officers. Views regarding the scope and limits of discretion, however, vary. Responsibility is central to a long-standing debate in public administration concerned with the extent to which public officials should be allowed discretion in carrying out their duties (Dunn & Legge, 2001). Equally, professional discretion is central to clinical decision-making (Elstein, 1988; Thompson & Dowding, 2001), and it has been the subject of a debate regarding the role of external control mechanisms, such as procedural standards, in medical and nursing practice (Strauss et al., 1985; Timmermans & Berg, 2003).

Box 3.3 The concept of responsibility (adapted from Dunn & Legge, 2001, and Dunn, 2003)

'Responsibility' consists of:

1. Formal responsibility = external charge of duties and tasks as defined by accountability forums
2. A sense of responsibility = subjective definitions of 'for what' people feel responsible

Accountability in the public sector typically involves expectations of both neutral competence and discretionary decision-making. According to Harmon (1995) traditional views of public sector personnel as neutrally competent bureaucrats were challenged by the political turmoil and reform movements of the 1960s and 1970s. Reformers

perceived organisations and their staff not only as instruments of public purpose, but as actors who should promote social equity and distributive justice by drawing on their professional expertise and ethics. However, the crises of public finance that emerged in the 1970s restored administrative efficiency and effectiveness as the key targets in official policies and programmes, and created demands for more consistent and transparent practice (Harmon, 1995). It can be argued that responsibility, by its association with discretion, provides a useful perspective into accountability in areas within the public sector, such as healthcare or education, where professionals are left in charge of important tasks and duties that cannot be fully standardised.

3.4 Standard setting

Standards are important as a means of articulating the aspirations of the organisation, and the desired norms of behaviour among staff. Procedural standards offer a means to express such expectations, and they enable accounts to be sought and given according to certain criteria. In general, standards play an important role in defining the boundaries of formal responsibilities and providing a method and structure for explaining conduct (Davies, 2001). Without specific mutual criteria, account-giving amounts to little more than excuses and vague descriptions (Day & Klein, 1987). However, as Davies (2001) and Power (2003) have argued, no amount of checking can guarantee that standards are actually met; this may be the case even where clear criteria have been set.

Accountability frameworks cannot function without a degree of trust regarding the reliability of the accounts (Davies, 2001). Precise standards and enforcement through sanctions represent a hard model of accountability characterised by low levels of trust. Broad standards and enforcement through persuasion, on the other hand, represent a soft model characterised by high levels of trust among participants (Davies, 2001).

Standards may, however, fail to ‘attach’ to everyday practice. Research suggests that variation and selective retention of practices may emerge if standards are not fully consistent with staff perceptions of appropriate practice. A study about NHS Direct, for example, reported that nurses adjusted the patient assessment process to compensate for weaknesses they identified with a computerised decision support system (Ruston, 2006). The study suggested that while nurses appeared compliant, they could alter the outcome of the assessment process by modifying and repeating the questions included in the assessment protocol. Failure to attach may also be caused by disagreements over standards which create tension among staff. A study about guideline adherence in operating theatres found that nurses, who were more likely to comply with guidelines, criticised doctors for non-compliance and viewed them as rule breakers (McDonald et al., 2005). Doctors, on the other hand, did not necessarily perceive standards as legitimate, especially if written by non-medical groups. This type of disagreement can be caused by standards that reflect views that are based on certain social, moral or religious values, or are held by a faction of a divided scientific, professional or political community. Such standards divide not only professionals but also scholars and the wider society. Butler (1999) gives a number of examples where diagnostic classifications of mental disorders have been seen to reflect value judgments disguised as scientific decisions. These include the classification of variant sexual behaviours, such as homosexuality, as mental disorders mainly because they offend traditional moral and religious values. Overall, standards may be subject to debate and confrontation, which can have a profound impact on patient care and the organisation of work.

From an organisational perspective, such differences and disagreements may create barriers to compliance, continuing variation in practices, and a source of risk. Both organisations and practitioners may find implementation of procedural standards challenging, and sometimes standards fail to attach to practice or they become redundant. Alternatively, efforts to maintain them may involve groups and individuals adjusting their own, or ‘repairing’ each others’, interpretations of procedural standards and how they should be used in daily practice (Timmermans & Berg, 1997). Perhaps more importantly, disagreements over risk management standards compromise the functioning of procedural standards as an accountability mechanism, because staff may either refuse to adhere to standards, or give the impression that they are compliant even when they are not. Embedding procedural standards into daily practice can become a lengthy process through which accountability for adhering to formal risk management standards is negotiated, contested and continuously re-established.

The notion that formal standards are not necessarily widely accepted and ‘neutral’ is highly significant to this study. Procedural standards that prescribe clinical practice are likely to promote specific understandings of how work should be carried out. As I will show in my empirical analysis, procedural standards may fail to control variability in practice if staff do not find formal definitions of work meaningful.

3.5 Obligation to give an account; judging and sanctioning

Accountability in organisations is typically understood to involve an authoritative forum with formal powers and sanctions, and an obligation to give an account is often enforced by introducing procedures that can be scrutinised. Examples of such

procedures include form filling and reporting structures that can be audited. It is important to note that a forum may not necessarily exercise its right to call to account, and that both standard-setting and accounting procedures may involve bargaining and negotiation (Davies, 2001). The process of account-seeking may also be casual or even informal. Especially in mutual and socialising forms of accountability, the seeking of accounts often takes place during casual daily interactions and conversations in the workplace. An obligation to give an account can be encouraged by appealing to the actors' ethical and moral stance (Bovens, 2007) for example by encouraging staff to be good team players or loyal to the organisation.

Equally, the consequences of poor performance can be highly formalised (e.g. disciplinary measures and fines), or implicit and informal such as being reprimanded in public (Bovens, 2005). Informal sanctions, often present in mutual and socialising forms of accountability, can be very powerful and involve peer-pressure and even conflict between colleagues (Roberts, 1996). Whether the process of accountability must always involve actual punishment is debatable. According to Bovens (2007, p. 451) *'the possibility of sanctions is a constitutive element of accountability'*, and thus a sense of accountability can be invoked simply by the possibility of being scrutinised and disciplined. However, a sense of accountability - a willingness to act as prescribed by set standards and to be open to scrutiny - can be interpreted with a positive meaning as a genuine wish to comply with rules that are seen as appropriate and justified. Therefore individuals may accept that they are accountable purely on the grounds that formal standards, responsibilities and accounting procedures exist.

3.6 The purpose of accountability in an institutional context

So far I have described how accountability can be processed in organisations. In the section that follows I will examine the purpose of accountability: what organisations and forums may wish to achieve by seeking accountability. First I examine, following Boven's (2007) presentation and in the context of healthcare governance, three explanations that draw on theory of public administration. These explanations represent traditional views of public organisations as neutral instruments to achieve targets, such as efficiency and effectiveness, as set out in official policies and programmes. Then I briefly discuss critical theory approaches which suggest that accountability may be useful as a means of governing risk in institutional settings.

3.6.1 Accountability as mandated by democratic governance

Bovens (2007) has identified three types of rationale behind accountability: as a principle of democratic governance; for prevention of corruption and abuse; and for enhancing government effectiveness. These three rationales can be found in current health policy, and clinical governance serves as a good example.

3.6.1.1 Accountability as a principle of democratic governance

First, the principle of democratic governance implies public accountability for achieving the aims and objectives set for a public sector care provider. In 2004 the Department of Health issued the core and developmental standards for health. The mandatory core standards include, for example, the requirements that *'health care organisations promote, protect and demonstrably improve the health of the community served, and*

narrow health inequalities' (DoH, 2004b, p. 17) and that these organisations '*apply the principles of sound clinical and corporate governance*' (DoH, 2004b, p. 12). These standards reflect the requirement to demonstrate that taxpayers' money is used wisely to improve the health of the nation in the long-term.

3.6.1.2 Accountability for prevention of corruption and abuse

Second, clinical governance criteria addressing working culture, poor standards of practice, and professional misconduct can be seen as being directed at the prevention of abuse. The core standards prescribe that healthcare organisations must '*actively support all employees to promote openness, honesty, probity, accountability, and the economic, efficient and effective use of resources*' (DoH, 2004b, p. 12). Further, effective care and optimal health outcomes require '*a safe and secure environment which protects patients, staff, visitors and their property, and the physical assets of the organisation*', and an environment that is '*supportive of patient privacy and confidentiality*' (DoH, 2004b, p. 16). Organisations must also '*challenge discrimination, promote equality and respect human rights*' (DoH, 2004b, p. 12). In public administration problems usually originate from corruption; however, the current government focus on patient safety (DoH, 2000a; DoH, 2001; DoH, 2006a; DoH, 2006b) suggests that in healthcare the key concerns relate to the vulnerability of patients, the seriousness of adverse outcomes, and workplace culture that allows sub-standard practices.

3.6.1.3 Accountability for enhancing government effectiveness

Third, clinical governance also emphasises the efficiency and effectiveness of care. The seven domains for mandatory core standards include clinical and cost effectiveness

which includes compliance with NICE guidelines, clinical audits, and reviews of clinical services (DoH, 2004b, p. 7). Similarly, the core standards for governance include a requirement to '*ensure financial management achieves economy, effectiveness, efficiency, probity and accountability in the use of resources*' (DoH, 2004b, p. 12). According to Bovens (1998), the rationale behind accountability as a tool for achieving efficiency and effectiveness is that it is intended to promote learning. The learning perspective implies that accountability works as a feedback mechanism to identify shortcomings and introduce improvements. The NHS incident reporting system is an example of such a mechanism, where systematic data collection on incidents and near misses is required in order to ensure that '*lessons from adverse events in one locality are learnt across the NHS as a whole*' (DoH, 2001, p. 3). Equally, the forms and reporting mechanisms of early warning systems can be used to examine adverse patient outcomes, and to enable learning and prevention.

The Department of Health also stated that care provision is moving from national targets to '*a standards driven system*' for '*continuous improvements in quality*' (DoH, 2004b, p. 2). The goal of performance improvement is clearly stated in clinical governance as the following quotation shows:

'Clinical governance is a system through which NHS organisations are accountable for continuously improving the quality of their services and safeguarding high standards of care by creating an environment in which excellence in clinical care will flourish'. (Scully & Donaldson, 1998, p. 2)

Therefore clinical governance makes explicit demands on organisations to ensure that their staff maintain the highest standards in order to prevent risk, errors and failures. For the purposes of my thesis, perhaps the most significant aspect of clinical governance is its strong emphasis on the quality of care and considerations of the role and perspective

of a range of stakeholders with a claim on accountability (Donaldson, 2001) including patients, healthcare organisations, regulatory bodies, and the general public.

Quality is typically measured in relation to expectations, and it holds a subjective meaning located '*in the eye*' of the person or persons concerned with a specific object, process or function (Harteloh, 2003). In the quality improvement context, 'quality' can be defined as the '*degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge*' (IoM, 1997, p. 3). Patient safety is a specific area of quality and it can be defined as:

'The process by which an organisation makes patient care safer. This should involve; risk assessment; the identification and management of patient related risk; the reporting and analysis of incidents; and the capacity to learn from and follow up incidents and implement solutions to minimise the risk of them recurring.' (NPSA, 2004, p. 17)

It is of specific interest that these definitions emphasise the importance of knowledge and learning which, as was mentioned above, can be seen as the underlying rationale for seeking accountability. Thus accountability is sought not for the sake of scrutiny but to improve performance.

3.6.2 Accountability as a means of governing risk

The above descriptions can be seen to promote positive perceptions of accountability as a process that genuinely seeks to improve organisational and individual performance. Critical approaches to accountability have, however, presented more pessimistic interpretations of its purposes by implying that the underlying rationale is to make

practice more amenable to control. For example, scholars influenced by Michel Foucault's (Burchell, Gordon, & Miller, 1991) work on governmentality have perceived accounting procedures as '*an intellectual machinery*' to orient individuals to '*the values and practices of accountability*' (Neyland & Woolgar, 2002, pp. 261-262).

Accountability has also been interpreted as a framework that makes performance auditable, and offers a means to prove that practice in organisations is acceptable and legitimate (Power, 2003). Thinking of early warning system and the policy and regulatory drivers discussed earlier (Section 2.7), it may be necessary to ask to what extent the public sector reform and demands for greater accountability may be associated with efforts to control risk in organisations.

In Chapter 2 I suggested that the NHS has undergone substantial regulatory change which has given healthcare organisations more responsibility for quality improvement. These developments have taken place in response to alleged weaknesses such as undesirable practice variation, professional misconduct, and medical error. These weaknesses have apparently led to a loss of trust in healthcare institutions and professions, and efforts to control practice by implementing procedural standards. Such developments may be described as quality improvement but, in practice, implementation has often focused on controlling risks associated with clinical practice. For example, an early warning system is a procedural standard that is specifically designed to manage the risks associated with bedside observations. As discussed earlier, such risks may relate to poor patient outcomes (e.g. cardiac arrest) or problems identified with work processes and practices (e.g. poor skills base, lack of consistency). In this latter part of the conceptual framework, I examine why risk can be seen as a significant motivation for regulation and governance, and thus for accountability.

According to Mythen and Walklate (2006) there has been an ‘*explosion of interest in risk*’ (p. 2) since the early 1990s following Ulrich Beck’s pioneering work on the ‘risk society thesis’. Beck’s mainly environmental analysis examined the ills of ‘late modernity’ which is a widespread topic across many scholarly disciplines. In sociology, the shift towards late modernity since the 1960s is associated with an intensifying sense of uncertainty in society. Sociologists including Zygmunt Bauman (2000; 2007) have argued that economic growth and globalisation have induced political and social change and reduced the stability of work, family and communities. As Bauman (2006) argues:

“‘Fear’ is the name we give to our uncertainty: to our ignorance of the threat and of what is to be done – what can and what can’t be – to stop it in its tracks – or to fight it back if stopping it is beyond our power.” (p. 2)

Bauman’s description of fear is equally appropriate for describing how we perceive and respond to risk, whether as individuals or as institutional actors and decision-makers. The underlying assumption is that feelings of risk and uncertainty have a profound effect on societies, and in the section that follows I will examine how risk may act as a catalyst for the growth of governance and regulation. The following section has two parts. First I examine the concepts of risk and uncertainty, and then I explore how intensification of risk discourses and practices has been explained in areas of governance and regulation.

3.6.2.1 The concept of risk

The concept of ‘risk’ has been given a number of different definitions in scholarly literature but most accounts acknowledge the notion of uncertainty (Denney, 2005; Taylor-Gooby & Zinn, 2006). Risk is often understood in three different but closely related ways (Denney, 2005; Zinn, 2008a). First, uncertainty means that risks are

associated with chance, probability and randomness. Second, risk may indicate an uncertain adverse event involving threat, damage or loss. Third, risk can be a positive force and involve weighing up the potential gains and losses of an uncertain event. Definitions of risk can be explained against their 'epistemological foundation', and one distinctive feature is whether risk is perceived as an independent variable that can be approached objectively, or whether it is constructed or mediated in social interaction.

In 'realist' disciplines such as economics, physics and medicine, risk is predominantly objective and measurable, and techniques of probability assessment are typically used in domains such as banking, engineering and epidemiological research (Zinn, 2008b). Such disciplines are associated with a techno-scientific notion of risk which assumes that individuals are capable of making calculative and purely rational choices based on objective facts (Lupton, 1999). It has been argued that the 'risk as science' perspective dominates the current approaches to patient safety which rely on shared understandings of manageable risks, and on systems that detect and prevent harmful actions (MacDonald et al., 2005). In workplaces, the rational choice model is often combined with disincentives such as disciplinary procedures to deter staff from violative behaviour (Vaughan, 1998). The 'risk as science' approach has been criticised for promoting methodological individualism and removing decision-making from its cultural, social and situational contexts (Lupton, 1999; Vaughan, 1998).

'Constructivist' approaches, on the other hand, perceive risk as socially mediated or constructed in social groups such as family, workplace and society (Zinn, 2008b).

Douglas's (1996) cultural symbolic perspective suggests that '*dangers are real enough, and terrifying too*' (p. 39), but that perceptions of risk are based on cultural formations

embedded in social functions and responsibilities within a group (Lupton, 1999; Zinn, 2008b). Therefore risky behaviour manifests cultural differences in political, moral and aesthetic judgments of risk rather than individual calculative rationale. On balance, Douglas has been criticised for portraying organisations as politically neutral and failing to recognise the ‘cultural underpinnings’ of organisational risk perceptions (Lupton, 1999).

Social science literature offers further epistemologies of risk including governmentality analyses influenced by Michel Foucault’s work, and the risk society thesis as demonstrated in the work of Ulrich Beck (Horlick-Jones, 2003; Lupton, 1999; MacDonald et al., 2005). Governmentality, which will be discussed in more detail in Section 3.6.2.2, is said to exert social control by presenting an idealised norm of conduct and by harnessing mechanisms of individual accountability. Based on formal discourse by those who hold power to construct knowledge, it creates pressure to conform to modes of behaviour that are perceived as self-improvement (Flynn, 2002; Lupton, 1999). According to governmentality analyses, risk is not an objective fact to be discovered by observation. Rather, knowledge of risk and how it should be managed is generated by the government to serve any purposes they see fit and appropriate. The risk society thesis, on the other hand, argues that preoccupation with risk is a conscious response to escalation of real risks created by techno-scientific, industrial and economic development, therefore implying that both risks and our awareness of them have intensified (Beck, 1992; Lupton, 1999; Mythen, 2004). The risk society is engaged in ‘reflexive modernisation’ which means contemplating, debating and dealing with risks that cannot be contained or avoided as long as the production of wealth takes priority over its negative side-effects such as pollution (Dean, 2010). This process can be

confrontational and even destructive because decisions about risk may lead to undesirable and unequal distribution of goods and ills, such as governments allowing ecologically unsustainable deforestation in third world countries for short-term financial gain.

The risk society thesis has been criticised for depicting fearful approaches to late modernity as '*homogenous and all embracing*' (Rose, 1998), thus overlooking the highly localised, individualistic and reflexive nature of 'lay knowledges' of risk (Lupton, 1999; Lupton & Tulloch, 2002). Similarly governmentality has been criticised for representing individuals as '*insentient 'docile bodies' observing and obeying disciplinary discourses*' (Mythen & Walklate 2005, p. 15), and ignoring the independent nature of individual rationalities. On the other hand, both can be said to operate analytically at the intersection of micro- and macro-level theories by contemplating both human agency and the structural conditionings of people's behaviour.

Risks are typically seen to arise from uncertainty. Uncertainty in clinical decision-making is well established in the health sciences and often analysed and conceptualised in the context of medical practice (see for example Eddy, 1988; Fox, 1957; Katz, 1988). In nursing practice a smaller number of studies have examined uncertainty, for example, in the context of nurse decision-making (Thompson & Dowding, 2001), overconfidence (Baumann, Deber, & Thompson, 1991) and information needs (French, 2006). Fox (1957) has identified three types of uncertainty that concern clinical decision-making. The first type results from a practitioner having incomplete or imperfect knowledge; the second from the limitations of current medical knowledge; and the third from the

difficulty in distinguishing between personal ignorance and the limitations of current knowledge. Causes of uncertainty mentioned in the health sciences literature typically include: difficulty of specifying problems, priorities, and appropriate response due to variation in cases and circumstances; insufficient or contradictory information; and communication problems (Holmberg, 2006; McNeill, 2001). Uncertainty is also associated with an expanding body of medical knowledge, treatment of more complex cases, and use of more risky interventions (Bosk, 2005; Fox, 1980). As discussed earlier, with vital sign monitoring the uncertainty concerns the difficulty in identifying early signs of patient deterioration. For example, staff may not have the necessary skills or experience to assess patients, or they may not appreciate how rapidly patients can deteriorate. On the other hand, from managers' perspective uncertainty may be caused by difficulty in scrutinising how bedside observations are being carried out and followed up.

Power (2007) has argued that uncertainty is '*transformed into risk when it becomes an object of management, regardless of the extent of information about probability*' (p. 6). According to Power, the content of plans and strategies depend on how risk is framed in an environment where not all risks can be reliably estimated. For example, early warning systems could be seen as an effort to manage the uncertainties that regulators and organisations associate with bedside observations and vital sign monitoring. By introducing an early warning system, hospital trusts may feel more confident that practice meets set standards, and that every patient is assessed appropriately and managed accordingly in order to prevent deterioration. This will then reduce the assumed threat of sudden patient deterioration and poor patient outcomes among hospital inpatients, even though it may be difficult to show 'hard' evidence of how

significant the threat is in reality, or of changes in clinical outcomes (e.g. in-hospital mortality and morbidity) following the introduction of such systems.

Therefore I suggest that, for the purposes of this thesis, perhaps the most significant question is not whether risk is based on ‘real’ threats, but how risk is ordered and governed in the presence of uncertainty. As Ewald (1991) argues, *‘anything can be a risk; it all depends on how one analyzes the danger, considers the event’*, and he describes, for example, insurance simply as a *‘technology of risk’*, *‘a schema of rationality, a way of breaking down, rearranging, ordering certain elements of reality’* (p. 199). Risk in society has attracted much scholarly interest, but there is one particularly well-established approach that has frequently been adopted to examine risk as a system of governance and regulation: governmentality analyses.

3.6.2.2 *Governmentality theories and governing ‘through’ risk*

Governmentality represents a strong constructivist approach according to which risk is a governmental strategy of regulatory power, and a technique for managing an uncertain future (Lupton, 1999). Michel Foucault, one of the most prominent and controversial post-war thinkers, introduced this concept in one his public lectures (Foucault, 1991a) at the College de France in the late 1970s. Foucault’s highly productive career as a philosopher was cut short by his untimely death at the age of 57. He left a significant scholarly legacy, and the concept of governmentality alone has generated a large body of work which is best described as analyses, rather than a theory, of governmentality (O’Malley, 2006). Foucault himself did not write specifically about risk, and risk as an area of governmentality has been taken forward by influential scholars including two of Foucault’s colleagues, Francois Ewald (1991) and Robert Castel (1991), and by a

generation of 'Foucauldians' including Nikolas Rose (1998), Mitchell Dean (2010) and Pat O'Malley (2006). Analyses of governmentality and risk have also generated interesting research with NHS practitioners. These include a study by Julie Brownlie and Alexandra Howson (2006) of practitioners' response to formal discourses and parental concerns on the risks of MMR vaccinations, and Paul Godin's (2004) research on how community mental health nurses combine actuarial methods (e.g. a screening tool), clinical knowledge, and intuitive expertise in the assessment and management of risk.

Foucault defined governmentality as the 'conduct of conduct', which according to Gordon (1991) means '*a form of activity aiming to shape, guide or affect the conduct of some person or persons*' (p. 2). Dean (2010) offers the following definition:

'Government is any more or less calculated and rational activity, undertaken by a multiplicity of authorities and agencies, employing a variety of techniques and forms of knowledge, that seeks to shape conduct by working through the desires, aspirations, interests and beliefs of various actors, for definite but shifting ends and with a diverse set of relatively unpredictable consequences, effects and outcomes.' (p. 18)

The methods of governmentality include (Dean, 2010, pp. 18-19; Gordon, 1999, p. 1; Miller & Rose, 2008, pp. 16, 33-34):

- 'governmental rationalities' which involve systematic ways of thinking about how things are, or how they should be
- 'knowledge' of what constitutes good, virtuous and responsible conduct
- 'technologies' which consist of people, techniques, instruments and institutions for conducting of conduct

- ‘self-government’, or ‘government at a distance’, in which individuals and collectives are encouraged, by employing different technologies and forms of knowledge, to regulate and conduct themselves.

In governmentality analyses, risk is a fairly stable component of governance that is used to monitor and control populations by adopting the above methods. Risk is socially constructed through the actions of influential agencies and institutions, including the government, industries, or smaller entities such as professional groups, in an attempt to govern uncertain future events. Through this process certain practices become labelled as ‘risky’ and population groups as ‘at risk’ or ‘high risk’, therefore providing a moral justification for specific interventions.

Governmentality studies suggest that risk assessment and predictions are increasingly deployed as a means of managing subjects in all areas of social life (O’Malley, 2006). Such activities may take place at any level of governance; for example, Baker and Simon (2002) have defined governing through risk as *‘the use of formal considerations about risk to direct organizational strategy and resources’* (p. 11). Examples of organisational activity include social services strategies to identify and protect at-risk children, or community policing that targets high-risk areas. Risk as a governing principle may, however, be problematic if it substitutes other, equally relevant, principles such as individual or population needs. For example, Rose (1998) has argued that penal and mental health strategies are disproportionately influenced by risks posed by a small number of exceptionally dangerous criminals. Thus government may use formal considerations of risk posed by a small minority of individuals to direct strategy

and resources in public services in ways that address neither population nor most individuals' needs.

Governmentality studies offer different interpretations of how governing through risk has emerged, and O'Malley (2006) has identified three major streams of scholarly work. One stream has focused on mapping patterns and trends of risk-centred governance and how responsibility for risk management is assigned to citizens and organisations. Such studies have detected a gradual progression towards 'techniques of self-government' that promote autonomy, responsible risk-taking and freedom of choice. For instance, many scholars have argued that management of pregnancy and child birth is increasingly determined by the risks it poses to both mother and baby (Lankshear, Ettore, & Mason, 2005; Ruhl, 1999; Weir, 1996). As a result, pregnancy is being governed by predicting and managing problems associated with expectant women's lifestyle, age and health status (O'Malley, 2006). Advice, tests and interventions can be tailored to match the predicted level of risk, and pregnant women are made responsible for a number of risk-management duties such as controlling diet, alcohol intake and smoking. Further, pregnancies are managed by means of scientific risk calculation, such as screening for chromosomal abnormalities.

In a second stream, scholars have examined how risk-centred governance is 'assembled' by drawing from existing ideas and resources, often in inventive ways that demonstrate no particular trends or chronological order. O'Malley (2006) gives as an example Francois Ewald's (1991, p. 198) analysis of 'insurance imaginaries'; i.e. inventive ways in which insurers have responded to risk as an entrepreneurial opportunity to develop new and better products. In the public sector, a good example of 'insurantal

imagination’ was the introduction of the NHS Litigation Authority (NHSLA) in 1995 to *‘create incentives to reduce negligence in the NHS’* and *‘to provide prompt and appropriate responses to claims when they did arise’* (NHSLA, 2009c, p. 5). The NHSLA operates a risk accreditation scheme and indemnifies NHS bodies against clinical negligence claims. Each NHS trust’s membership fee depends on their risk accreditation score, which is similar to an insurance premium that is based on the level of risk associated with the insured party. This system introduced a new way of risk management, ‘risk-pooling’ (NHSLA, 2009c), in which hospital trusts form a pool to protect themselves with respect to clinical negligence and negligence claims.

A third stream of governmentality studies has examined ideologies that explain risk-centred governance. Such analyses suggest that political and governmental rationalities determine how risk is deployed in governance. For example the welfare state model is said to assume that risks to well-being should be governed collectively through techniques such as social insurance. In contrast neoliberalism, a popular explanation for the alleged move towards ‘enterprising’ and individualised modes of governance, advocates modest state intervention and encourages voluntary and entrepreneurial approaches to risk management (Lupton, 1999; O’Malley 2006; O’Malley, 2008). In this third stream of analyses, the new public management (NPM) and regulatory reform have, quite appropriately, been associated with neoliberal governmentality (O’Malley, 2006; O’Malley, 2008). Several scholars (Black, 2002; Braithwaite et al., 2005; Hood et al., 2000; Power, 2007; Rose & Miller, 1992) have observed that organisations are increasingly expected to take responsibility for regulatory measures to manage risk. This has involved voluntary measures and internal controls to complement externally enforced command-and-compliance regulation. This would appear to match the health

sector reform discussed in Chapter 2, and in particular the growth of regulatory advice-giving (e.g. NICE guidelines) and risk accreditation (NHSLA) alongside the more traditional forms of regulation (the independent regulator Care Quality Commission). Advice-giving can be seen to promote both autonomous and responsible behaviour, as well as opportunities to develop innovative and entrepreneurial approaches to risk management in organisations. This type of shift in the ‘regulatory mood’ is interesting because it puts pressure on organisations to develop workable risk management solutions that appear credible to external accountability forums.

If we assume that healthcare organisations have been subject to efforts to increase voluntary and self-governing approaches to risk, how would governmentality analyses describe the operationalisation of such efforts? Health sector reform has been said to ‘responsibilise’ professional autonomy in that practitioners are encouraged to show initiative and virtue in providing a high-quality service as defined by the management (Dent, 2003; Fournier, 1999). Criteria for professional competence can thus include organisational norms and values such as ‘continuous quality improvement’ and ‘evidence-based practice’. Governmentality analysts have described responsibilisation as ‘technologies of the self’ (Lemke, 2001) through which individuals construct their personal identity based on dominant discourses on self-improvement. Such discourses include the moral virtues of hard work and diligence typically associated with a good work ethic.

Views on the extent to which individual rationalities are shaped by these processes vary, however. For example Simons (1995) concludes, based on his reading of Foucault, that *‘the individual has available only those technologies of the self that are in cultural*

circulation, and which may be imposed rather than individually chosen' (p. 102). The continuous processing of the self can be seen to take place in unequal power relationships where any action taken, including resistance, is purely reactive (reacting-to-power) and not a positive, independent action on its own terms (Hartmann, 2003). Governmentality analysts have typically taken a rather pessimistic view of individuals' ability to make genuinely autonomous decisions.

A question that arises is whether it is appropriate to assume that in governmentality the subjects, including professionals, are totally governed 'docile bodies' (Lemke, 2001), or whether they maintain some degree of autonomy. The answer appears to depend on how Foucault's work is interpreted. Scholars including Hartmann (2003) argue that Foucault during his later years discussed the relationship between the 'technologies of domination' and 'the technologies of the self', and indicated that the latter may involve some positive, independent means of constructing identity. It could be argued that such positive means include, for example, new ideas, technologies and art forms.

In a similar vein, it could be suggested that individuals perhaps maintain some degree of autonomy if they choose between different dominant discourses. For example, evidence-based medicine (EBM) first emerged as a reform movement that encouraged professionals to identify with a style of practice that draws on systematic reviews of scientific evidence from RCTs. This gradually led to a more pragmatic approach to integration of evidence into practice using clinical protocols and practice guidelines, which has been endorsed by policy-makers and managers. Both EBM and public sector reform can be interpreted as dominant discourses, and it may be useful to note that they appear to join up in government strategies such as 'evidence-based practice' and

‘evidence-based policy’. The extent to which such developments have actually changed professional practice vary, ranging from a highly enthusiastic response to angry claims of cookbook medicine. Both EBM and public sector reform have challenged traditional perceptions of professional autonomy which can be seen to represent yet another dominant discourse.

Finally, it has been argued that the technologies of the self, which represent governing through freedom and at a distance (Miller & Rose, 2008), act as a source of self-empowerment that may even work against the dominant rationalities:

‘The fact that we are vehicles of disciplinary power reveals [...] not the omnipotence of power but its fragility. Such vehicles might go off the designated path in directions that frustrate the purpose for which they were originally developed’. (Ransom as cited in Gallagher, 2006, p. 13)

The above quotation suggests that even though the technologies of the self may influence identity and ethical self-understanding, the development of individual rationalities involves a degree of autonomy and a prospect of resisting dominant discourses. Rule-breaking and failure to adhere to set standards can be seen as examples of such resistance.

The notion that self-empowerment may exist alongside disciplinary forms of power has been discussed in the context of accountability. Drawing on Foucault’s work, John Roberts (1996) argues that hierarchical forms of accountability represent a disciplinary power that draws individuals’ attention to their own conduct. This may seem as a desirable outcome aimed at improving practice in organisations, but instead it may potentially lead to pre-occupation with one’s own performance and how it is seen and judged by others (Roberts, 1996). Performance expectations may create fear and thus

reduce reciprocity and cohesion in the workplace. However, as Roberts suggests, such effects of disciplinary power can be counteracted by lateral working relationships that humanise and socialise work experience. This takes us back to the mutual and socialising forms of accountability: i.e. accountability that is fostered by regular contact with colleagues, and which helps to develop reciprocal senses of obligation and responsibility (Section 3.2.4).

Roberts is not, however, suggesting that socialising and mutual forms of accountability are the only way to develop a sense of obligation and responsibility in organisations. He argues that much of organisational work depends on the mutually beneficial interdependence between hierarchical and socialising forms of accountability. Roberts (1996) suggests that the two forms of accountability are '*practically interwoven and mutually dependent on each other*' (p. 51): while socialising forms of accountability nurture reciprocity and cohesion, the '*impersonal order*' of hierarchical accountability can alleviate conflicts and local abuse of power that may emerge within working communities. This offers a useful point of departure for my thesis by suggesting that both hierarchical and socialising/mutual forms of accountability are needed to achieve accountability in organisations. I will explore this argument, and the process and nature of accountability in organisations as outlined earlier (Box 3.1), in my empirical study.

In the short chapter that follows I will briefly summarise the background to the study (Chapter 2) and the conceptual framework that I have developed by drawing on scholarly literature on accountability, risk and governmentality (Chapter 3). The purpose of Chapter 4 is to outline the key argument and present the focus of the empirical study that is presented in the remaining chapters of this thesis.

CHAPTER 4: Development of research focus

The previous two chapters have explained why procedural standards can be approached as a regulatory technique in organisations. In this chapter, I will summarise the key argument and present the focus of my empirical study.

I began by discussing standardisation of care provision, and contemplated a number of factors that appear to have contributed to the growth of procedural standards in healthcare. These included the institutionalisation and professionalisation of care, and the introduction of the NHS in the post-war years. Standardisation of practice was facilitated during this period by efforts to develop an infrastructure for a centrally managed service. The day-to-day care provision was managed fairly independently by professional groups until the social, political and economic developments of the 1960s and 1970s began to change attitudes towards clinical autonomy. Over the next three decades the public sector was reformed to become more accountable and managerially driven, which involved tighter financial controls, target setting, and performance monitoring. Two reform movements within healthcare – evidence-based medicine and the patient safety movement - drew attention to how variations in practice could affect the quality of care, and they both appear to have facilitated standardisation. Further, highly publicised medical scandals suggested that clinical autonomy could potentially hinder the detection and prevention of sub-standard practices. The introduction of clinical governance in 1998 can be seen as a response to these problematic issues, and as a step in a long progression towards scrutiny and standardisation of practice.

Clinical governance can be described as a '*system of accountability*' (Secretary of State for Health, 1998, p. 1) that makes an explicit link between quality and standards of care. I referred to this system as 'new' accountability because it is not limited to traditional professional perceptions of accounting for one's own actions as a practitioner, colleague, and an employee. Rather, clinical governance has introduced hierarchical forms of accountability aimed at making practice consistent with national targets and priorities. I suggested that this new accountability promotes organisational and managerial, rather than professional, frameworks of accounting to demonstrate that clinical practice meets expectations. These changes appear to have coincided with a significant growth in procedural standards, and the regulatory space of healthcare organisations provides an infrastructure for the production, distribution and enforcement of such standards. I distinguished between mandatory and discretionary standards, and suggested that regulatory advice-giving is increasingly used to educate staff and organisations of their responsibilities.

My thesis has a specific focus on procedural standards that are used to manage risk. Early warning systems provide a good example of such standards, and advice that supports their use has been given by government agencies, professional societies, and expert organisations. Even though early warning systems may be resource-intensive (e.g. chart development, training, and introduction of rapid response teams), their use has rapidly spread among acute hospital trusts. A plausible explanation would be a capacity of track-and-trigger systems and rapid response mechanisms to enable earlier intervention, and thus to reduce morbidity and mortality, among patients at risk of deterioration on general wards. However, the evidence of the clinical effectiveness of these systems appears to be limited. Another explanation for the implementation of

early warning systems is that they are expected to improve the quality of work processes, i.e. the detection and management of risk, on hospital wards. The method of improvement involves standardisation of vital sign monitoring and record-keeping to make management of risk more consistent with the recommended practice. I suggest that the spread of early warning systems can be seen as a result of regulatory advice-giving that encourages organisations and individuals not only to change their practice, but also to account for their performance in ways that can be scrutinised. Efforts to achieve greater accountability may be based on voluntary and self-regulatory measures within organisations, but they are typically implemented by introducing mandatory rules, standards, and record-keeping.

Accountability therefore seems relevant to exploring the implementation of early warning systems, but the review of literature indicated that it is an elusive concept that can mean different things to different people. To operationalise this concept in my thesis, I presented a conceptual framework that describes accountability as a process in public sector organisations. This conceptual framework is, in particular, informed by the description of accountability adopted from Bovens (1998; 2005; 2007) and Davies (2001), as previously presented in Box 3.1 (p. 62), which is incorporated into the summarised research focus in Box 4.1 below. The process of accountability in organisations involves establishing the relationships between actors and accountability forums; identifying the tasks and duties for which each actor is responsible; setting the standards of desirable practice; scrutinising and judging practice; and sanctioning performance. The purpose of accountability can be explained as an effort to improve democratic governance and the responsiveness of public sector staff, and thus the quality and efficiency of work. Further, demand for greater accountability may relate to

efforts to prevent abuse and corruption. A different explanation is offered by scholars to whom the purpose of accountability is to control the thoughts and actions of individuals, and such views present risk as a catalyst, or a pretext, for governance and regulation. While the first part of the framework focused on the ‘technical’ or ‘processual’ aspects of accountability, contemplating the purpose was helpful in clarifying the different functions that the process of accountability may have in organisational settings.

In the empirical study that follows, I draw on this broad research focus on risk and accountability, and develop my analytical approach and specific research questions. As I will explain in the Methods Chapter (Chapter 5), this process combined both deductive and inductive approaches, and it developed gradually during the fieldwork and data analysis.

Box 4.1 The conceptual framework that presents the research focus for the study

The process of accountability:

1. establishing a relationship between an actor and a forum
2. in which the standards of formal responsibilities define acceptable performance and
3. in which the actor is under obligation
4. to explain and justify
5. his/her conduct
6. the forum may pose questions and it may pass judgement
7. and the actor may face consequences

The many purposes of accountability:

- create willingness to act as prescribed by set standards and to be open to scrutiny
- improve responsiveness
- prevent abuse and corruption
- control the thoughts and actions of individuals

CHAPTER 5: Methods

5.1 Introduction

In this chapter I describe the background to my PhD study and the methods of data collection and analysis. I begin by describing the Safer Patients Initiative (SPI) and the evaluation study, and how early warning systems became the topic of my empirical study. I briefly describe the four study areas, the preparatory stage which involved a pilot study, and the way in which I negotiated fieldwork arrangements with the participating hospitals. I explain the epistemological foundations of the study, and discuss research governance, ethics and data collection. Finally, I describe the analysis and reporting of findings, and summarise the key assumptions that guided this process.

5.2 Background to the PhD study

This PhD project is part of a larger ethnographic study of patient safety and ward culture in four hospitals in the UK that participated in the Health Foundation's SPI. The Health Foundation implemented the initiative in partnership with the Institute for Healthcare Improvement (IHI), a US-based not-for-profit organisation. The IHI was responsible for developing a multi-component organisational patient safety programme (Benning, Ghaleb, Suokas, Dixon-Woods, Dawson, Barber et al., 2010). The Health Foundation made an investment of £775k per hospital to secure the services of the IHI and to provide the capacity for change in the individual hospitals. The Health Foundation is a charitable foundation that seeks to influence healthcare decision-makers in making sustainable widespread improvements in the quality of patient care (Benning, unpublished). The initiative involved a £4.3 million investment across four acute

hospitals trusts that were selected through UK wide competition. The four trusts were located in England, Scotland, Wales, and Northern Ireland. The funding was spent mostly on training activities, and the trusts were expected to self-finance the interventions (e.g. setting up an early warning system) in order to create commitment to long-term, rather than project-based, implementation. The Health Foundation implemented the initiative in partnership with the Institute for Healthcare Improvement (IHI), a US-based not-for-profit organisation. The IHI was responsible for developing a 'change package' to help hospitals make patient safety improvements (Benning, unpublished).

The initiative had two phases (Benning, unpublished). In the first phase from December 2004 to October 2006 the participating hospital trusts were supported by the IHI. The IHI offered four learning sessions, a web-resource for learning materials, and 'teleconferencing' for advice and networking. They also carried out site visits to the participating trusts. In the second phase from October 2006 to December 2008, each trust was expected to work independently, continue to spread out the interventions, and perform as a patient safety exemplar from which external organisations could learn.

In 2004 the Health Foundation launched a call for proposals to evaluate the SPI. The contract was awarded to a research consortium led by the University of Birmingham and the evaluation commenced in 2005. The evaluation involved a number of sub-studies including stakeholder interviews with managerial and clinical staff involved in safety management; correct-site surgery evaluation; a case-note review of medication management; and a staff and patient satisfaction survey (Benning, Ghaleb, Suokas, Dixon-Woods, Dawson, Barber et al., 2010). The University of Leicester was

responsible for carrying out '*an ethnography of organisational culture related to safety*' (SPI Evaluation Team, 2006). My PhD project contributed to this ethnographic sub-study and involved three phases of data collection in 2006-2008. In the first two phases I carried out 91 staff interviews and ethnographic observations in the study wards. In the third phase of the fieldwork I arranged and co-facilitated seven ward feedback groups, and eight focus groups, in the study hospitals. My PhD study is limited to the analysis of ethnographic observations, including brief notes from the feedback and focus groups, and the 37 interviews that relate to the early warning systems.

5.3 Selecting the topic for the empirical study

The empirical study commenced with a broad focus on SPI interventions on the study wards. After the first phase of the fieldwork in 2006, I narrowed the focus to early warning systems for a number of reasons. Compared with other SPI-related activities in general ward areas, early warning systems were a sizeable intervention and implemented in a similar fashion in all four hospitals and the study wards. Each of the four acute trusts had their own design and timetable for the implementation of early warning systems. This involved developing a track-and-trigger tool based on templates acquired from expert groups or other hospitals. The track-and-trigger tool was included in the bedside observation chart and required chart design. The initial design stage took one to two years to complete and was carried out primarily between 2004 and 2006 depending on each organisation's timetable. Three of the trusts later revised the tool and issued a new version or versions of the observation chart. Once the trusts had established the calling criteria, the rapid response systems were set up between 2005 and 2007 depending on the progress made by each organisation. The timing of the implementation was thus convenient for the ethnographic study. An additional

advantage was that early warning systems could be linked with another SPI-intervention, the Situation-Background-Assessment-Recommendation (SBAR) tool, which was introduced to improve communication in clinical situations including handovers and calls for medical assistance. Early warning systems were also part of the routine monitoring of vital signs for all patients and, as such, they were frequent and highly visible, thus offering a good opportunity for ethnographic observations.

The other SPI interventions that were less suitable for an ethnographic study included bedside forms that were used with a minority of the patients (monitoring forms for anticoagulation drugs and blood glucose levels), and forms that were kept in the patient's medical notes and used irregularly (medication reconciliation forms).

Interventions that were used infrequently or 'covertly' were not considered appropriate for ethnographic observations. Thus one initially promising topic for the empirical study, hand hygiene, turned out to be impractical because the intervention on the wards consisted mainly of a 20-minute weekly, fortnightly or monthly covert audit.

Interventions that were developed towards the end of the three-year evaluation study were also excluded. Some SPI interventions, such as safety briefings during the nursing handovers, were developed towards the end of the ethnographic study and the implementation varied significantly across the study areas. For example, two of the study wards asked nurses to raise safety issues during the handover; one ward developed a computerised nursing handover sheet; and one ward did not introduce a safety briefing for nurses' handover.

In February 2007 I proposed to my supervisory team that the focus of the second phase of the fieldwork would be early warning systems and SBAR tools. I developed a semi-

structured interview schedule for staff interviews that focused on this topic and, together with the ethnographic observations, this aspect of the study became the topic of the empirical study for my PhD. This decision was supported by an opportunity to contribute to a study of early warning systems that was commissioned by the National Patient Safety Agency (NPSA, 2007).

5.4 The content and terminology of early warning systems

In the section that follows, I briefly describe the components of early warning systems in the study organisations (Table 5.1). I also explain the terminology for early warning systems that will be used throughout the thesis.

In each hospital trust the early warning systems consisted of four key components:

1. physiological triggers in the bedside observation chart
2. a graded response to early warning alerts
3. a rapid response system
4. structured communication of patient deterioration.

5.4.1 Physiological triggers and the observation charts

The physiological triggers were locally modified versions of existing tools such as the Modified Early Warning Scoring System, and the number of variables and the thresholds – i.e. *the calling criteria* - set for summoning assistance varied across the four trusts. The physiological triggers were included in the bedside observation chart and used by nursing staff as part of the routine monitoring of patients' vital signs. In this

thesis the bedside observation chart is referred to as the *OBS chart*. Physiological observations for each variable were measured and recorded in the charts. Three of the trusts adopted a scoring system, and one counted the number of variables that exceeded the acceptable parameters as set out by the calling criteria. An example of an OBS chart is presented in Appendix 5.1a.

5.4.2 Graded response to early warning alerts

The early warning alerts and the response were graded according to the summary score or the number of variables outside the acceptable parameters. Summary figures that exceeded a threshold activated an alert, defined here as the *EWS rapid alert*, which required informing the nurse-in-charge and contacting a rapid responder or the ward doctors. Early warning alerts below the threshold could be managed by qualified nurses on the wards. In this study the graded response based on the physiological triggers is called the *call-out cascade*. In all four study organisations the call-out cascade was included in the OBS charts (Appendix 5.1b).

5.4.3 Rapid response system

The key intervention to improve the management of patient deterioration involved setting up a rapid response system that would support the wards in this task. The arrangements for rapid responders varied, however (Table 5.1). In all four study organisations, the on-call and ward medical staff continued to respond to alerts of patient deterioration. Only two of the trusts set up a critical care outreach (CCO) team. The CCO service was provided by advanced nurse practitioners from the ICU. Two of the trusts also had a hospital-at-night (HAN) team of advanced nurse practitioners who

worked alongside medical staff at nights. HAN teams contributed to tasks previously carried out by junior doctors and provided support with the management of deteriorating patients. In the medical and health sciences literature, the concept of rapid response teams usually refers to CCO only. In this study, however, the definition of *rapid response* is broader and includes the on-call medical staff and the advanced nurse practitioners who responded to early warning alerts and contributed to the management of deteriorating patients.

Table 5.1 Key components of early warning systems in the four study hospitals

| Key components | Hospital 1 | Hospital 2 | Hospital 3 | Hospital 4 |
|---------------------------------------|----------------------------------|----------------------------------|---|----------------------------------|
| Calling criteria and call-out cascade | In the bedside observation chart | In the bedside observation chart | In the bedside observation chart | In the bedside observation chart |
| Rapid response system: | | | | |
| • Ward & on-call medical staff | Yes | Yes | Yes | Yes |
| • Critical Care Outreach Team | | | Yes | Yes |
| • Hospital-at-Night Team | Yes | | | Yes |
| • Cardiac Arrest Team | | | | Yes |
| SBAR communication tool | Generic guideline | Part of the observation chart | Separate form linked with the observation chart | Generic guideline |

5.4.4 Structured communication of patient deterioration

While the physiological triggers, the referral guideline, and the rapid response mechanism were generic features applicable to any early warning system, the SPI introduced an additional tool that became part of these systems in the study

organisations. This was a communication guideline prompting concise verbal reporting using the Situation-Background-Assessment-Recommendation (SBAR) structure. The SBAR involved a series of verbal prompts that were either printed as a guideline that was kept by the phone, or alternatively included in the chart design. One of the study organisations included SBAR in the OBS chart, and another introduced a separate SBAR sheet for organising and recording further information on the patient who was deteriorating. In this study, the *SBAR* refers to the guidelines that the hospital trusts issued for handing over information in clinical situations including patient deterioration. Examples of SBAR communication tools are presented in Appendix 5.2.

5.5 Study hospitals and wards

The study organisations included four acute hospital trusts participating in the Health Foundation's SPI, one in each member country of the UK. The hospital settings in which I conducted my study varied in size and location (Table 5.2). One of the study organisations was an acute teaching hospital, and two were acute district general hospitals. The fourth study organisation was a small acute district general hospital with fewer facilities and no critical care service provision. One of the hospitals was in a rural location, two in a city, and one in a large town close to a major urban centre.

The protocol (SPI Evaluation Team, 2006) for the evaluation of the Safer Patients Initiative defined the area of interest as *acute medical wards* caring for older people (aged 65+ years) who suffer from acute respiratory conditions and exacerbations of chronic respiratory disease. This patient group was of particular interest because older patients are at an increased risk of adverse events in hospitals (Brennan et al., 1991; Davis et al., 2001; Forster et al., 2004; SPI Evaluation Team, 2006; Vincent et al.,

2004). One study ward was selected in consultation with each participating trust, and the wards consisted of two respiratory wards, one general medical ward specialising on respiratory medicine, and one ward for the care of the elderly. The layout of the wards varied and the smallest ward had 17 beds and the largest 30 beds. I drew a map of each ward in my field notes and an example of ward layout is presented in Appendix 5.3. The wards included one Nightingale ward (open ward) and three wards with bays, and each ward had four to six siderooms. In this thesis, I describe all bed areas on the main ward as bays regardless of the ward layout.

Table 5.2 Characteristics of the study areas

| Study organisation | Acute hospital A | Acute hospital B | Acute hospital C | Acute hospital D |
|---------------------------|-------------------------|---------------------------|---------------------------|---------------------------------|
| Type of hospital | Acute teaching hospital | District general hospital | District general hospital | Small district general hospital |
| Location * | City / urban | City / urban | Town and fringe / rural | Large town / urban |
| Study ward | Respiratory | Respiratory | Care of the elderly | General medical |
| Study ward size | 30 beds | 24 beds | 30 beds | 17 beds |

* Partially based on the Commission for Rural Communities, Scottish Government, Wales Rural Observatory, and NISRA area classifications.

5.6 An overview of fieldwork tasks

Project administration and data collection activities (Table 5.3) for the evaluation study took a significant proportion of my time, and I was granted a six months' extension to my three-year PhD study. The tasks involved a pilot study, fieldwork preparations, data collection on the study sites, and developing a study design and fieldwork materials for

focus and ward-based feedback groups in the study hospitals. I also assisted with the development of staff and patient information sheets for the pilot study.

Table 5.3 An overview of fieldwork tasks

| Time | Activities | My contribution | Data collected |
|-------------------------|--|---|--|
| Nov 05 – Jan 06 | MREC ethics approval and site-specific research governance approvals | Contributed to the development of staff and patient information sheets for the pilot study | |
| Nov 05 – Feb 06 | Pilot study | Interviews and ethnographic observations in an East Midlands hospital | Eight days of observation and seven staff interviews |
| Jan 06 – June 06 | Fieldwork preparations | Visiting the study sites; meetings with senior clinicians and nurses; staff briefings | |
| May 06 – Sept 06 | Phase 1 data collection | Interviews and ethnographic observations in four medical wards | 28 days of observation and 50 staff interviews |
| Mar 07 – May 07 | Fieldwork preparations | Staff briefings; renewal of honorary contracts | |
| Apr 07 – July 07 | Phase 2 data collection | Interviews and ethnographic observations in four medical wards | 20 days of observation and 41 staff interviews |
| Feb 08 – May 08 | Fieldwork preparations | Developed a design for focus groups and ward-based feedback groups; preparation of staff information sheets and invitations; preparation of PowerPoint presentations for three different types of groups; liaised with the study hospitals to arrange the groups; renewal of honorary contracts | |
| May 08 – July 08 | Phase 3 data collection | Co-facilitated focus and ward-based feedback groups | Eight focus groups and seven ward-based feedback groups |

The pilot study involved eight days of data collection in an acute hospital in the East Midlands region. I carried out six days of fieldwork in an acute medical admissions unit, and two days on a respiratory ward. During the course of my PhD study, I visited each of the four study hospital three to five times for meetings and staff briefings. Phase 1 data collection lasted for seven days, and Phase 2 for five days, in each of the four study hospitals. Overall I spent over 100 days either travelling or carrying out fieldwork.

5.7 Research governance and ethics

Research Governance Framework for Health and Social Care (DoH, 2005c) '*outlines principles of good governance that apply to all research within the remit of the Secretary of State for Health*' and '*it applies to the full range of research types, contexts and methods*' (p. ii). All research within the NHS must be carried out in accordance with the Research Governance Framework, and the SPI evaluation study with its four participating acute hospital trusts was subject to rules that regulate multi-site studies. This involved gaining an approval from a NHS multi-centre research ethics committee and from the Research and Development (R&D) office in each acute hospital trust. According to the Department of Health, the purpose of the research governance process is to ensure that researchers adhere to high scientific, ethical and financial standards, transparent decision-making processes, clear allocation of responsibilities and robust monitoring arrangements (DoH, 2005c). The purpose is also to protect the safety and well-being of research participants. In the following section, I will discuss the research governance approvals and protection of study participants.

5.7.1 Research governance approvals

The MREC ethics approval was granted in October 2005 (REC 05/MRE04/44), and R&D approvals from the individual sites were received in winter 2005-06. Site-specific research governance processes also involved a Criminal Records Bureau check and completing an occupational health questionnaire, and I signed an honorary contract with each hospital trust. As an honorary appointee I was required to comply with the trust's policies and regulations. During the course of the three-year evaluation study the research team submitted annual progress reports from all sub-studies to the Central Office of Research Committees (COREC), and one of the R&D offices required similar reporting procedures.

Phase 3 data collection involved focus groups with staff who were involved in the implementation of the SPI, and feedback and discussion groups for the study wards. These groups were not part of the original study design and ethics committee approval; an application for a substantial amendment was therefore submitted to the COREC. I developed a study design and the accompanying materials for the groups in consultation with the research team and the Health Foundation. The design included the background, purpose, aims and objectives, the process of informed consent, and the data analysis of the groups. I also described who we would invite, and how the groups would be arranged with the study hospitals. Each group was to be given a presentation on the preliminary findings from the SPI evaluation study, and the research team developed questions and prompts for group discussion. Finally, I developed three sets of staff information sheets, invitations, and cover letters.

5.7.2 Protection of study participants

It was important to inform the study areas of the empirical study, and give staff and patients an opportunity to voice any concerns that they might have. Before I commenced the fieldwork I visited the pilot and the study wards once or twice to brief the staff about the forthcoming study. Each briefing took 10-20 minutes during which I explained about the length and purpose of the study, and encouraged staff to ask questions. I emphasised that the purpose of the evaluation was not to compare the study wards or rate individual performance. All data would be anonymised, and reporting of the findings would not identify the study sites or individual members of staff. The purpose of the briefings was to reassure staff that the purpose of the study was not to search out individual failings and ‘blow the whistle’. Unfortunately the acronym SPI resembled the word ‘spy’ in pronunciation, and during the fieldwork some staff in the study wards asked if I was ‘spying’ on them. Even though the tone of the questioning was light hearted, I felt that it indicated a genuine concern.

Patient and staff information sheets (Appendix 5.4a and 5.4b) were distributed by nursing staff on the four wards before and during the fieldwork, and posters (Appendix 5.5) informing visitors about the study were displayed on notice boards. The information sheets described the content and purpose of the study, and indicated who to contact if staff or patients had any concerns. Participation in the study was voluntary and staff could decline to take part, or withdraw from the study, at any time. Consent for semi-structured interviews was recorded in writing in a consent form (Appendix 5.6), and consent for observing individual or team activities, and taking notes of informal discussions, was obtained verbally. Even though the study participants included only members of staff, observing their daily work meant that I came into frequent contact

with patients and observed certain aspects of their stay on the ward. Consent for carrying out participant observation by a patient's bedside was usually obtained verbally by a member staff, and on a rare occasion by myself.

5.8 The pilot study

I commenced fieldwork less than a month after I started my doctoral studies, and the first task was to carry out a pilot study together with a member of my supervisory team who had experience of ethnography. The pilot was conducted in November 2005 and February 2006, and it involved eight days of observations and seven interviews. I practised ethnographic observations and note-taking in an acute medical assessment unit and a respiratory ward, and discussed my field notes with my supervisors. The pilot site did not take part in the Safer Patients Initiative, and therefore I was not able to explore or practise observations on SPI interventions. However, the pilot was useful in that I was able to familiarise myself with the data collection method, and I began to contemplate how best to carry out observations and interviews within a rather short stay 'in the field'. This was highly relevant as the fieldwork consisted of two week-long visits to each of the four study sites, and was thus much shorter than the prolonged stay of months, or even years, traditionally associated with ethnographic research.

5.9 Background to the empirical study

Ethnography can be applied in many different ways depending on the scholarly, theoretical and methodological disposition of the researcher. It can be inductive and/or deductive, it may involve qualitative and/or quantitative methods, and it may involve different epistemological beliefs. Epistemology means *'the theory or science of the*

method or grounds of knowledge' (OED), i.e. the theory of how we know what we know. In the sections that follow I will discuss how epistemological foundations of ethnography and qualitative inquiry have shifted within one faction of social research, the Chicago School of Sociology. My intention is not to associate my work with this scholarly discipline but to demonstrate the wealth of different influences that have contributed to its development. I recognise some of these influences in my work but not in a way that would make me a 'grounded theorist' or a 'symbolic interactionist'. Rather, an epistemological tradition that is central to my study is social constructionism; an approach which assumes that people construct reality through individual and collective actions (Charmaz, 2006). I have adopted a 'constructivist' (Charmaz, 2006) approach and believe that researchers construct knowledge in interaction with others, including their study participants, and that the analysis is influenced by who we are and what we know already. The recent rise of reflexivism in social research suggests that we should understand what has (and has not) influenced our work and where these influences come from, and this is the purpose of my brief overview of the Chicago School. I first discuss ethnography and sociology within the Chicago School, and then explain how this knowledge influenced my empirical study.

5.9.1 Ethnography and sociology in the Chicago School

Ethnography became an established method in sociology during the first half of the 20th century, but as a term and a method it emerged much earlier. The Encyclopaedia Britannica defined this term in 1878 as follows:

'Ethnography embraces the descriptive details [...] of the human aggregates and organizations.' ('Ethnography', Oxford English Dictionary)

Early ‘ethnographers’ were missionaries, administrators and travellers who collected artefacts and wrote descriptions of exotic tribes and communities during Europe’s colonial expansion (O’Reilly, 2005). Social anthropology, the study of human society and culture, explored similar topics but drew on scientific field methods. Bronislaw Malinowski’s research in the Pacific Trobriand Islands established the key elements of ethnographic methodology including what is now called ‘participant observation’: observing and participating in the daily lives of people in their own surroundings (O’Reilly, 2005). Malinowski’s methods also included statistical documentation and logging minute, detailed observations. In social anthropology these methods have remained very much the same, while other forms of ethnography have developed in sociology and organisation studies. Although ethnographic studies can involve both qualitative and quantitative methodology, contemporary ethnography in sociology is typically associated with participant observation and face-to-face interviews. According to Sherman Heyel (2007) ‘ethnographic interviews’ are different from other qualitative interviews in that researchers are expected to develop an on-going relationship with their interviewees. This may involve several encounters with a study participant, typically made possible by an extended stay in the field during which meaning is gradually and patiently ‘co-constructed’. Such an approach sees the interviewer as a traveller on a journey *‘from which he or she will return with stories to tell’*, as opposed to a miner of *‘facts waiting to be culled out and discovered by the interviewer’s efforts’* (Sherman Heyl, 2007, pp. 370-371).

The Chicago School is recognised by many as one of the most influential ethnographic traditions in sociology (Deegan, 2007; Fine & Ducharme, 1995; Gobo, 2009; O’Reilly, 2005; Van Maanen, 1988). Under the Chicago School, ethnography became a method

for studying urban settings and social problems such as poverty, homelessness, social segregation, crime, and mass immigration (Deegan, 2007). Notable studies include Nels Anderson's ethnography of hobos and homelessness in the 1920s, and Paul Gozalby Cressey's 'Taxi-Dance Hall' which studied the nightlife of urban Chicago. Similar to social anthropology, the Chicago School used also quantitative methods such as surveying and mapping of economic and social data (Gobo, 2009). The Chicago School began to develop theoretical understanding of urban society as a result of historical, political and cultural change, such as Louis Wirth's study of how the Jewish ghetto in Chicago built upon its European roots (Deegan, 2007). Even though some of the early works of the Chicago School have been described as naive and even biased, the School was unique in generating a stream of work that addressed issues of social injustice (Charmaz, 2005; Gobo, 2009). The time period from 1892 to 1942 which generated the core of urban ethnographies is often described as the 'first' Chicago School of sociology (Fine, 1995).

After the II World War the 'second' Chicago School of sociology (Fine, 1995) produced a number of highly influential young sociologists including Howard S. Becker (Becker, Geer, Hughes, & Strauss, 1961) and Erving Goffman (1961) both of whom produced pioneering work on the ethnography of health and medicine. The existence of a second Chicago school, and to what extent sociological thought carried from the first to the second school, has been subject to a lively scholarly debate (Fine, 1995) which cannot be covered within the remit of this chapter. A major influence at the second Chicago School was Everett C. Hughes who taught 'Introduction to Field Work' and developed a methodology based on comparison (Gobo, 2009). In this method data were collected across different sub-groups, and constantly compared across these groups and

in relation to theoretical issues (Gobo, 2009). Hughes believed that sociologists can learn about one group by studying other groups that may first appear different but actually bear similarities. The following remark by Hughes is often used to illustrate the principle of constant comparison: *‘How is a priest like a prostitute? They both hear confessions in private, both must manage their client's emotions and reframe them in the context of these private conversations’* (Hughes as cited in Star, 1997, 3.2).

However, while Hughes’s method was systematic in analysis, he did not systematise data collection or develop specific rules for fieldwork:

‘Everett Hughes gave us some words of introduction and of instruction, but good father that he was, he quickly pushed us out of the nest and told us to fly on our own.’ (Herbert J. Gans, one of Hughes’s students, as cited in Gobo, 2009, p. 37)

This quotation represents well the ‘spirit’ of ethnography as it is often described in textbooks. Researchers are typically given very little guidance, and ethnographic data collection is meant to be learned by doing it.

A more systematic approach to data collection began to emerge in the 1950s and 1960s as the Chicago School contributed to one of the hallmarks of qualitative inquiry: grounded theory and constant comparative analysis (Charmaz, 2006). Anselm Strauss’s collaboration with Barney Glaser from Columbia University, another significant scholarly site for sociology, produced this highly inductive method where constant comparative analysis is used to derive theory that is grounded on empirical data. The research process is iterative and data are coded into emerging categories as the researcher makes progress with fieldwork. Emerging structures guide the research process, and the researcher may revise and develop his/her methodology and research questions. Emerging theory is developed through theoretical sampling which means

purposive selection of key informants, and gathering data on the properties of the relevant categories (i.e. categories that are relevant to the development of the theory) until they are 'saturated' and no new properties emerge (Charmaz, 2006). Grounded theory is a popular topic in scholarly literature, but as a method it is demanding and some have argued that little theory has been developed using it (Charmaz, 2005). Further, grounded theory has been criticised for objectivist assumptions according to which reality can be observed by an impartial observer through systematic data collection and analytic procedures (Charmaz, 2005), and which seek to produce theory '*abstract of time, place and people*' (Glaser and Holton as cited in Clarke, 2005, p. 18). It may be useful to note that these objectivist tendencies coincided with a strong emphasis on quantitative survey research, a popular method in social research at the time of the second Chicago School (Abbott & Gaziano, 1995). Glaser and Strauss later departed ways and began to apply grounded theory in different ways, and further adaptations have been developed by more recent scholars.

Apart from methods of data collection and analysis, the Chicago School of Sociology contributed to the development of social constructionist perspectives in the social sciences. The School is perhaps best known for 'symbolic interactionism', an epistemological approach which emerged in the 1960s and which gave ethnography a special role and importance (Charmaz, 2006). According to symbolic interactionism, both social structures and the self (personal identity and self-consciousness) are created in everyday interactions between individuals who watch and react to each others' activities (Burr, 2003; Gobo, 2009; Rock, 1979) Interaction between people takes place through a conversation using gestures and language, both of which are understood as use of symbols that are given a meaning through that interaction (Burr, 2003). Even

though interaction may be influenced by established rules and norms, such as understandings of gender roles, individuals continuously recreate their meaning rather than simply learn about their existence. Charmaz (2005) describes this process by drawing on Anselm Strauss's work according to which *'the reality of the present differs from the past from which it develops'* (p. 508), and Shalin (1986, p. 13) has argued that individuals are both the product and the producers of society. Thus behaviour should not be predicted from macro structures such as class, gender or race, but from the work individuals must do to create shared understandings of a certain social situation and the rules and norms associated with it. The 'roots' of symbolic interactionism are in pragmatist philosophy, a powerful movement in the United States that penetrated both the first and the second Chicago schools, and the works of key 'Chicagoans' including John Dewey, George Herbert Mead and Herbert Blumer. Paul Rock (1979) provides a useful account of the 'Making of Symbolic Interactionism' which as a subject is too complex to be discussed within the scope of this thesis. For the purposes of this thesis, and understanding the Chicago School traditions, it is useful to mention that:

'Pragmatism agrees with empiricism in its emphasis on the priority of experience over a priori reasoning [...] Pragmatists interpret ideas as instruments and plans of action rather than as images of reality; more specifically, they are suggestions and anticipations of possible conduct, hypotheses or forecasts of what will result from a given action, or ways of organizing behaviour.' ('Pragmatism', Britannica Concise Encyclopaedia)

For early 'Chicagoans' including John Dewey and Robert E. Park this implied a highly inductive methodology through which researchers were to gather firsthand knowledge of challenging aspects of urban life, and to generate analysis and conclusions that could be used to address social issues.

Symbolic interactionism has generated methodological principles that provide guidance on how knowledge construction should be understood (Charmaz, 2005; Clarke, 2005; Deegan, 2007; Gobo, 2009; Plummer, 2008):

- **Individuals are creative actors, and active creators, of social life.**
- **The ‘natural areas’ and ‘social mosaic’ of these actors** should be studied by employing direct fieldwork and observations: as Robert E. Park, an influential scholar who taught at the Chicago School for nearly three decades, advised his students to *‘go get the seat of your pants dirty in real research’* (Blumer as cited in Gobo, 2009, p. 35).
- Meaning is created and shared through **symbols such as gestures and the language**. Symbolic interactionism has generated important ethnographic studies especially in the sociology of deviance and the professions (Gobo, 2009). These include Becker’s (1997) labelling theory which suggests that negative stereotyping, such as labelling people as ‘delinquent’, can enforce deviant behaviour in individuals.
- Meaning is created and shared through **continuously emergent processes of social life**; for example, abstract concepts such as ‘injustice’ (or ‘accountability’ in my study) are made real through enacted processes, i.e. actions that are performed repeatedly.
- **Social interaction is situated** which means that interaction is dependent on the people involved; the environment where the interaction takes place; the time period; and on the cultural and historical context. As Clarke (2005) argues in Blumer’s words, power relationships between individuals and groups can be *‘the result of the situation rather than situation being the result of their respective power positions as they entered it’* (p. 23). Social order thus becomes subject to

‘negotiated ordering’ which, although patterned and influenced by the power held by each person, is continuously reappraised and re-negotiated.

Such assumptions appear very similar to how social constructionism is described in textbooks. Firstly, they advocate ‘anti-essentialism’ (Burr, 2003) which means that people and societies have no given or determined nature. For example, personal characteristics develop through social interaction and they are not a product of biological or environmental factors (Burr, 2003). Structural properties of social life may, however, set constraints, and individuals as producers of society are not entirely free. My understanding of social constructionism is that the existence of structural properties is not denied, but that such structures should be seen as constantly changing products of social life that individuals perceive and handle in different ways. These structural properties are not objective facts that exist independently from the individual, and their impact is not totalising or taken-for-granted. Secondly, knowledge is not obtained through direct observation of reality but constructed by exploring the world from a personal perspective (Burr, 2003). Thus, for example, it may be perceived that knowledge can be generated by observing or theorising objects that exist independently of the observer, which represents an epistemological approach defined as realism (Edgar & Sedgwick, 2008). Such perceptions can be interpreted as one way of understanding and conceptualising knowledge generation, developed by those who believe in empirical objectivity. Thirdly, in order to understand how people generate knowledge we should focus on the processes and dynamics of social interaction (Burr, 2003), which I understand as ‘situatedness’.

Recently some scholars, including Kathy Charmaz (Glaser's student) and Adele Clarke (Strauss's student), have contributed to efforts to renew the legacy of the Chicago School of Sociology by developing grounded theory as a 'constructivist' methodology, and distancing it from its objectivist assumptions (Charmaz, 2005). They have sustained the systematic methods of data collection (theoretical sampling, constant comparative analysis, development and saturation of thematic categories) but adopted the view that researchers construct knowledge, reality and their own identity in the same way as the social actors who participate in their study. Thus a theory based on data is never fully grounded in terms of being abstract of time, place and people, and is influenced by the way in which the researcher perceives the emergence of data categories and findings. Further, constructivism appears to have shifted the focus from micro-level interaction to encompass structural properties of social action, such as power relationships that operate at the meso-level (i.e. the intersection of micro- and macro-levels). Both symbolic interactionism and grounded theory have been criticised for being too focused on micro-level analytics and neglecting issues surrounding power and social structures. The above developments can be seen as an effort to push the Chicago School legacy around the 'post-modern turn' (Clarke, 2005) and bring it closer to contemporary sociology.

Postmodernism is a concept that is difficult to define, and it has been described it as:

'The state, condition, or period subsequent to that which is modern; spec. in architecture, the arts, literature, politics, etc., any of various styles, concepts, or points of view involving a conscious departure from modernism, esp. when characterized by a rejection of ideology and theory in favour of a plurality of values and techniques.' ('Postmodernism', Oxford English Dictionary)

In social sciences postmodernism typically means rejecting established ways of examining and theorising social activity. Postmodern societies, which can refer either to the post-industrial / post-war / post cold war era, are 'pluralistic' and people can choose from numerous different knowledge systems (e.g. political, scholarly and religious disciplines; lifestyles; beliefs). Postmodernism has unsettled the boundaries between existing scholarly disciplines, and generated new critical theory including gender, feminist, and gay/lesbian studies; studies of power that encompass both micro and macro perspectives; and studies of the impact of postmodernity on individuals and societies. It has been associated with a crisis of representation (Lather, 2007) in ethnography which questions the authenticity of ethnographic texts and a lack of critical reflection. For example, the tradition of ethnographic research and writings can be seen to reflect romantic aspirations of studying the 'underdogs' of society and giving 'voice to the voiceless' while the representation often draws on scholarly middle-class perspectives. Ethnography has been particularly troubled by its past reputation as a method that advanced Europe's colonial expansion, but equally the ability of ethnographers to describe and analyse the often devastating impact of colonial and neo-colonial regimes has been questioned (Marcus, 2007). An important outcome of postmodernism in sociology is a heightened emphasis on reflexivity and critical thinking: that the *'instruments of social science should be turned upon the sociologist in an effort to better control the distortions'* of representation caused by the personal identity, the intellectual field, and the scholastic stance of the person. This definition of reflexivity is from Wacquant's (2008, p. 273) discussion of reflexivity in the works of Pierre Bourdieu, a highly influential postmodern thinker.

5.9.2 My approach

My understanding of ethnography in sociology has been influenced by the Chicago School tradition through the works of Anselm Strauss and Adele Clarke. Strauss's roots are in symbolic interactionism and grounded theory, while Clarke has built partly upon Strauss's work but also drawn on postmodernism and Michel Foucault's work. What is common to both, and of particular interest to me, is their focus on social order, the process of work, and the situatedness of social action.

My interest in Strauss's and Clarke's work developed after the first phase of the fieldwork while I was preparing to return to the field. I was writing up field notes from Phase 1 observations and preparing a topic guide (interview questions) for Phase 2 interviews. Although I found the more recent Chicago School ethnographies (Bosk, 1979; Strauss et al., 1985) useful in guiding on the style of presentation and in providing interesting perspectives, Strauss's and Clarke's textbooks on theory and method opened up new ways of approaching the fieldwork. I was keen to develop a methodological 'tool box' and not to become too concerned about a 'right' way of carrying out, analysing and writing up ethnography.

My tool box started with a mapping exercise which was influenced by Clarke's (2005) situational analysis. Clarke developed situational analysis to amend the methods of grounded theory, and it involves drawing:

- *Situational maps* which represent different 'elements' of situations. For example, situations involve human (nurse and doctors) and non-human (equipment and documentation) elements; collective human elements (healthcare organisations, departments, units, teams); temporal elements

(seasonal variations, crisis such as shortage of beds or a MRSA outbreak); socio-cultural elements (age, race, gender); and spatial elements (locations of organisations, departments and units).

- *Social worlds/arenas maps* which involve identifying boundaries that can be used to differentiate individuals and groups. These involve different professional and staff groups in hospitals but also ‘geographical’ boundaries that separate the nurses’ staff room from the doctors’ mess, or the nursing team in bays A and B from the nursing team in bays C and D. Such boundaries can be very short term and last only for the duration of a meeting or a working day.
- *Positional maps* which involve identifying different positions and perceptions held by study participants and the groups they represent. For example, nursing care may involve different ‘models of care’ depending on whether professionals prioritise clinical efficiency or the caring/nurturing aspects of nursing work.

According to Clarke (2005) situational analysis has its roots in the early (first) Chicago School social ecologies which focused mapping the characteristics of communities and locales. For example, researchers would map geographical distribution of objects of social life such as churches, taverns, taxi dance halls and ethnic neighbourhoods. Later the focus shifted from geographical boundaries to social segments with specific identities and interests, including studies of work, professions and occupations. Following in Strauss’s footsteps, Adele Clarke has developed this further into the analysis of ‘social worlds, arenas and discourses’ which according to Clarke (2005) differs from most organisational theory by acknowledging that social worlds do not necessarily follow organisational structures.

I used situational analysis between the first and the second phase of the fieldwork to ‘sensitise’ myself to different elements, boundaries and positions of what I saw in the field. Sensitising concepts are an integral part of grounded theory and their purpose is to guide the researcher to think analytically about data (Charmaz, 2006). I mapped elements of situations (e.g. human and non-human elements), geographical locations (maps of ward areas), the process of work, ideas for my interview topic guide, and even theoretical influences from the Chicago School (Appendix 5.7). Situational analysis and mapping served four important purposes:

- identifying a general direction for the empirical study
- developing a more specific focus
- developing a topic guide for Phase 2 interviews
- recognising the epistemological foundations of my empirical study.

As Section 5.9 describes the epistemological foundations of my study, the following sections will focus on the first three items.

5.9.2.1 Research into action, practice and social worlds

A key influence for my empirical study was the notion of work as collective activity which appeared highly relevant because of the interdisciplinary nature of patient care and the application of knowledge by multiple actors. Following Strauss’s (1993) theory of action, monitoring of patients’ vital signs and related follow-up could be understood as a course of action and a trajectory which evolves iteratively and can be unpredictable. Strauss (1993) defined ‘trajectory’ as:

- 1) *‘the course of any experienced phenomenon as it evolves over time (an engineering project, a chronic illness, dying, a social revolution, or national problems attending mass or ‘uncontrollable’ immigration)’* and

2) *'the actions and interactions contributing to its evolution.'* (pp. 53-54)

I understood that the meaning, purpose and the appropriate course of action was negotiated by actors (members of staff) participating in diverse social worlds (Clarke, 2005; Strauss, 1993). Social worlds relate to a wide range of simultaneous affiliations - social, occupational, organisational, familial, religious, ideological etc. - which are transitional, temporal, and socially situated (Clarke, 2005). However, affiliation and membership not only imply belonging but also separation, by drawing boundaries that mirror different social worlds. Social worlds can be described as *'universes of discourse'* and *'principal affiliative mechanisms through which people organise social life'* (Clarke, 2005, p. 46).

I was particularly influenced by Clarke's way of developing a postmodern interpretation of symbolic interactionism and grounded theory by drawing on Foucault's work on power and structure. Clarke's main influence, Strauss, had already defined work as actions and practices that are continuously enacted and negotiated by individuals who participate in various social worlds. Such participation creates structural properties of social action (p. 120) for example when individuals associate certain type of behaviour with occupational roles. For instance, my analysis of interview data suggested that some nurses saw it inappropriate to advise doctors about treatment decisions unless the nurse was specifically asked to do so. Nonetheless, Clarke adds strength to her analysis of practice by bringing in Foucault's concept of 'regimes of practices':

'Practices being understood here as places where what is said and what is done, rules imposed and reasons given, the planned and the taken for granted meet and interconnect.' (Foucault, 1991b, p. 75)

While for Strauss the continuous negotiated ordering was a way of managing the contingencies of practices, Foucault discussed how certain ‘ways of doing things’ become dominant and accepted through sustained action (Clarke, 2005).

Foucault’s work offers an interesting focus for my study for two reasons. First, he sees the regimes of practice as a development of rules and a production of ‘true discourses’ which serve to explain and justify certain ways of doing things. Second, he draws attention to how practices develop and transform. For example, when asked about his interest in the analysis of prisons and the penal system, he replied that he was not interested in the history of the prison as an institution but as a practice of imprisonment. Foucault (1991b) said he wanted:

To show its origin or, more exactly, how this way of doing things [...] was capable of being accepted at a certain moment as a principle component of the penal system, thus coming to seem an altogether natural, self-evident and indispensable part of it. (p. 75)

Foucault found the practice of imprisonment contradictory with the penal system’s initial rationale that was to reform and improve the individual’s character, and he felt that it was important to account for the transformations and ‘mutations’ that had caused this diversion. Therefore regimes of practice may not necessarily involve a steady, linear development of practices and the codes by which they are ruled.

5.9.2.2 *Developing a focus*

During the first year of my PhD study I used the protocol for the ethnography sub-study to develop research questions. But as I carried out the first phase of the fieldwork, the questions appeared increasingly abstract and I felt a need to ‘operationalise’ them; to

make them more accessible and understandable. In this task I followed the interactionist belief that meaning is created and shared through social interaction, and that abstract concepts such as culture or accountability only become real and meaningful through actions that are performed repeatedly. Therefore, the focus of the study was to be kept, similar to grounded theory, on ‘gerunds’ which means the ‘-ing’ form of verbs as in ‘recognising’ and ‘responding’ to risk. Similarly, I used the same rationale in Chapter 3 to clarify the concept of accountability as a process (Box 3.1) that involved establishing relationships, setting standards, and achieving various outcomes.

The original research questions were:

- What is the relationship between organisational culture and directed efforts at managing patient safety?
- What features of culture facilitate or interfere with interventions?
- Can safety interventions change culture?

I wanted to clarify, for the purposes of my empirical study, how best to understand ‘organisational culture’; ‘directed efforts’ and ‘interventions’; and ‘management of patient safety’. Of these, the concept of organisational culture was the most difficult one to explain and operationalise for research purposes.

Based on my empirical focus (Section 5.9.2.1) and Phase 1 fieldwork I concluded that ‘*management of patient safety*’ actually meant management of risk. I saw patient safety as an aspiration and a goal while the activities I observed in the ward environment involved practical measures to manage risk. I perceived risk management on the wards as a continuous process of recognition and response that was simultaneously systematic and accustomed because every patient was to be assessed for risk while the intensity and

frequency could be adjusted individually. The appropriate course of action, and thus response, depended on the individual patient and his/her condition, the skills and competencies of staff, and temporal and spatial elements such as time of the day (e.g. fewer staff in a night shift) and the location (e.g. patients transferred to the ward could be at an increased risk of deterioration). Therefore I concluded that the activities directed at management of patient safety and the knowledge applied during that process – i.e. recognising and responding to risk - were situated. Knowledge application, I suggest, is a precondition for practice, and certain ways of applying knowledge lead to ways of ‘doing things’, i.e. regimes of practice. For example, the nurses could use formal risk assessment tools in combination with tacit understandings of risk and decide, depending on the situation, whether to rely on the scoring method or to look for additional signs of deterioration.

On the study wards I observed many routines and chores that represented established ways of applying knowledge, and a good example was the bedside monitoring of vital signs. A recent addition included ‘*directed efforts*’ to improve risk management by standardising the monitoring of vital signs and follow-up, and the specific ‘*intervention*’ was the introduction of a procedural standard, an early warning system. I perceived early warning systems as one accepted way of applying knowledge which potentially competed with other ways of recognising and responding to patient deterioration, such as tacit understandings of risk. These different regimes of practice became my definition of ‘organisational culture’ because to me they were the most meaningful way of approaching the diversity of knowledge that influenced management of risk. Therefore culture was not to be understood as uniformity:

‘Culture is a loosely structured and incompletely shared system that emerges dynamically as organizational members experience each other, events, and multiple identities’. (Martin, 2002, p. 58)

Such dynamics could emerge, for example, from differences in values, beliefs or affiliations, or from efforts to negotiate priorities and contingencies. There are many definitions of organisational culture (Martin, 2002) but I made a conscious decision to limit my focus on knowledge, practice and risk management. It is important to note that my focus on practice and knowledge was not limited to direct observation of vital sign monitoring or any other aspect of risk management. In interviews and during the ethnographic observations my study participants told me about ‘risk work’ on the wards including mundane descriptions, ‘horror stories’, and angry reflections of what had or should have been done to manage risk. These verbal accounts of risk management were equally important.

Clarifying the meaning of culture, safety and directed efforts was perhaps the most important outcome of my analytical ground work, and it influenced every aspect of my analysis including the coding framework. The reworking of the original research questions focused my attention on how early warning systems interacted with other kinds of knowledge when staff recognised and responded to risk.

5.9.2.3 Developing a topic guide for the interviews

After identifying a general direction and more specific focus for my empirical study, I began to develop a topic guide and questions for the staff interviews. I used situational analysis and mapping to identify the key areas and topics of interest, and how to approach them in the interviews. The starting point was the collective process of

recognising and responding to risk and the role of a safety intervention, the early warning system, in that process. I treated this as a process that consisted of a number of actions and operations. According to Strauss's (1993) theory of action, staff may need to choose between different actions available to them, and decide on the choice of operations that put those actions into practice. Making sense of the activity and what it involves in terms of actions and operations is called 'articulation work' (Strauss, 1993).

This involves clarifying

- the meaning of the work process: why it was important
- tasks and goals: how to get the work done, what was to be achieved
- responsibilities: who is doing what
- conceptual structures: rules and guidance on 'how to'
- time: when the work should be carried out
- space: where it should be carried out

I also mapped different 'boundaries', such as occupational groups, hierarchies and 'camps', and 'filters' including personality and identity, that could unite or separate individuals during the course of their daily work. This provided the structure for my topic guide and interview questions (Appendix 5.8).

5.10 Data collection

In Phases 1 and 2 the fieldwork involved spending a total of eight weeks (one week at a time) on the four wards carrying out participant observation and semi-structured interviews with staff. I stayed in staff accommodation or within five minutes walk from the hospital which meant that I was able to 'immerse myself' in hospital life. I typically worked 10-14 hour days, and carried out observations and interviews at different times

of the day. Because the stay in the field was rather short and the aim was to achieve 8-12 interviews from each site, the data collection became very intense. In addition, I made very brief notes of some of the Phase 3 feedback and focus groups where staff discussed the use of exclusion rules with regard to the early warning systems, but I treated these notes as a minor amendment to the data collected in Phases 1 and 2. In the section that follows, I discuss the collection of data and concentrate on these first two phases.

5.10.1 Phase 1 and 2 participant observation

Participant observation was conducted while participating in the daily life of the wards and talking to staff informally. This included ward rounds, handovers, ward meetings, training sessions, and coffee and lunch breaks. Furthermore, observations by the nurses' station captured a wide range of activities including care management and informal case conferences. Participant observation was mostly engaged with the daily work on the wards, complemented by more focused observations of routine monitoring of patients' vital signs and the follow up. I observed very little patient deterioration and this finding was consistent with a similar study of early warning systems on surgical wards (Andrews & Waterman, 2005). Therefore early warning systems were primarily observed in their mundane everyday context as a routine monitoring tool. Ethnographic field notes were jotted down in a notebook and written up after each phase of the data collection was completed. The field notes, which totalled 65 000 words, included descriptions of daily work and routine monitoring of vital signs; short stories of patients' stay on the ward which I describe as 'trajectories', or pathways, of illness and care (Section 11.5.1); and other relevant topics such as training events.

5.10.2 Phase 2 semi-structured interviews

In my study I applied purposive sampling to engage a range of different staff groups using or managing the early warning system. 37 semi-structured interviews were conducted with doctors, nurses, medical and nursing staff who respond to EWS alerts, and staff from patient safety and risk management. The sample included:

- Seven doctors
- Seven senior nurses
- Seven staff nurses
- Two healthcare assistants
- Six members of staff from outreach/hospital-at-night teams
- Eight members of staff from patient safety/risk management

If possible the interviews were prearranged but some respondents, especially nurses, were recruited ‘on-the-spot’ through participant observation and informal discussions. The semi-structured interviews took place in quiet locations such as dayrooms and office areas. Interviews were recorded using a digital recorder and transcribed verbatim by an external freelance transcriber. The transcripts were anonymised and uploaded to NVIVO software.

5.11 Summary of data analysis

This section will summarise how the process of data collection, together with reading of scholarly and policy literature, contributed to the analysis (Table 5.4). The PhD study focused on one specific aspect of the SPI evaluation: improving the detection and management of patient deterioration by introducing an early warning system. Initially

my decision to focus my study in this way was influenced by the apparent weight and scale of the intervention which involved developing an observation chart and an alert system, and setting up a rapid response mechanism. The time and commitment given to early warning systems suggested that they were of high importance to the participating organisations. As I made progress with data analysis and the review of background literature, the policy relevance and institutional context of early warning systems appeared to be even more significant. Both NHS policies and the SPI emphasised organisational strategies to prevent, detect and mitigate medical error and harm to patients. Both also offered advice, rather than mandatory requirements, on how to improve patient safety by implementing an early warning system and a response mechanism.

The organisational context of early warning systems, and the expectations of desirable practice as defined by government and expert organisations, appeared to reflect what the NHS clinical governance policy stated about organisations' and practitioners' accountability for the quality of care. Of particular interest were the observations that accountability seemed to be linked with efforts to reform and standardise healthcare provision, and that organisations were increasingly given advice about voluntary and self-regulatory measures. While I had initially organised and coded my data according to themes that emerged from the data, towards the end of my third PhD year my analysis was increasingly influenced by both policy and academic literature on accountability in organisations and the public sector. I was particularly interested in examining how external imperatives and influences might shape practice in organisations.

Table 5.4 An overview of data analysis

| Stage | Data collection and writing up | Conceptualisation and analysis | Relevant literature discussed in |
|---------------------------------|---|---|---|
| Phase 1 Fieldwork 2006 | Participant observation | | |
| Analysis 2006-07 | Writing up field notes; developing the research focus and a topic guide | Studying practice, knowledge and risk | Chapter 5 Methods: Sections 5.9.2.1 – 3 |
| Phase 2 Fieldwork 2007 | Participant observation, interviews | | |
| Analysis 2007-08 | Writing up field notes; coding the interview data | Studying standardisation and risk | Chapter 2 Context: Sections 2.2 – 2.4 |
| Analysis 2008 | Further development of the coding framework; writing a thesis plan | Studying risk, accountability, and regulatory advice-giving | Chapter 2 Context: Sections 2.4 – 2.9 |
| Analysis; writing-up 2008-10 | Writing up of the thesis | Developing a conceptual framework | Chapter 3 Conceptual framework |

The above research process may appear phased but in practice the inductive and deductive processes overlapped (Table 5.4) and led to a dynamic process of ‘*weaving back and forth between data and theory*’ (Bryman, 2001, p. 10). The purpose of this process was to produce a better understanding of procedural standards in organisations by drawing on three equally important sources of knowledge: empirical data, prior theory, and further conceptualisation.

Most researchers include a deductive element in their data collection and analysis, by setting aims and objectives which suggest that they have some prior knowledge that guides the study. Deductive methods may also involve drawing on background

literature and other types of information (e.g. a pilot study, archives or statistics) to develop research questions and ideas for data collection, which will then influence the analysis. I adopted this kind of approach by exploring literature on standardisation, routines, knowledge and action, and developing my interview questions and data collection methods by drawing on the work of Strauss (1993), Clarke (2005) and Timmermans and Berg (1997; 2003). I used a process-based approach and understood risk management on the study wards, including routine monitoring of vital signs, as a continuous process of recognition of, and response to, risk. The above deductive method developed the epistemological foundations of my study, and my understanding of social constructionist (Charmaz, 2006) approaches to knowledge.

The analysis was, however, also inductive. Inductive analysis is a popular approach in qualitative research and involves multiple readings and interpretations of raw data to identify themes and patterns (Thomas, 2006). It may also lead to conceptualisation (formulation of concepts) and theory building. My analysis of interview transcripts explored the processes of recognition and response that emerged from the data, and it produced a thematic coding framework (Appendix 5.9). The themes under

‘recognition’ included:

- The purpose and importance of early warning systems
- Different uses of early warning systems: e.g. a training tool, bedside observation chart
- How staff completed the relevant charts and forms
- Setting the frequency of observations
- Use of tacit knowledge
- Interpreting vital signs in context with a patient’s condition (situatedness)

The themes under ‘**response**’ included:

- How staff handled EWS alerts and requests for assistance
- Early warning systems as an ‘arena’ for staff to come together and negotiate

This coding framework loosely followed the structure of the topic guide and the process of ‘articulation work’ outlined in Section 5.9.2.3. I also coded material under the themes ‘EWS training’ and ‘audits and feedback’. My thematic framework was broad and all the material from the interviews was coded and analysed. Some of the analysis, for example on EWS training, was mainly descriptive, while issues such as tacit knowledge and situatedness of risk assessment underwent more thorough analysis. The purpose was to gain a good overall understanding of how early warning systems interacted with knowledge and practice on the study wards, rather than an in-depth exploration of any specific aspect of the systems.

As my knowledge of relevant theory and early warning systems increased, I began to focus my attention on the concept of accountability in my coding and analysis. Despite its apparent potential and relevance to my analysis, ‘accountability’ was a multifaceted concept that required further clarification. I pursued deeper theoretical understanding by developing a conceptual framework that mapped different topics and dimensions typically associated with accountability in organisations. I used the conceptual framework for identifying the focus and direction of my analysis, which strengthened the deductive element of the analysis but did not involve theory-testing or building specific hypotheses. Overall my ‘accountability lens’ influenced how I interpreted the data, and during this process I expanded the coding framework with a theme that explored early warning systems as a source of empowerment. This last stage of the

analysis influenced how I interpreted and wrote up the findings emerging from the data, but overall the coding process was primarily inductive.

5.12 Summary of key assumptions

This short section will summarise the key assumptions that guided the development of my research questions and the analysis presented in the findings chapters that follow.

First, I assume that the meaning of accountability is created and shared through continuously emergent processes of social life. I am particularly interested in ‘enacted processes’ that are performed repeatedly in the workplace, and the focus of my empirical study is on how staff recognised and responded to risk of patient deterioration. Second, I understand that in order to manage the process of recognition and response, staff needed to negotiate the meaning, purpose and appropriate course of action. This process can be described as articulation work, or sense-making, through which staff establish why certain work processes were necessary and how they should be carried out. Third, repeatedly enacted processes and articulation work result in meanings given to what each person’s responsibilities involve and what they are answerable for. Thus understandings of what I define in this study as ‘accountability’ are not generated knowingly and purposively, but as a derivative of how staff process their daily work activities. As work activities are articulated collectively across diverse ‘social worlds’, so are meanings given to accountability. Fourth, I perceive knowledge application as a precondition for practice, and that certain ways of applying knowledge create ways of ‘doing things’, such as assessing risk by using scoring tools or tacit knowledge. Knowledge played a key role in how staff managed risk because the process of recognition and response had to be accustomed to suit patients’ needs and circumstances, staff skills and competencies, and the resources available. Early warning

systems could be used to standardise such knowledge application. For instance, the systems prescribed that vital signs above certain thresholds indicated patient deterioration and required immediate response.

The findings of the empirical study are presented in five chapters. Chapter 6 describes the study wards and the types of risks staff managed on a daily basis, and Chapter 7 examines how early warning systems were set up by clarifying role responsibilities, standardising the process of bedside observations and call-outs, and introducing record-keeping and audit measures. Chapters 8-10 will then explore how staff perceived early warning systems as part of the daily management of risk on the wards.

CHAPTER 6: First findings chapter - description of the study wards

This chapter describes the daily work on the four hospital wards included in the study.

The purpose is to prepare the ground for the analysis by describing the patient profile and the types of conditions that appeared to be common; various staff groups that contributed to care provision; and the daily work schedules on the wards. Overall, many of the patients on the study wards were frail and suffered from multiple pathologies.

This created a care environment where staff needed to account for complex problems that could not be solved by medical treatment only. This included frailty, vulnerability, addiction, depression, and feelings of loneliness or fear. Management of patient care on the wards was based on interdisciplinary and multi-agency working, and patients' relatives and family carers often got involved in the process. Daily work on the wards was influenced by staffing levels and skills mix, and the work schedules were often hectic.

The multifaceted nature of daily care provision on the wards appeared to be highly significant to understanding the complexity of risk assessment and, thus, early warning systems. Both the staff interviews and participant observation indicated that the care environment was unpredictable and many patients could be seen as being 'at risk'. For example, confused older patients could be at risk of climbing out of bed and falling, and staff had to decide on an appropriate level of surveillance when resources would not allow for continuous one-on-one care. Sudden patient deterioration was one of the risks the nurses and doctors had to manage, and early warning systems can be seen as an effort to improve the consistency of bedside observations and the action that follows

(the follow-up), thus reducing reliance on individual skill, experience and capacity to assess and respond to risk.

6.1 Patients on the wards

6.1.1 Patients' age

Although I recorded observations on patients' age and causes of admission, no data were requested from the hospitals or systematically collected on patients admitted to the study wards. Based on information acquired from handovers and ward rounds during the fieldwork, the majority of the patients across the four study wards appeared to be over the age of 65. The lowest recorded age was 24 and the highest 95. Patients on the care of the elderly ward were typically over 70 years of age. The age profile was more varied on the two respiratory wards and included a higher proportion of patients under the age of 65. On these two wards I observed the admissions to include a small number of patients under the age of 30.

6.1.2 Complex nature of health problems and 'risk work' on the wards

Patients' cause of admission and stay on the ward fell primarily into one or several of the following four categories:

- a. Cardiovascular or respiratory illness, or a combination of both
- b. Cancer
- c. Acute ailments, such as chest infections or gastroenteritis, that could lead to frailty or falls and exacerbation of underlying chronic conditions. This includes cross-infection on hospital wards.

- d. Mental health or social problems that often involved assessing the need for care in the community, such as nursing, domiciliary or residential care.

The above categorisation is non-clinical and developed only for the purposes of the data analysis. Next I will briefly describe each of the four categories.

- a. Cardiovascular and respiratory illnesses

Most patients admitted to the wards suffered from cardiovascular or respiratory illness. Many older patients suffered from both, and these conditions could aggravate each other and exist in combination with other problems such as renal impairment or diabetes. The cause of admission was typically an exacerbation of an underlying cardiovascular or respiratory problem, and the symptoms that brought patients to the hospital included general weakness, falls, shortness of breath, chest pain, difficulty in mobilising, and accumulation of fluid that could affect lungs or cause swelling in other parts of the body. These conditions and symptoms could be highly debilitating and cause anxiety.

[Extract from field notes:]

This elderly man was admitted for shortness of breath, flu like symptoms and feeling increasingly unwell. He has a history of asthma and two myocardial infarctions. He is diagnosed with an exacerbation of chronic obstructive pulmonary disease (COPD). The patient's ankles are swollen and his breathing is laboured. He is able to go to the bathroom and move from the bed to his armchair, but apart from that he does not mobilise well. As the patient has had problems with his heart in the past, the doctor suspects that the reason behind his shortness of breath is build-up of excess fluid in the lungs caused by a heart failure. The doctor explains to the patient that his condition fits a 'COPD from a heart failure' picture, and that they want to keep him in and reduce the excess fluid causing the swelling in his legs and the shortness of breath.

The wards worked to bring such conditions and symptoms under control, and to mobilise the patient as much as possible. Treatments could involve use of diuretics or chest drains to remove fluid, or medication to improve blood circulation and to reduce the pressure in blood vessels that pushed fluid into the surrounding tissues. Patients with respiratory illnesses were often prescribed anti-inflammatory medication such as inhaled corticosteroids or bronchodilators that expanded the airways and made breathing easier. Treatment to improve both respiratory and cardiac functions could include oxygen therapy. All four wards provided oxygen therapy using a nasal cannula (a plastic tube with prongs placed in the nostrils) or oxygen masks, and the two respiratory wards provided non-invasive ventilation (NIV) delivered by a nasal or face mask. NIV requires close monitoring of patients, and the two respiratory wards typically had no more than one or two patients on NIV.

The study wards treated patients with cardiovascular illness including hypertension (high blood pressure), atrial fibrillation (rapid and erratic heart beat), angina (decreased blood oxygen supply to the heart), and heart failure (reduced pump function). Some patients were treated for DVT (deep vein thrombosis), or DVT and pulmonary embolism (blood clot in the lungs), and they received anticoagulants. Anticoagulants were also used to treat atrial fibrillation. Patients with cardiovascular illness admitted to respiratory wards often suffered from respiratory problems.

Oxygen therapy, non-invasive ventilation, inhaled corticosteroids, chest drains, and anti-coagulants represent only a few examples of therapies that involve risk. Oxygen and NIV require regular observation of blood oxygen saturations (SATS, i.e. % of oxygen in the blood) and arterial blood gases which means the concentration of oxygen

and carbon dioxide in the blood. Too intensive use of these therapies can, for example, lead to toxic levels of oxygen in the blood. Chest drains were used to remove either trapped fluid or air from the lungs, and involved an invasive procedure and a risk of infection. Finally, anti-coagulants such as intravenous heparin and oral warfarin make blood 'thinner', and their use carries a risk of internal bleeding and requires careful monitoring.

b. Cancer

The study wards also cared for some cancer patients. Sometimes the cancer was detected during the admission, or was already diagnosed and the admission was caused by management issues or related health problems. This could involve management of pain or breathing problems, acute ailments including chest infections, or symptoms such as excess fluid in the lungs. Cancer patients were usually discharged with appropriate support, or transferred to a hospice or a special cancer unit. Sometimes a patient was allocated to another medical team and transferred to their ward. Only on one occasion I observed a case where a cancer patient was deteriorating and reaching the final stages, and staff were uncertain whether there was enough time to arrange a transfer. Care planning and transfer arrangements for cancer patients typically required multi-agency work and involvement of the patient's family.

[Extract from field notes:]

A scan had revealed a tumour in this elderly female patient's kidneys and the prognosis is very poor. In Tuesday morning's handover the nurses think the patient may deteriorate quickly and they assume she will be transferred soon. The patient comes from a residential care home that cannot provide palliative care, and doctors and the family need to decide on appropriate placement. The doctor asks if the patient has been seen by the palliative care nurse, and the

junior doctors say no because the patient doesn't know about the diagnosis but that the nurse has spoken to the family. The doctor sighs and looks distraught. He says they have tried to explain the situation to the patient, but she suffers from dementia and doesn't understand her condition or the prognosis. The family doesn't want any active treatment but no decisions have been made on a hospice placement. On Wednesday we hear that the patient has been referred to the palliative care team, and I understand the ward is already making arrangements for a hospice placement although they haven't discussed this with the family. Two days later the patient is transferred to a hospice, escorted by a relative.

Based on the fieldwork my impression was that staff did not see medical wards as the most appropriate place for palliative cancer care and pain management involving strong analgesics, and that staff were therefore keen to refer patients to other services. An informal discussion with a palliative care nurse suggested that even medical staff could lack the knowledge to manage cancer-related pain effectively, and specialist cancer and palliative care nurses supported wards in this task. Another issue was a lack of resources to look after and comfort patients who were anxious about their recently diagnosed or terminal cancer. Open wards provided little privacy, and placing a cancer patient in a sideroom reduced the facilities available for barrier nursing for infected patients. Infected patients on the main ward, on the other hand, increased the risk of cross-infection.

c. Acute ailments

Patients were often admitted for acute ailments that exacerbated underlying chronic conditions, or caused frailty and faintness in those whose health was already compromised. These ailments included pneumonia, chest infection, gastroenteritis, and

urinary tract infection. Such problems were a major cause of hospital admissions for frail older patients who could become very unwell, disoriented and prone to falls.

[Extract from field notes:]

This elderly female patient was admitted for shortness of breath and exacerbation of COPD. The doctors suspected chest infection and prescribed antibiotics. She suffers from asthma, hypertension and diabetes. She has a history of falls. The doctor mentions that her diabetes is well managed but she has been prescribed steroids for her respiratory conditions which have knocked her usual diabetes care regime out of balance.

This patient experienced a number of health problems in the hospital. The antibiotics gave her severe nausea, and as soon as the treatment was discontinued she began to feel better. While the patient's health improved, her blood glucose remained high because of drug side-effects. The patient also developed a urinary tract infection, and had a fall during her physiotherapy session which caused a deterioration in her health and significantly reduced her confidence to mobilise. All these factors were likely to postpone her discharge arrangements and raised questions about how she would cope at home. This demonstrates a theme that was recurrent in the four wards: risks caused by multiple pathologies and drug side effects among older patients who suffered from poor health. Further, falls were a major risk to older people both at home and on the wards.

Risk of cross-infection was always present on the wards, and all of the wards I studied had either suspected or confirmed cases of MRSA. None of the wards had confirmed cases of *Clostridium Difficile* during the time of data collection, although a small number of patients suffering from diarrhoea were barrier-nursed while the wards waited for their test results. In one of the study hospitals I attended a training session where I learned that the most common hospital acquired infection is urinary tract infection.

d. Mental health and social problems

Another recurring theme was problems experienced with mental health, addictions, lifestyle issues and social circumstances. These included smoking, poor diet, drug or alcohol addiction, lack of exercise, isolation and loneliness, depression and anxiety, and family problems.

Smoking-related health problems were common on the study wards and some patients were unwilling or unable to stop smoking despite debilitating lung and heart conditions. Some continued smoking during their stay in the hospital:

[Extract from field notes:]

This middle-aged male patient has a history of acute coronary syndrome (unstable angina and evolving myocardial infarction) and hypertension, and in the past he has suffered a type II respiratory failure. He was admitted for chest pain and diagnosed with pneumonia. Staff suspect he goes outside to smoke. Earlier this week he got disoriented and the security found him wandering in the maternity unit.

As the above quotation suggests, tobacco cravings can make patients restless and those who are unwell or confused may struggle to find their way back to the ward.

On one of the study wards staff explained that some of their admissions were caused by a local drug problem: young people smoking or injecting heroin. On two separate occasions I observed a young patient with a drug problem being admitted to the ward. Both demonstrated withdrawal symptoms and were keen to leave the hospital, and subsequently one of the young patients requested to be discharged early and the other absconded wearing only a dressing gown, pyjamas and slippers. Ward staff contacted

hospital security and the police to search for the missing patient who later returned to the hospital voluntarily.

Inability to beat addiction represents one type of risk staff dealt with on a daily basis. Risk could, however, also arise from patients' circumstances at home. Living alone could be a risk especially for frail older patients, and some were reluctant to go home because they felt vulnerable or lonely. Further, some patients suffered from depression or anxiety that could relate to ill health, dementia, isolation or troubled family life. On one occasion staff suspected abuse in the family and were planning to place a frail older patient on the POVA (Protection of Vulnerable Adults) register. Sometimes relatives struggled to provide the care patients needed after discharge. For example, some older patients were cared for by spouse who also suffered from ill health. Sometimes patients or their relatives refused care packages from social services, insisting that they did not need any help at home. On one of the wards, staff were concerned about an older patient who urgently needed to improve his diet, and they felt that a care package could perhaps improve his lifestyle. Both the patient and his spouse were reluctant to change their eating habits or accept help:

[Extract from field notes:]

The multidisciplinary team discussed the patient's poor diet and coping at home. The wife had told the social worker in no uncertain terms – 'she was firm but not rude' - that she doesn't want their daily home routines to be disturbed.

Knowledge of family and home circumstances was important and it influenced care planning and discharge arrangements. Basic details (e.g. address, type of housing, next of kin) were supplemented with information acquired from medical and nursing assessments, ward rounds, and informal discussions. Healthcare assistants, a staff group

that spent most time with patients, were particularly well placed to obtain information on how patients were likely to cope after discharge. Mental health and social problems meant that risk work on the wards frequently involved external parties such as family members, hospital security, social services, and the police. Patients' progress and ability to manage their illness depended not only on their physical health and response to treatment, but also on family support and their capacity to cope with problems such as addiction, loneliness and depression.

The high proportion of older patients emerged as the single most prominent characteristic of the study wards. These patients' illness trajectories revealed risks and uncertainties caused by a combination of factors relating to age, multiple pathologies, drug side-effects, and drug interactions. Cognitive and physical limitations made many patients highly dependent on personal care (e.g. nutritional care, washing and toileting) provided by nursing staff. This created, to a degree, a setting of institutional care which may involve unpleasant smells and scenes, states of undress and, occasionally, incoherent and even aggressive speech and behaviour. Such events were part of the daily life of the wards and reflected the vulnerability of many of the patients.

In such an environment, 'risk work', which I define as the assessment and management of risk to patients caused by any combination of factors that range from drug interactions to cross-infection and frailty, becomes a complex task. I suggest that appropriate management of risk, including patient deterioration, requires understanding of the physical, mental and social aspects of health. For example, an asthma patient's illness could be made worse, and their recovery put at risk, by drug addiction and withdrawal symptoms.

6.2 Staff on the wards

Management of patient care both before and after discharge required interdisciplinary and multi-agency working. Nursing care on the wards was provided by the nursing team that comprised healthcare assistants and the qualified nurses. By '*qualified nurses*' I mean NMC (Nursing and Midwifery Council) registered nurses on the wards including staff nurses, senior staff nurses, specialist nurses (e.g. cardiac or respiratory), sisters and senior charge nurses, and ward managers. The term 'qualified nurse' was frequently used in the staff interviews to describe a person with a professional nursing degree, as opposed to auxiliary nurses (e.g. healthcare assistants and support workers) with NVQ qualifications. Some staff also used expressions such as qualified and unqualified, or trained and non-trained to distinguish between the registered and auxiliary nurses.

Staffing levels and the skills mix varied across the wards, and typically involved three or four qualified nurses and one to four healthcare assistants during the day shift. The most senior nurse on the study wards, the head of the nursing team, was called a ward manager or a senior charge nurse. Next in the nursing hierarchy came the sisters and senior staff nurses who were left in charge of the ward when the ward manager or senior charge nurse was off duty. In this study the ward managers, senior charge nurses, sisters, and senior staff nurses are called '*senior nurses*'. When the senior nurses were off duty, the wards were managed by experienced staff nurses. *Staff nurses*, together with *healthcare assistants*, made the core of the nursing team that was most involved in the day-to-day care provision. Staff on the wards could also include *student nurses*, *agency nurses*, and *bank nurses* who sometimes worked regularly on the same ward. On a few occasions, a staff nurse or a healthcare assistant was allocated from one ward to another during staff shortages. Ward managers discussed the difficulty in securing

appropriate staffing levels and skills mix for each shift. Based on my observations, staff shortages were likely to be most severe when the morning and night shifts started. Night shifts were particularly difficult because the wards often operated on minimum staffing levels. On one occasion I observed a situation where the nurse-in-charge of the night shift refused to receive a handover until the ward had the minimum number of nurses in place.

The medical team on each ward included two or three consultant physicians one of whom was the lead clinician. On three of the study wards patients were allocated to consultants, and each consultant carried out a ward round twice a week to attend their own patients. On one of the study wards, senior medical staff worked a rota during which one consultant carried out a twice-weekly ward round and attended all patients on the ward. Trainee doctors included senior house officers (SHOs), junior house officers (JHOs) and specialist registrars. During the two-year fieldwork period medical training changed from house to foundation (F1 and F2) officer posts. In this thesis I will refer to these junior doctors as JHOs and SHOs although there was a change to foundation training posts during the time of the study.

Care provision on the wards was based upon multi-disciplinary teamwork. Ward nurses and doctors managed patient care on a day-to-day basis, and specialist nurses and allied health professionals visited wards to attend patients and meetings. Physiotherapists exercised patients, assessed their progress and mobility, and assessed the need for equipment such as zimmer frames and stair lifts. Physiotherapy was an important part of the care on the wards to mobilise patients and to improve their respiratory functions. Specialist nurses liaised with medical and nursing staff to discuss medication and care

needs: for example, with respiratory patients this could concern oxygen or steroid therapies, or respiratory care in the community. Specialist nursing care was also provided for patients with conditions such as cardiovascular disease, diabetes, cancer, and osteoporosis. Pharmacists or pharmacy technicians visited wards, checked patients' medication, and gave advice to staff and patients. One of the wards organised a weekly meeting where a consultant, trainee doctors, a member of nursing staff, and a pharmacy technician went through each patient's drugs kardex to check that all prescriptions were appropriate and up-to-date. Similar reviews could be carried out by the consultant during or after the ward round.

Wards also referred patients to an occupational therapist or a social worker, and to primary care services. Occupational therapists assessed patients' physical home environment and ability to cope there. Social workers planned care packages that could involve nursing or residential care, respite care, domiciliary care, meals-on-wheels, and home improvements including stair rails and lifts. Wards also liaised with general practices and with district nurses regarding patients' medication and care in the community, including home oxygen concentrators, special beds and mattresses, and nursing care at home. I attended multi-disciplinary team meetings in two of the study hospitals, and referrals to the team typically concerned patients who were, or had become, dependent on care services.

6.3 Daily work on the wards

The day shift typically commenced with the nurses' handover at 7.30am. The morning chores included basic nursing care, breakfasts, and a 'drug round' where a qualified nurse administered medication as prescribed by each patient's drugs kardex, a chart kept

in a bedside folder. Lunch was served at noon and dinner after 4.30pm, and hot and cold drinks were served during the day and before bedtime. In the afternoons ward staff were occupied with discharge arrangements. Wards were open to visitors in the afternoons and evenings but closed to protect dinnertime and afternoon rest. Nurses' evening handover took place after 7.30pm when the night shift started. The evening chores involved helping patients to bed, serving drinks and toast, and doing the drug round. Daily life on the wards involved several nursing routines including the monitoring of vital signs.

Consultant-led ward rounds took place two to four times per week depending on the ward. These rounds were not scheduled for every weekday and at other times patients were reviewed by trainee doctors. Ward rounds usually took place in the mornings and lasted two to three hours. Ward rounds were attended by nursing staff, and this could involve a senior nurse, staff nurses in charge of patient care, and a specialist respiratory or cardiac nurse.

Trainee doctors typically worked on the wards from 9am to 5pm and completed orders from senior medical staff, reviewed patients, and carried out tasks that emerged during the day such as prescribing of drugs. I rarely observed medical staff handovers but once I attended a handover from the evening to the night on-call staff, and once I attended a morning handover from the night on-call staff to the ward doctors who commenced their day shift. These handovers typically took place outside the study wards because the on-call staff covered all medical wards.

Demanding work schedules on the study wards were often made worse by staff shortages, inappropriate skills mix, and frequent bed crises in the hospitals. Inappropriate skills mix meant that teams had too many junior or inexperienced members of staff, which put pressure on senior nurses to contribute to care provision and supervise activities on the ward. Low staffing levels and inappropriate skills mix left less time for senior nurses to manage the ward and coordinate the patient flow. Many patients were highly dependent on nursing staff and wards were busy simply trying to follow their normal daily schedules (Dixon-Woods, Suokas, Pitchforth, & Tarrant, 2009). The most time-consuming tasks included morning and bedtime chores, mealtimes, ward rounds, and discharge arrangements. The wards were under pressure to discharge patients and accept transfers from medical assessment units, and a peak in the patient flow could stretch the services to the limit.

[Extract from field notes:]

The nurse in charge of the ward has been trying to do the drug round since 9pm but she gets constantly interrupted. There are transfers, patients calling, and medical staff coming and going. The nurse is also in charge of the bay where one patient is on NIV and intravenous insulin which requires hourly blood glucose checks. Between 10pm and 11pm the two remaining transfers from the medical assessment unit arrive and go into the same bay. Both are highly dependent older patients – one has severe breathing problems and is put on NIV. During that night most of the nurse's time is spent between the two patients on NIV. She takes the vital signs regularly, and JHO takes arterial blood gases from the patient who was transferred earlier that night. This patient is restless, he can't sleep and he keeps pulling his respiratory mask off. He is not comfortable on his back and has to be in a half-sitting position supported by pillows. He slides down in bed, the nurses help him up, he slides down, the nurses lift him up again. His condition deteriorates – medical staff discuss ITU referral but eventually this option is turned down by the ITU. The patient is upset and asks the nurse to contact his family, and she makes the call 4am in the morning. But

later that morning his condition improves and by 9.30am he is off the ventilator and on oxygen therapy.

In the above note the factors that increased workload included low staffing levels at night, late evening transfers from the medical assessment unit, and two patients on NIV who needed one-on-one nursing and regular monitoring by a qualified nurse, all of which stretched the nursing resources. Further, care management decisions required communication with the on-call doctors, the ITU, and the patient and his family. The fieldwork observations suggested that paging other staff, leaving messages, making phone calls, talking to colleagues and relatives, and dealing with paperwork took a significant amount of qualified nurses' time.

Overall, 'risk work', such as recognising and responding to patient deterioration, was affected by numerous factors including complex health problems, patients' social circumstances and personal problems, reliance on team work and staff ability to recognise and respond to risk, difficult staffing issues, and busy work schedules on the wards.

6.4 Concluding remarks

In this chapter I described the daily work on the four medical wards involved in the study. The purpose was to set the scene for the analysis and reporting of the findings in the remaining chapters. As described earlier in Chapter 5 (Methods), the study settings included three district general hospitals and one acute teaching hospital, and the size of the study wards varied from 17 to 30 beds. Of the four medical wards, two were respiratory wards, one a general medical ward specialising in respiratory medicine, and one ward was for the care of the elderly. I explained that the majority of the patients on

the four wards were older people who suffered from a chronic cardiac or respiratory illness, or cancer. Patients were typically admitted for exacerbation of chronic conditions and acute ailments such as chest infections. I observed that managing the care of patients with chronic illnesses and multiple pathologies often required finding the right combination of drugs and other therapies, and staff needed to be cautious about drug side-effects and interactions. Risks to patients also included cross-infection and falls. I noticed that care management addressed a variety needs that went beyond the patients' medical treatment. Such needs concerned mental health problems, addictions, life style issues, vulnerability, and coping at home. My conclusion was that assessment and management of risk, which I described as 'risk work', was a complex task that required knowledge of patients' physical and mental health, as well as their social circumstances. I then went on to describe the staff (nurses, doctors and allied health professionals) on the study wards, and I discussed their daily work that typically involved hectic schedules and staff shortages. A prominent feature of the daily work on the wards was routines including ward rounds, handovers and bedside observations. Overall, the description of the study wards demonstrates the diversity, complexity and the 'busyness' of the work on the medical wards, and it shows that staff needed to be vigilant of a multitude of factors that could cause patients to deteriorate suddenly.

CHAPTER 7: Second findings chapter – setting up an early warning system

We can trace back as to who was looking after the patient so there's more accountability. You know, we can say to people well, look this person's EWS score was five and you didn't do anything about it, why is that... so yeah, they do take more responsibility. Senior Nurse (33)

7.1 Introduction

In this chapter I examine how early warning systems were set up in the study hospitals. I discuss, with reference to the process of accountability (Box 3.1) outlined in Chapter 3, how staff were made answerable for the routine monitoring of vital signs.

The process of accountability can be usefully understood as a process of dependence restructuring (Green & Welsh, 1988). Before the early warning systems were introduced, hospital wards depended on the qualified nurses' ability to manage bedside observations, detect changes in vital signs, and obtain medical intervention. The qualified nurses, on the other hand, depended on medical staff to respond promptly to calls when signs of patient deterioration were detected. The introduction of early warning systems did not remove this basic structure of dependence. They did, however, alter it by dividing the process of bedside observations and follow-up into smaller tasks; by clarifying the allocation of tasks and the call-out cascade; and by engaging new organisational actors including non-medically qualified rapid responders. It appears that the organisations became less dependent on individual discretion to detect and manage

risk, and instead created more detailed tasking and discrete responsibilities that were easier to monitor and control.

In this chapter I examine role responsibilities with routine monitoring of vital signs and follow-up (7.2) and explore the content and standards of appropriate practice (7.3). Then I describe the controls that the organisations put in place to scrutinise practice (7.4). Finally, I discuss how procedural standards can be understood as an effort to make staff more accountable for how they apply knowledge (7.5).

7.2 Clarifying role responsibilities

In the section that follows I examine ‘role responsibility’ (Bovens, 1998) which involved allocation of roles and tasks within a group of frontline staff. Early warning systems influenced the organisation of work by clarifying existing, and creating new, role responsibilities.

7.2.1 Role responsibility and monitoring of vital signs

The wards were divided into two to four areas each with 6-15 patients and allocated to qualified nurses in charge of the patients’ care. These qualified nurses were responsible for monitoring of vital signs which included regular bedside observations. Bedside observations could be delegated to other members of staff who were responsible for measuring and recording the vital signs as prescribed by the early warning systems, and for reporting back to the qualified nurse. Therefore the observations could be delegated, for example, to a healthcare assistant while the overall responsibility for vital sign monitoring remained with the qualified nurse.

You know they [healthcare assistants] have their training, and I know they go for classes because they get their certificates to say that they have joined the classes, and they do the obs and they report back to the nurses in charge of that particular side [bay] and to the main nurse in charge [of the ward] to say 'this patient's score is this much, what do I do about it'.

Patient safety/risk management (18)

Bedside observations were carried out mostly by staff nurses and student nurses. In one of the study wards the healthcare assistants made a significant contribution to this task, and in two of the wards some healthcare assistants carried out monitoring. In the fourth ward I saw only staff and student nurses carrying out monitoring.

The qualified nurses in charge of the patients' care were expected to report EWS rapid alerts to the nurse-in-charge of the ward and contact a rapid responder as prescribed by the call-out cascade. Alternatively, the nurse-in-charge could communicate with rapid responders or senior medical staff if necessary. Qualified nurses in charge of the patients' care were also responsible for reporting alerts and other signs of deterioration in the nursing notes and handovers. Early warning systems reinforced these role responsibilities.

Early warning systems contributed to an important change in role responsibilities within the nursing teams by facilitating delegation of routine observations to healthcare assistants. The new OBS charts offered a step-by-step guideline that enabled auxiliary staff to measure and record vital signs, and to identify abnormal readings against set thresholds that were clearly marked with a simple colour-coding or a scoring system. Changes in vital signs that fell into the 'danger zone' were thus easy to detect and bring to the attention of the qualified nurses. In all four study hospitals the healthcare

assistants were expected to attend a training session on early warning systems before they were allowed to carry out bedside observations.

In general, staff were supportive of this arrangement as long as appropriate training and supervision were provided:

I think as long as people work within a framework of what they are required to do, and they are using appropriate tools; then if observations are done by a healthcare assistant who knows that if this score goes beyond this I need to alert this to an appropriately trained member of staff, then I think it is appropriate. I think it's not appropriate if people don't know their boundaries.

Rapid responder (29)

Some felt that healthcare assistants were well placed to detect deterioration because they were in more frequent contact with the patients than the qualified nurses.

Healthcare assistants also provided personal care that enabled close monitoring of possible warning signs that were not part of the early warning systems, including changes in mobility and appetite. Some doctors, however, would have preferred to have qualified nurses carrying out the routine monitoring:

Our nursing support is not enough in most of the wards... those days the observations were done by the nurses, in some other hospitals it's still done by the nurses, but here most of the observations are done by the healthcare assistants. They [senior nurses] are telling that the healthcare assistant have got enough experience in measuring blood pressure, pulse and all the things, and to identify whether it's normal or abnormal, but still I am not convinced.

Consultant (3)

This consultant argued that early warning systems could fail to highlight important changes in vital signs, and that patient deterioration could manifest in ways that only qualified, experienced nurses were able to detect by measuring, recording and

interpreting vital signs. It should be noted that expanding the healthcare assistants' role reflects wider efforts in the NHS to reassign tasks previously carried out by qualified nurses (Jack, Brown, & Chapman, 2004; Smith, 2003; Stokes & Warden, 2004) and this trend is not attributable to early warning systems alone.

7.2.2 Role responsibility and the rapid response

The call-out cascade and rapid response teams introduced significant changes to role responsibilities. Before the early warning systems were introduced, qualified nurses would first contact a junior house officer (JHO). If the nurse felt that the patient should be attended by a more experienced doctor, s/he could then, based on her/his professional judgment, contact a senior house officer (SHO) or a specialist registrar. The new rules, by contrast, directed the call-outs directly to the SHOs and to advanced nurse practitioners when the outreach or Hospital-at-Night (HAN) service was running. If neither was available, the call-out could be sent to a specialist registrar. During the day the qualified nurses could contact the doctors working on the ward, and out-of-hours calls were made to on-call medical staff. In the two study hospitals that provided a critical care outreach (CCO) service, the wards were expected to contact the CCO team even if the call-out went to the medical staff. Similarly, in one of the hospitals where the HAN was the bleep holder, all calls during the night would go to a HAN practitioner first. Recent EWS rapid alerts and patients who required further attention were reported in the handovers between the in-hours and out-of-hours teams. Qualified nurses and rapid responders were responsible for recording EWS rapid alerts, and the action taken, in the nursing and the medical notes kept on the wards.

This call-out cascade meant that EWS rapid alerts were first managed by SHO/HOs, specialist registrars and advanced nurse practitioners. If these rapid responders were not able to attend the patient, or if deterioration was serious or escalating rapidly, qualified nurses could contact a consultant physician or anaesthetist. If a response was not provided within set time limits, the qualified nurses could repeat the request or call the next person in the call-out cascade.

The call-out cascade introduced significant changes in terms of responsibilities and accountability relationships. First, the call-out cascade identified advanced nurse practitioners as part of the rapid response mechanism alongside medical staff. Second, the cascade provided a clear protocol that increased nurses' responsibility and authority to send call-outs. Third, it upgraded the medical response to patient deterioration by making the SHOs (instead of JHOs) the first port of call, and by stating when nurses could contact a consultant physician or the ICU directly. Fourth, it set limits for acceptable waiting times for a rapid response. By formalising the graded response, the nurses were given a clear guideline and justification for call-outs:

If you don't get any joy from your medical staff, or you feel that their decision was inappropriate, you've got other ports of call that you can go to: outreach nurses and the anaesthetics. Senior nurse (15)

The new rules also reflected changes in responsibilities and accountabilities between the wards and the advanced nurse practitioners. Advanced nurse practitioners had access to wards and could initiate and manage the care of the deteriorating patient. They were also experienced in communicating patient deterioration with medical staff and the ICU. Even though the advanced nurse practitioners emphasised their support role, CCO and HAN could provide resources and expertise not always available on the general wards.

Overall, staff gave very positive feedback on these new team arrangements in the interviews, although their introduction had involved some teething problems:

When the [team of advanced nurse practitioners] first started I think it was a bit... well it was a bit strange because some of their attitudes kind of rubbed the nurses up the wrong way. It was a bit, you know, you can't do anything unless you bleep [the team] and they're coming up and saying, well let me just check you've connected the oxygen properly and you're like urrrgh... but that's kind of settled down now and I think it's just a change for everybody, and we all had to get used to it, and that was kind of difficult to start with because it was very frustrating. Senior nurse (33)

HAN and outreach teams introduced new and extended nursing roles into traditional ways of working on the wards. Such arrangements are far from unique in the NHS; for example, specialist and advanced nurse practitioners increasingly perform tasks previously carried out by doctors, such as physical examination, diagnosing and prescribing (Dewar, 2008; Weiss, 2004; West, 2006). These new ways of working have shifted traditional professional boundaries and accountability relationships, and frontline staff may find changes in professional roles and values confusing (Savage & Moore, 2005). The above comment by a ward nurse may reflect such sentiments, or perhaps the frustration was simply caused by the rapid responders still 'learning the ropes' and failing to adjust the advice so that ward staff would find it meaningful.

7.3 The content and standards of appropriate practice

So far I have discussed how early warning systems altered and formalised role responsibilities and, as a result, prescribed how frontline staff were expected to work as a team when they took bedside observations and responded to deterioration. Another way for the organisations to restructure and formalise lateral working relationships was

to standardise the process of bedside observations and follow-up into discrete tasks.

Characteristic of procedural standards, the systems prescribed the steps staff needed to take to measure and assess vital signs, and to respond to signs of patient deterioration.

Early warning systems prescribed the course of action from physiological observations to appropriate response which involved: identifying when a patient needed to be monitored; measuring the vital signs; charting the observations; calculating the summary figures and checking them against the call-out cascade; preparing a handover if there were concerns about patient deterioration; and contacting the person identified in the call-out cascade. By prescribing the sequence and dividing it into discrete tasks, the systems could also be used to attribute blame and liability. Thus a rule violation or lapse could be located, in terms of which part of the process had failed, and attributed to the person who was responsible for that part of the process. In the section that follows, I will describe the course of action that begins with physiological observations and ends with appropriate response.

7.3.1 Setting the frequency of observations

The qualified nurses were expected to set the appropriate frequency of observations.

Typically each ward followed a basic frequency of observations that was carried out at certain times of the day: before the day shift started at 7am; mid-morning; lunch time; late afternoon; late evening after the night-shift had started; and in the early hours of the morning. However, the qualified nurses were responsible for adjusting, based on their professional judgment, the frequency so that it matched the individual patients' needs, and not all the patients were monitored at every round. If the patient was unwell or unstable, monitoring could be carried out almost continuously, every 15 or 30 minutes,

or every one, two or four hours. OBS charts provided some guidance on the appropriate frequency when the early warning system activated an alert. For example, an EWS rapid alert prompted repeating the observations in 15 or 30 minutes. Patients who were not for resuscitation could be excluded from the early warning alert system, though nurses could still continue to take a partial or a full set of observations.

Table 7.1 A summary of early warning variables and additional components in the bedside observation charts in the four study hospitals

| Physiological variables | | | Hospital 1 | Hospital 2 | Hospital 3 | Hospital 4 |
|--|---|--|-------------------|-------------------|-------------------|-------------------|
| EWS variables: | | | | | | |
| Respiratory rate (breath/min) | M | | EWS | EWS | EWS | EWS |
| Temperature (°C) | E | | EWS | EWS | EWS | EWS |
| Syst. blood pressure (mmHg) | E | | EWS | EWS | EWS | EWS |
| Heart rate (beat/min) | E | | EWS | EWS | EWS | EWS |
| Blood oxygen saturation (SpO ₂ %) | E | | EWS | EWS | OBS | OBS |
| Conscious level (AVPU) | P | | EWS | EWS | | EWS |
| Urinary output (ml/hr) | M | | EWS | EWS | | EWS |
| Blood glucose (BM) | E | | OBS | | | OBS |
| Pain score | P | | OBS | EWS | | OBS |
| Nausea score | P | | OBS | EWS | | OBS |

E = electronic measurement M = manual counting P = patient response

EWS = included in the early warning system

OBS = additional component included in the OBS chart

7.3.2 Taking a full set of observations

Nursing staff were always expected to take a full set of observations as set out by the OBS charts, unless the patient was excluded from the early warning alert system. Each hospital used a different design for the OBS chart, and the vital signs observed for the early warning system comprised a minimum of four and a maximum of nine

physiological variables (Table 7.1). Each OBS chart included the following four variables: respiratory rate, temperature, blood pressure and heart rate. These four variables were consistent with previous standards and they were already routinely monitored on the wards. Additional variables could include: blood oxygen saturation (% of oxygen in the blood); level of consciousness; urine output; a pain score; and a nausea score.

7.3.3 Measurement of vital signs

By standardising the OBS charts, the study organisations made the measurement of vital signs more consistent. In the study wards, the nursing staff typically took vital signs using portable electronic monitors that measured heart rate, blood pressure, temperature, and blood oxygen saturation. Alternatively, heart rate could be taken by feeling the pulse at the wrist or the neck, or using a stethoscope to listen to heart beats. Blood pressure could be taken with a manual sphygmomanometer and using a stethoscope to listen to the blood flow through the arm, though this method was rarely used on the study wards. Respiratory rate could only be measured manually by counting the number of breaths, and staff were expected to count the breaths for a full minute. Nurses used simple ‘AVPU’ conscious level categories to assess whether the patient was *Alert*, responded to *Verbal* prompt or *Pain*, or whether the patient was *Unconscious*. Urine output could be measured only for catheterised patients, although nurses could simply ask whether the patient had difficulty in passing water. Finally, pain and nausea were assessed using standard self-report scales as prescribed by the OBS charts.

7.3.4 Recording of vital signs

Each round of observations was supposed to be fully recorded in the patient's OBS chart (Appendix 5.1a) that was kept in a bedside folder. All OBS charts required recording of the date and time of the monitoring, which enabled the hospitals to trace the recordings back to the person who took the vital signs. One of the charts also included a space for the nurse's initials. The readings were recorded in the chart as the nurse took the patient's vital signs. The scale of each variable in the early warning system was divided into bands that gave a colour-code or a score, or both, to indicate deviation from normal vital signs. For example, in one of the OBS charts white (score of 0) indicated normal vital signs and yellow (1), orange (2) and red (3) signalled increasing deviation in this order. Each measurement was supposed to be recorded in the appropriate band by drawing a mark or writing down the figure.

As part of the recording process, the nurses were responsible for calculating a summary figure that measured the level of deterioration for each patient. OBS charts that used a scoring system provided a sub-score for each variable which was summed to provide a total early warning score. Increases in the sub- and aggregate scores indicated growing deviation from the normal parameters. One OBS chart did not use a scoring system and nurses instead calculated the number of variables outside the normal 'white' parameters. An example showing the variables, the colour-banding and the scoring system in one of the OBS charts is presented in Table 7.2.

Table 7.2 An example of the variables, the colour-banding and the scoring system for the early warning system in one of the study hospitals

| Physiological variables | Sub-scores, trigger thresholds, and the colour-coding | | | | | | |
|--|---|-------------|-------------|------------------------|-------------|-------------|----------|
| | 3 Red | 2 Orange | 1 Yellow | 0 White = normal | 1 Yellow | 2 Orange | 3 Red |
| Respiratory rate (breath/min) | ≤ 8 | | | 9-20 | 21-30 | 31-35 | 36+ |
| Temperature (°C) | < 34 | 34.1-35 | 35.1-36 | 36.1-38 | 38.1-38.5 | 38.6+ | |
| Syst. blood pressure (mmHg) | < 70 | 71-80 | 81-100 | 101-199 | | 200+ | |
| Heart rate (beat/min) | < 30 | 30-40 | 41-50 | 51-100 | 101-110 | 111-129 | 130+ |
| Blood oxygen saturation (SpO ₂ %) | < 85 | 85-89 | 90-92 | 93+ | | | |
| Conscious level (AVPU) | | | | Alert | Verbal | Pain | Unresp |
| Urinary output (ml/hr 3hrs+) | < 30 | | | | | | |

7.3.5 Structured communication

If the early warning system produced an alert of patient deterioration, the nurse was expected to prepare a handover before contacting a doctor or a rapid responder. The SPI introduced an Situation-Background-Assessment-Recommendation (SBAR) tool (Appendix 5.2) that was specifically developed to improve the reporting of patient deterioration. The purpose of the SBAR was to provide verbal prompts that reminded staff to gather and organise all relevant information before making a contact. When staff were reporting patient deterioration this included, for example, the early warning score; the name and age of the patient; the identified problem such as fast and erratic heartbeat that activated an early warning alert; the cause and time of admission; primary and secondary diagnoses in brief; and the readings for key vital signs. This information was used to describe the situation, background and the assessment of the patient.

The SBAR encouraged qualified nurses to make a recommendation on the appropriate response based on their assessment. This could involve stating how urgently the patient needed medical attention, or suggesting tests or immediate interventions such as fluids or oxygen therapy. No strict rules were issued to prescribe the nature of the recommendations that nursing staff were expected to make, and these could vary from detailed suggestions to simply stating how soon the patient should be seen by doctors or rapid responders. Qualified nurses' willingness to make recommendations typically depended on their experience and skills, and how confident they felt about communicating with rapid responders and medical staff in particular.

7.3.6 Responding to early warning alerts and call-outs

Qualified nurses were responsible for acting upon the early warning alerts as directed by the call-out cascade (Appendix 5.1b). Table 7.3 presents a summary of the alert mechanisms and the thresholds for EWS rapid alerts in the OBS charts. The call-out cascade typically set the limits for acceptable response times, and rapid responders or ward doctors were expected to attend the patient within 20-30 minutes from the ward staff raising an EWS rapid alert.

Table 7.3 A summary of alert mechanisms included in the bedside observation charts in the four study hospitals

| | Hospital 1 | Hospital 2 | Hospital 3 | Hospital 4 |
|---------------------------------------|--------------------------------|-------------------|---------------------------|-------------------|
| EWS rapid alerts triggered by: | Summary score Colour-coding | Summary score | Colour-coding | Summary score |
| Threshold for EWS rapid alerts | Score 4 1 new 'red' | Score 4 | 1 'red' or 2 'yellows' | Score 4 |

Three of the charts used the summary score to categorise the risk of patient deterioration and the appropriate response. Generally, the charts that used a scoring system provided the following call-out cascade for early warning alerts:

- scores of 1-3 alerted informing the nurse-in-charge of the ward
- scores of 4+ issued an EWS rapid alert prompting also to contact a rapid responder.

Two of the OBS charts that used a scoring system categorised a score of 6+ as serious patient deterioration.

One of the study hospitals used an OBS chart where early warning alerts were activated by counting the number of variables outside the normal parameters. Two variables ‘on the yellow’ or one variable ‘on the red’ issued an EWS rapid alert. Furthermore, in one of the OBS charts the EWS rapid alert was activated both by a 4+ score and a single new variable ‘on the red’. An increase in the risk category also prompted increasing the frequency of observations. Qualified nurses and rapid responders were responsible for documenting the EWS rapid alerts, and the action taken, in the medical and nursing notes. Two of the OBS charts also had a space for summarising this information.

Initially the rules guiding the implementation of early warning systems were perceived to be quite rigid, but gradually the systems became more flexible. Firstly, staff were encouraged to refer signs of patient deterioration even in the absence of an early warning alert. Therefore the hospitals acknowledged the importance of subjective recognition of patient deterioration, such as sensing that a patient was ‘about to go off’ or there was ‘something wrong’ with the patient. These subjective and sensory aspects of what the nurses saw as an integral part of the ‘holistic assessment of patients’ will be

discussed later (Section 9.4). Secondly, nursing staff were encouraged to avoid unnecessary calls to medical staff and the rapid responders.

If the nurse is told right everybody that scores four on that chart you contact [the rapid responder], they'd be inundated with calls on a daily basis and you can't have that either because that's going to cause problems [...] You still need to use your initiative on it. You know you still need to use your experience to know whether your patient has become very sick or not, whether you need to take action or not, it's stipulated on the chart, but it's trying to get that across at the training. It's trying to get them [to] understand that although the score is there for them, they still need to make a decision.

Patient safety/risk management (6)

Thus it can be argued that staff were encouraged to exercise discretion when they assessed the risk of patient deterioration. However, as this member of staff from patient safety/risk management pointed out, it was difficult to establish guidance that incorporated both rule compliance and discretionary behaviour:

That made it harder for [us] writing the protocol because you have to leave it open for experienced nurses to use their initiative, whilst keeping it firm enough that inexperienced nurses have support. Patient safety/risk management (10)

These findings suggest that early warning systems created a dilemma both for the 'administrators' and the users of these systems. The administrators and staff with managerial responsibilities could only reiterate the general principle that discretionary behaviour was acceptable as long as staff recognised, and acted within, the limits of their skills and experience. Therefore staff on the wards, and the experienced qualified nurses in particular, were given a rule that they should exercise discretion but little guidance on how that rule should be implemented in practice.

7.4 Scrutiny of practice

Sections 7.2 and 7.3 described the role responsibilities and standards that defined how frontline staff were expected to work individually and as a team. However, the organisations still needed mechanisms to ensure that staff actually adhered to the early warning systems. Typically the controls introduced by the study organisations involved both ‘cybernetic’ and ‘quasi’ control (Brady, 2007). In organisation and management studies, control is typically understood as a cybernetic process (Green & Welsh, 1988). Cybernetic describes the cycle of setting the standards of desired behaviour (‘director’), detecting variation from standards (‘detector’), and bringing non-compliant individuals or collectives back into line with the standards (‘effector’) (Hood, Scott, James, Jones, & Travers, 1999). With early warning systems, cybernetic control involved mandatory record-keeping, standard schedules and tasks, and auditing, which enabled the organisations to scrutinise performance and to rectify any unsatisfactory practice.

Quasi-control, on the other hand, is needed when an organisation is dependent upon the compliant behaviour of its members to meet the set standards (Brady, 2007). Under such circumstances, forceful use of cybernetic controls can generate hostility and alienation and lead to non-compliance. Quasi-control can be seen to include advice on good, virtuous and responsible practice, which takes us back to the ‘responsibilisation’ of professional autonomy and the technologies of the self (Section 3.6.2.2). For example, early warning systems and the accompanying training and supervision can be seen to encourage individuals to improve their risk management skills. Early warning systems thus included a combination of cybernetic and quasi controls.

7.4.1 Cybernetic control

Cybernetic control was operationalised through standard procedures, record-keeping and auditing. The OBS charts and the nursing and the medical notes provided a visible trace of what had been done against what was supposed to have been done. This created transparency of daily activities as standardised paperwork left evidence of how tasks were completed. For example, failure to complete bedside observations according to the set frequencies could be detected by checking the charts, and missing recordings raised suspicions of poor compliance. Standard procedures and schedules also created predictability and made it possible to observe staff performance as the work progressed. Staff with line managerial or supervisory responsibilities could identify, simply by following the conduct of daily activities on the ward, whether tasks were carried out at certain times of the day.

Early warning systems were typically audited by a member of ward staff, the outreach team, or staff from patient safety or risk management. If audits were carried out by ward staff, the outreach or patient safety/risk management staff would still carry out checks to monitor overall compliance. Randomly selected OBS charts were audited for ‘key compliance’ which meant checking that all the components in the form had been completed, and a score calculated, for each round of bedside observations. The appropriate response to EWS alerts was audited by checking a sample of alert scores against nursing and medical notes. The results were fed back to ward staff, but based on the analysis of the interview data it appears that the audits concerned performance at ward and team level rather than at individual level. There was no indication that auditing had raised fears among staff, or that it had ever involved ‘naming and shaming’ individual members of staff. However, spot checks of bedside observation charts and

immediate feedback were perhaps more effective in creating compliance because the ‘culprits’ could be identified even if they were not named by the auditors:

We’d do an overall compliance of how they’d used the chart as a whole, and we’d feed that back to every member of staff on duty [...] in doing that you weren’t sort of naming and shaming; and you knew if you looked at the last set of obs it would be somebody that was on duty there and then, and if you fed back to everybody you’d catch the culprits, and we fed it back to everybody and then you did that daily so very quickly people were starting to get a little bit competitive and quite eager to find out what was their result today.

Rapid responder (20)

This rapid responder emphasised that audits offered an opportunity to be in regular contact with ward areas in order to maintain the momentum for behaviour change. Audits could also stimulate a positive form of competitiveness and a ‘*desire to do things well*’ as Winthereik et al. (2007, p. 15) observed in their study of accountability in general practitioners’ work. Overall, it is reasonable to assume that such a change was supported by demonstrating that the purpose of auditing was to advise and engage staff rather than to correct and discipline, as was suggested by this member of staff from patient safety/risk management:

Audit trail is for learning ... the other side of traceability is legality, and best try and keep them separate in the way you talk about it. You don’t want nurses to think of audit as ‘we’ll get you and beat you ‘cos you didn’t do it right’... the accountability needs to come in a nurse going ‘this is a good thing, this is a safe thing for me to learn and use’. Patient safety/risk management (10)

This supports the assumption that cybernetic control alone was not enough to generate behavioural change, and that individuals were meant to discover new knowledge, skills and competence in risk management. However, as the rapid responder I quoted earlier

argued, resources were limited and it was a struggle to maintain regular visits to the wards:

I wasn't able to provide the surveillance that I'd like to provide, you clearly need to keep the surveillance going to keep the behavioural change, you know, to keep them documenting stuff [in the OBS charts and case notes]... It doesn't take long to step back, before the habits slip back to where they were.

Rapid responder (20)

Record-keeping served another function that was perhaps even more effective in creating adherence to early warning systems than auditing. OBS charts and other record-keeping devices created a 'paper-trail' that could be used, especially in the event of adverse patient outcomes, to trace the persons responsible for bedside observations and rapid response. In general, staff who responded to EWS rapid alerts were easier to identify because they needed to complete and sign the medical and nursing notes. Rapid response teams also kept their own records of alerts and patients they had attended. In contrast, nurses' signatures were not required in the OBS charts though one of the study organisations had introduced a chart with a space for nurses' initials. However, even a single set of observations could be traced back to an individual member of nursing staff by checking the staff rota and the date and time recorded in the OBS chart. Equally, a gap in the observations could be linked with the qualified nurse in charge of the patient at the time.

Based on the interviews with members of staff who carried out audit activities, it appears that compliance with making a full set of observations increased significantly after the introduction of early warning systems. These findings were corroborated by a review of OBS charts that was carried out for the evaluation of the SPI in the study hospitals (Benning et al., 2010). It is reasonable to assume that by making performance

visible to scrutiny, early warning systems had successfully built in expectations of appropriate performance as prescribed by organisational standards. Nevertheless, the interviews indicated that the wards still experienced problems with compliance, especially with regard to the measurement and recording of respiratory rates and, as the following quotation by a senior nurse suggests, with the call-out cascade:

I think if you compare it to maybe two or three years ago then there is an improvement, but there is still room for [improvement]. There are still some patients that are slipping through the net, and there are still some areas where Early Warning Scores are being triggered and the appropriate action is not taking place. Senior nurse (15)

The audits of compliance involved, however, some weaknesses. First, retrospective reviews of OBS charts could not distinguish between accurate and false readings. Though this topic was rarely discussed in the interviews, some acknowledged that it was possible that staff could skip over the actual measurement of vital signs and simply record a figure that was similar to previous readings. My field observations suggested that staff were unlikely to do so with vital signs that could be easily measured using the electronic, portable vital sign monitors. However, it appears that the manual measurement of respiratory rates may have been subject to some ‘fake’ recordings, which I will discuss in more detail later (Section 10.4). Second, nurses sometimes took additional single measurements of vital signs - e.g. checking only the respiratory rate in between the regular rounds of observations - and recorded them in the OBS charts. Unless the nurse indicated this in the chart, for example by writing ‘respirations only’, the auditors would interpret a single observation as non-compliance with a full set of observations. Equally, failure to record the action taken in response to EWS alerts could be interpreted as non-compliance with the call-out cascade in the auditor’s report. Thus the auditors were not able to distinguish compliance with appropriate record-keeping

from compliance with bedside observations and the call-out cascade. For example, if the medical staff failed to record their response to an EWS rapid alert in the patient's medical notes, the auditors would assume that medical staff had either not been alerted or not taken any action. Third, at the time of the fieldwork, the focus on key compliance appeared to take precedence over other important issues, such as whether the frequency of bedside observations was correct and reviewed regularly.

7.4.2 Quasi-control

Cybernetics offers only a partial explanation for how organisational order is created and sustained. A pluralistic model of governance (Dermer, 1988) recognises that control in organisations comprises both governed and self-regulatory activities. Such an arrangement is typical for complex organisations, such as hospitals, that can be characterised as having a division of labour, a hierarchical structure, and a workforce with special expertise and discretionary powers (Bovens, 1998). Perhaps more importantly, the specialist workforce in hospitals includes occupational groups – doctors, qualified nurses and allied health professionals – with *'professional norms, accepted protocols and prevailing practices of one's peer or work group'* (Romzek, 2000, p. 26). Work processes that involve autonomy, discretion and specialist knowledge may not be managed with cybernetics alone, and thus advice-giving and support can play an important role in directing organisational and individual behaviour in situations where control is difficult to exercise.

Even though supervision can be understood as a cybernetic control, it is perhaps better understood in this context as a form of advice-giving and support during the course of daily activities. Monitoring of vital signs was perceived as a task that the team leaders,

the qualified nurses in charge of the patients, were expected to manage independently. Qualified nurses were responsible for supervising healthcare assistants and they carried the overall responsibility for bedside observations. The senior nursing staff were responsible for overseeing the ward and providing supervision where needed, but time pressures and staff shortages often made this difficult. This senior nurse explained that because of staff shortages, she regularly contributed to patient care, which reduced the time available for supervising other staff:

Every nurse, or junior nurse, deserves a senior nurse input on a daily basis. But at the moment we're not able to do that with the staff shortages, you know, because I've got my own caseload. So I can't really oversee to that depth but it would be good to do that. Senior nurse (33)

The advanced nurse practitioners from the CCO and HAN could offer supervision and support during their visits to the wards. However, staff interviews and my field observations indicated that advanced nurse practitioners covered a large area and received a high volume of calls in the study hospitals. Therefore the time available for advising and supporting staff was limited.

Finally, in each study hospital, the implementation of early warning systems included small group or ward-based training on the OBS chart and the SBAR. In general, the training appeared to focus more on the OBS charts and it was more intensive during the early stages of the implementation. The training sessions targeted nursing staff only, though the interviews indicated that the OBS charts and the call-out cascade were explained in the induction for new trainee doctors (JHOs and SHOs). I attended nurses' training sessions in three of the study hospitals, and in each hospital the session comprised a lecture and exercises on how to complete the OBS chart. Sessions that

focused on the SBAR, on the other hand, gave advice on how to organise and hand over the relevant information when the early warning system triggered an alert. In the two hospitals that had a CCO team the advanced nurse practitioners contributed to training activities.

7.5 Discussion

In this chapter I have described how the early warning systems were operationalised in the study organisations. I drew parallels with the process of accountability (Box 3.1) and discussed role responsibilities, task allocation, standards setting, and how practice was scrutinised. I described the above process as ‘dependence restructuring’ (Green & Welsh, 1988) because it altered and formalised the way staff were expected to work as individuals and as a team.

Early warning systems introduced a number of changes to role responsibilities. First, it appears that risk scoring and response mechanisms, together with appropriate training, facilitated delegating the task of bedside observations to auxiliary staff. This was because the new observation charts gave clear guidance on how to monitor vital signs and what counts as deviation from normal readings. Healthcare assistants are increasingly contributing to tasks previously carried out by qualified nurses, and expanding their role to bedside observations follows the overall trend within the NHS. Even though this may reduce the qualified nurses’ workload, it has increased their responsibility to supervise auxiliary staff. Overall, staff were positive about these changes but some felt that only the qualified nurses had the appropriate skills to monitor vital signs and detect deterioration.

Second, the graded response increased the qualified nurses' authority to call for assistance when signs of patient deterioration were detected. Calls were to be made first to advanced nurse practitioners and SHOs, and the guideline stated when nurses could repeat or redirect the call. A lack of response or signs of rapid deterioration warranted contacting senior medical staff. Staff were provided with motivation to raise and respond to calls because EWS rapid alerts and the action taken were supposed to be recorded in the nursing and the medical notes, and therefore an audit trail could be established for calls for assistance and the quality of response.

Third, the introduction of rapid response mechanisms involved HAN and CCO teams, and delegating some of the tasks previously carried out by trainee doctors to advanced nurse practitioners. Advanced nurse practitioners responded to calls, attended patients, assessed risk, and worked together with ward staff and on-call doctors. Overall, compared with staff nurses and junior doctors, the advanced nurse practitioners were more experienced in communicating and managing patient deterioration, and in one of the hospitals the HAN team operated as a 'gatekeeper' by assessing patient deterioration and allocating medical resources to the wards.

The above changes formalised responsibility and authority to act upon risk, and observation charts and related guidance clarified the frequency, measuring, recording and assessment of vital signs. Such detailed tasking created predictability and allowed 'agents of accountability' (Schedler, 1999, p. 20), such as senior nurses and clinicians, to visibly check and scrutinise how bedside observations were carried out and followed up. This could be done either by observing practice, auditing documentation, or by requesting verbal reports, and then comparing activities against standardised monitoring

and reporting practices. Such vertical, top-down accountability (Bovens, 2007) represents traditional hierarchical structures in organisations. In addition, managerial groups external to the ward hierarchies, such as staff from patient safety and risk management, gained access to the monitoring of vital signs on the wards. It can be argued that the changes introduced by early warning systems shifted the source of agency control (Romzek & Dubnick, 1987) towards bureaucratic accountability. This implies that a traditional source of authority in risk management, professional expertise, was increasingly accompanied by managerial 'constituencies' (Romzek & Dubnick, 1987) such as the patient safety coordinator.

Further, the systems operationalised 'horizontal' accountability (Bovens, 2007) in lateral working relationships by allowing staff to observe how their colleagues performed, and to assess and question any shortcomings. For example, the early warning systems may have enabled qualified nurses to seek a higher degree of agency control in relation to medical staff. If medical staff did not respond to call-outs within the set time limits, the qualified nurses could repeat their request or alternatively contact the next in line in the call-out cascade. The introduction of HAN and CCO teams also crossed the traditional nursing and medical boundaries and created a service where trainee doctors and advanced nurse practitioners often worked 'shoulder to shoulder' when responding to alerts, reviewing patients and initiating treatment. Advanced nurse practitioners, on the other hand, had access to wards and could intervene with the way ward nurses managed the care of deteriorating patients.

Compliance with early warning systems was enforced by two types of control, cybernetic and quasi-control (Brady, 2007). Cybernetic control included methods that

enabled managers, supervisors and auditors to scrutinise and correct practice. Notably, record-keeping appeared to be the most powerful source of cybernetic control because practice could be assessed by following a 'paper trail' of observation charts and case notes. One study participant pointed out that *'the other side of traceability is legality'*, and suggested that staff should be supported and guided, rather than intimidated into, changing their risk management practices. Quasi-control, which consisted of training and advice, was perhaps more influential in creating such behavioural change because it could nurture skills and confidence in risk management. A very interesting aspect of quasi-control was the authority created by formal rules that justified and enabled acting upon risk, and early warning systems will be examined as a source of this type of empowerment in Section 10.5.

A number of themes arise from the analysis. These relate to the notion of dependence which, together with formal rules such as procedural standards, appears to explain how accountability is enacted in organisations. The term 'enacting' was discussed earlier (Section 5.12) when I suggested that abstract concepts such as accountability are given meaning through enacted processes, i.e. that meanings given to what each person's responsibilities involve and what they are answerable for are developed through repeatedly enacted processes and articulation work. Formal rules can be used to shape accountability, but they require an underlying structure which consists of bonds and links between organisational actors. Stewart (as cited in Yakel, 2001, p. 235) describes 'bonds' as contractually defined accountability relationships such as a contract of employment, and 'links' as an informal recognition of responsiveness typically associated with daily interaction in the workplace. In the study organisations, bonds that created dependence included contractual and line managerial structures, which can be

seen as vertical accountability relationships. Bonds can also be created by occupational affiliations and structures, such as nursing grades that categorised staff to qualified (NMC registered) and 'non-qualified' (NVQ level qualified) status. Links that created dependence included team arrangements and the multi-disciplinary nature of care provision: in order to manage risk effectively, staff needed to work together. This involved contributing to shared work processes and relying on knowledge generated within teams, which can be understood as horizontal accountability relationships. While accountability is enacted within vertical and horizontal structures, rules can be chosen to operationalise different types of accountability including process and performance outcomes (results) accountability. The early warning systems were implemented to render a work process - how staff recognise and respond to risk - visible, and the improved compliance with bedside observations could be interpreted as a success in achieving such transparency. On the other hand, lack of knowledge of changes in clinical outcomes (e.g. in-hospital mortality and morbidity, timely referrals to the ITU) suggests that the systems were not designed to render such outcomes visible, or to seek accountability for performance outcomes (results). This seems plausible because early warning systems involved procedural and not performance standards.

Enacted processes and dependence on the knowledge generated and shared within teams takes us back to 'articulation work' (Section 5.9.2.3) and how staff make sense of work activities. The early warning systems would appear to have structured knowledge generation so that it intervenes (Winthereik et al., 2007) with the clinical process of vital sign monitoring. This included the measurement and recording of vital signs, calculating a score, obtaining assistance, revising the frequency of observations, and repeating the relevant aspects of this process as long as the patient stayed on the ward.

Timmermans and Berg (1997) argue that procedural standards intervene and redirect the trajectories (pathways) of patients, their illness, and the care provided to manage a patient's illness. Early warning systems can redirect an illness trajectory by helping to detect early signs deterioration and prompting a timely response, thus potentially reducing in-hospital morbidity and mortality; allowing an earlier discharge from the hospital; and saving time and resources spent on patient care. I suggest that this is how the systems were expected to coexist with knowledge applied by multiple actors whose job is to recognise and respond to risk (Section 5.9.2.2).

7.6 Concluding remarks

Early warning systems can be seen as procedural standards that prescribe accountability for how knowledge is generated and shared in mutually dependent relationships that are further defined by specific role responsibilities. The systems appeared to operationalise answerability and responsibility for standard risk management practices both vertically, following hierarchical structures, and horizontally, in lateral working relationships. The systems clarified each person's tasks and duties, and generated mechanisms to support the detection and communication of patient deterioration both individually and within teams. Further, standardisation, record-keeping, and auditing created transparency of action so that practice could be scrutinised and rectified. The interviews suggested that early warning systems had improved compliance with bedside observations, and a case note review from the main SPI evaluation study supported this conclusion. Compliance is an important aspect of successful implementation, but a similar effect can be achieved by systematically adhering to OBS charts and the call-out cascade. Therefore compliance does not automatically imply that knowledge and management of risk have improved. The following questions then arise:

- Did early warning systems generate shared understandings of risk and how it should be managed?
- Did they increase responsiveness to risk?
- Did they change the way staff managed risk as a team?

I will seek answers to these questions by studying knowledge and practice on the study wards. Practice is understood here as application of knowledge (Section 5.9.2.2).

Chapter 8 examines attitudes to early warning systems in the management of risk.

Chapters 9 and 10 explore how early warning systems were used on the study wards.

CHAPTER 8. Third findings chapter – attitudes to early warning systems in the management of risk

Initially when it first came out I thought but I know when a patient's not well, you don't need to tell me [...] but I think it's an absolutely fantastic tool now, it really is a great tool.

Rapid responder (25)

8.1 Introduction

This chapter explores influences that contributed to how staff understood early warning systems, focusing on factors that promoted acceptance of these tools. Implementation of the tools involved some problematic issues, but these will be discussed later when I examine how knowledge of risk was applied on the wards.

My intention in this chapter is to examine why early warning systems may have been successful in improving compliance with bedside observations. As noted earlier, the study organisations used both cybernetic and quasi-control to seek accountability for formal rules. Control, however, may not be enough to justify the implementation of regulatory techniques such as early warning systems in organisations. Successful implementation requires that the systems can be shown to address a problem or danger (Bovens, 1998), and the justification must be established internally in organisations so that the systems become 'routinised' (Greenhalgh et al., 2004) or 'normalised' (May et al., 2007) and not rejected in the long-term. This is of particular importance with large-

scale interventions such as early warning systems that are resource-intensive and require significant commitment on the part of the acute trusts. In my analysis I will treat the implementation of early warning systems as an organisational process of validation through which the intervention gradually became embedded into practice. Drawing primarily on the interview data, three themes will be discussed.

First, early warning systems were relatively easy to incorporate into the existing ward routines (8.2). Second, bedside observations appeared to suffer from certain process weaknesses, and early warning systems were perceived to hold positive qualities that helped to address those problems (8.3). Third, there were a number of external influences that supported the use of early warning systems (8.4).

8.2 Tradition of bedside observations

An important source of knowledge was the routine monitoring of vital signs which was a well-established nursing task long before early warning systems were introduced in the study hospitals. Prior to early warning systems, each ward had a bedside observation chart, i.e. a TPR chart, that included at least temperature (T), pulse (P) and respiratory rate (R). According to staff, the content of the TPR charts lacked consistency and could vary from one ward to another, and did not include a scoring system, colour-coding, or a call-out cascade. Before the introduction of the early warning systems, the interpretation of vital signs and decisions to call for help depended on the skills and experience of the nurse, and there were no set thresholds for identifying patient deterioration and contacting medical staff. Apart from the introduction of these scoring and alert tools, the field observations and staff interviews suggested that the

introduction of early warning systems had not significantly altered the core tasks involved in routine monitoring. The bedside observations were carried out using similar frequencies, and observations were still taken using portable electronic monitors, or a manual sphygmomanometer and stethoscope to listen to the blood flow through the arm.

A good example of this continuity was the way in which staff could use OBS charts - similar to TPR charts that preceded the OBS charts - as a prognostic tool. Completed charts typically showed a time series of 20-40 readings for each vital sign, which staff could review to assess how a patient was responding to treatment and whether they were making good progress. It would be easy to overlook this important function as early warning systems are typically described and promoted as an alert system in a critical care context in the academic and policy literature. Yet my field observations on medical wards revealed that early warning systems had different uses, and that providing a critical illness alert was only one of them. The other aspects served the purpose of routine monitoring of patients' vital signs and response to less drastic changes. This was reinforced in some of the staff interviews, and it appeared to be equally important to both nurses and doctors:

With the double page charts it means that you can see if there's any trends and certainly from the actual scoring you can see if the patient's getting worse or better. It's not a hundred per cent accurate, it doesn't give you all the information you need, but it's a guideline which we didn't really have before.
Senior nurse (31)

When you look at an observation chart, as a good clinician, both nurses and doctors, you will be happy when you look at a chart [...] the observation will tell whether the patient is getting better or whether he's getting worse, or whether he's stable, so it's almost a dynamic picture of the patient. Consultant (3)

Physiotherapists and specialist respiratory nurses were described in the interviews as checking the OBS chart when they assessed patients and decided on therapy. Readings and trends in respiratory rates and blood oxygen saturations, in particular, were useful when deciding on chest physiotherapy and prescribing of inhaled anti-inflammatory drugs.

Even though the early warning systems were not meant to be used with patients who had been given a not-for-resuscitation order, staff often continued to use the OBS charts as a prognostic tool regardless of the patient's resuscitation status. Wards were not given any detailed rules for excluding patients from bedside observations and the early warning alert systems. Some study organisations prompted nurses to exclude all patients in a palliative care pathway, but on the whole it appears that exclusion decisions were often based on nurses' and doctors' professional judgment. My field observations suggested that nurses often continued to observe patients to see how they responded to treatment even if it was only a question of 'comfort care'; e.g. pain relief and oxygen therapy. Further, some patients who were given a not-for-resuscitation order still continued to receive active treatment, which justified the routine monitoring of vital signs. Even if nursing staff did not intend to follow the call-out cascade as prescribed by the OBS charts, they could still use the colour-banding and the scoring system to highlight changes and request medical intervention.

8.3 Internal risk management needs

The second source of knowledge was awareness of process weaknesses and the risks they posed. In the interviews staff indicated that bedside observations had not always been carried out as they should have been. In 34 interviews the study participants were

asked why an early warning system was introduced in their hospital. Some staff discussed past and present problems with bedside observations and response to patient deterioration. These problems included the following (numbers in brackets indicate the number of interviews in which these problems were cited):

- failure to obtain a full set of observations; inconsistency of monitoring practices (9)
- staff not measuring and recording the respiratory rate (7)
- failure to interpret vital signs and recognise early signs of deterioration (4)
- reluctance to ask for help when signs of deterioration are recognised (4)
- failure to obtain help; poor communication skills (4)
- late referrals to critical care (3).

Generally, staff perceived the physiological triggers and response mechanisms to be useful in improving the quality of bedside observations. The systems were seen to improve the consistency of routine observations, recognition of deterioration, response to deterioration, and the clarity of information passed on. Staff also felt that the systems could facilitate timely and appropriate referrals to intensive care. When I asked staff why early warning systems were introduced and what their purpose was, 31 participants discussed the benefits of a track and trigger mechanism, 18 respondents recognised the improved consistency of the procedures, and 17 felt that early warning systems helped nurses and junior doctors to be more concise and assertive when they communicated patient deterioration.

In the section that follows, I will describe how staff perceived the problems with bedside observations and how early warning systems helped to address these problems.

8.3.1 Compliance with routine observations

Overall, the standardised new OBS charts were seen as useful for improving compliance with bedside observations, in particular in relation to recording respiratory rates:

When this came it was like a godsend because the first thing on it's your respiratory rate and I think that's one of the reasons why I love it.

Senior nurse (14)

Past problems with compliance were seen as being associated with variable chart designs, poor practice, and a lack of awareness of the respiratory rate as the most important indicator of deterioration. Further, measurement of respiratory rate was seen as more demanding compared to some other tasks because it required manual counting and skill in taking the rate without distracting the patient. This senior nurse suggested that gaps in respiratory observations were partly attributable to what she describes as 'laziness':

Yeah the respirations are the biggest issue and I think it is just simply because people have to count them, there is no other way than that. People are lazy and I think you'll find that in every hospital that you ever go to. Senior nurse (31)

Poor compliance was also attributed to a lack of focus on vital sign monitoring in nurse training and ward-based mentoring. For example, junior nurses could be ill equipped to take bedside observations and fail to carry a watch needed for measuring the respiratory rate:

A lot of junior staff are well-trained academically but less experienced in general [...] It's very busy out there, we don't know how much mentoring people get [...] this sounds a bit stupid but you would notice junior nurses coming out without watches. You know you need something to do the respiration rate with [...] so you notice that the importance they're putting on things [in the training] maybe is not quite the same. Patient safety/risk management (10)

Another reason behind variable compliance was that electronic measurement of blood oxygen saturation (SPO²) had, to a certain degree, replaced respiratory observations even though this was not recommended practice:

People didn't record respirations because for some reason they thought that the SPO² monitor would tell them everything. I had a big issue with that because obviously one of the most important signs is your respirations, and people were not doing them consistently. Senior nurse (14)

Reluctance to count the respirations could be explained by the ease and simplicity of SPO² monitoring that only required attaching a plastic clip to a patient's finger.

However, as the above quotation suggests, the respiratory rate was generally seen as the most important vital sign and it was not meant to be replaced by blood oxygen saturations.

8.3.2 Interpretation of vital signs

Failures to interpret vital signs and detect deterioration were associated in interviews with difficulty in noticing or understanding the signs of patient deterioration. However, few nurses indicated that they were not fully confident with their own skills, and inability to recognise patient deterioration was generally seen to be an issue that affected newly qualified staff:

There are experienced nurses who can generally absorb what they see and realise there's a crisis developing, but there's some junior nurses who may not be able to do so. Senior Nurse (30)

Even though nurses rarely indicated that that they felt that they personally failed to detect early signs of patient deterioration, the complexity of 'risk work' (Section 6.1.2) on the wards told a different story. My field observations suggested that patients on the

wards could easily develop respiratory distress and symptoms of cardiovascular problems, or be seriously affected by ‘minor’ ailments such as urinary tract infections. Nurses therefore needed skills to interpret vital signs in the context of a patient’s age and condition, and what was deemed as ‘normal’ in each circumstance. This could create uncertainty over the interpretation of vital signs and what counted as early signs of critical illness. Some nurses also described situations where they had sensed that ‘something was wrong’ with a patient, or that a patient was about to ‘go off’, even though they were not able to identify the exact nature or cause of deterioration. Staff interviews suggested that such ‘gut feelings’ and intuitive hunches, also called ‘staff concern’, were fully legitimate reasons for contacting medical staff.

Positive views in staff interviews typically emphasised the ability of early warning systems to make the recording, interpretation and communication of patient deterioration more consistent and reliable. The OBS charts offered an ‘aid memoire’, or a check list, that prompted staff to measure and record the key vital signs before making a call-out:

I think it’s introduced consistency to approach, and it’s introduced a better quality of information. Because in the past I know the more senior doctors have said that if they took a referral from a junior doctor or from a nurse, the first thing they would do is ask questions and there would be answers to some of the questions and not answers to others, and they would have to say to them ‘well could you go and find out’. Rapid responder (29)

Staff interviews also indicated that the new bedside observation charts were helpful in ‘visualising’ risk and providing a numerical value to describe the level of deterioration. Visualisation was based on chart design and use of colour coding to highlight where vital signs reached a value outside the normal range. It was a sign of escalating risk if

vital signs changed for example from white, which indicated normal readings, to yellow and then red:

It's colour-coded and if they go into the red you know they've triggered.

Staff nurse (23)

The EWS rapid alerts were based on a simple scoring system, or counting the number of signs outside the normal range, and the bedside observation charts included a graded response guideline. Both the colour coding and the numerical values were seen as useful in helping staff to notice and understand the signs of deterioration, thus triggering response. As the following rapid responder suggests, the impact was two-fold: first, to assist with decision-making and second, to boost nurses' confidence in communicating deterioration:

It almost stops people making subjective decisions because there's parameters for them to work to they know when they should ... it takes out the inexperience or the people thinking I don't like to chase a doctor, they'll think I'm daft or I don't know what to do. It allows them to make decisions for them.

Rapid responder (24)

8.3.3 Communication and calls for assistance

The interviews suggested that some ward nurses and doctors lacked good communication skills. This could result in poorly structured information and inability to clearly state the patient's name, location, key vital signs, and the urgency of the call:

There's nothing worse than getting told I cannot remember the patient's name but she's got her pink pyjamas on and she's by the window.

Patient safety/risk management (6)

Another issue with communication was reluctance or a lack of confidence to ask for help when signs of deterioration were detected. This was a complex area, and staff

interviews and informal conversations suggested that it could be difficult for staff nurses to assert the urgency of the call and ‘get doctors to listen’. Staff interviews also indicated that nurses, especially those of junior grades and with less experience, were worried about being criticised for making unnecessary calls to medical staff.

I think they're very aware of somebody's observations being out of normal range. I just think when they're junior it's how empowered they feel about talking to somebody else about them. Senior nurse (15)

On the other hand, some felt that attitudes towards vital sign monitoring had been complacent and undermined the significance of routine observations and changes in vital signs:

I think what was happening before was people were merrily recording observations or not and nobody was responding to them, and you could watch a deterioration over a few days and nobody had picked it up.

Rapid responder (20)

Even though literature on physiological trigger systems typically focuses on improving detection, communication of patient deterioration is equally important if early warning systems are to work. Staff interviews indicated that early warning systems were seen as being useful in helping nurses and junior doctors to hand over the vital information that was needed for prompt decision-making. As one senior nurse explained, early warning systems were introduced not only to pick up deterioration, but also to improve communication:

The doctors got a better understanding of how sick the patients are, and then they could better prioritise which patients they should see. Senior nurse (33)

The systems also enabled staff first to gather the vital information, and then to summarise it by a single number. Even though a full set of observations was needed to

brief the doctors, an aggregate figure such as an early warning score was helpful in emphasising the urgency of a situation.

It's becoming a more powerful thing, rather than going and saying to a doctor 'patient's blood pressure is eighty over forty and they're tachycardic'; it's becoming far more powerful to say 'the patient's got a EWS score of four'. That wasn't always the case but I think as time has gone on and the EWS chart is more readily accepted into clinical practice, that is becoming far more powerful.

Patient safety/risk management (21)

But early warning systems were not only useful in improving the reporting of patient deterioration. The systems could also help nurses to be more assertive when they requested medical intervention:

I saw it as a tool of empowerment for staff who are concerned about their patients ... it's the usual saying why can a ward sister ring up and say exactly the same as a newly qualified staff nurse but get a different response from that SHO at the end of the line [...] It was a standard tool ... assertiveness tool for all members of staff. Patient safety/risk management (16)

Equally, junior doctors could use the early warning system to communicate deterioration to more senior medical staff. Assertiveness and feeling empowered to contact medical staff, and to insist upon medical intervention when it was difficult to obtain, were a major theme in the staff interviews. Good communication skills, as well as confidence to speak to senior and medical staff, were typically seen to develop as staff grew in experience. Many respondents saw the systems as a training tool that taught, especially junior nurses, not only how to recognise deterioration, but also how to communicate proactively and make suggestions on action that should be taken next. The systems were also seen as being useful in helping staff to weigh the seriousness of deterioration, and whether it was necessary to call medical staff or a rapid responder. It

appears that the systems were built so that the physiological triggers and summary figures could be used to flag up and communicate deterioration; first among the nursing staff, and then between the nurses and the doctors or the rapid responders. Formal triggers, the call-out cascade and the time limits set for response, on the other hand, provided a back-up and justification for contacting medical staff and rapid responders. Such back-up and justification apparently helped nurses to be more assertive.

8.3.4 Referrals to intensive care

All the above problems could be seen as contributing to suboptimal care on the wards and late intensive care referrals. Issues with intensive care referrals were more often raised by rapid responders, consultants, and patient safety/risk management who were perhaps better positioned to see the ‘bigger picture’ of patient deterioration in their hospital:

A lot of the patients we were admitting from wards were coming very, very late in the deterioration or possibly even post-arrest. Rapid responder (20)

As background literature on the problems of patient deterioration in hospitals (NCEPOD, 2005; NPSA, 2007) suggests, staff on general wards may lack the experience and skills to manage signs of critical illness. My field observations and staff interviews indicated that a cardiac arrest was a relatively rare event on the study wards, and no such event was observed to take place during the fieldwork. It can be argued that if arrests are infrequent, there is less opportunity for nurses and doctors working on general wards to develop skills in distinguishing these events. Although staff rarely discussed this in the interviews, this staff nurse suggested that she was lacking the

‘trained eye’ to immediately distinguish between the signs of cardiac and respiratory arrest:

A person like me who is really a beginner into this, I find it very hard to find out very quickly, it would take me at least a few minutes to realise which it is cardiac arrest or respiratory arrest, and treat the patient accordingly.

Staff nurse (18)

However, as this nurse was experienced and, based on my field observations, capable of taking charge of the ward, she was only a beginner in terms of training her eye to detect the signs of sudden and dramatic patient deterioration. This quotation is unique in that it implies that even experienced staff could feel unsure about their skills to detect sudden patient deterioration. Staff very rarely made such comments.

Consultants, staff from patient safety and risk management, and rapid responders with a critical care background were more likely to discuss early recognition of deterioration to prevent patients getting into a critical condition, to ‘*nip a problem in the bud*’ as described by one consultant. One rapid responder suggested that an early warning alert could work as a prompt to establish the best way to manage a patient’s care, including decisions about referral to intensive care:

I believe it was introduced to pick up an early clinical deterioration, so you could go down and improve care for the patients on the wards, keep them there, come up with a management plan. Rapid responder (20)

However, one consultant argued that decisions about management strategies including referrals to intensive care should be made as soon as a patient is admitted to the hospital:

If you're going by the early warning system and you are going to call the outreach and going to get er ... involved all those people, it's better to make sure that this patient is for full active treatment, resuscitation and ITU admission at the time of the admission, it's not always possible, I may say it's difficult to assess. Consultant (3)

These findings suggest that activities to identify appropriate referrals to intensive care (or ITUs or HDUs) involved two different types of uncertainty. First, wards experienced difficulty in recognising deterioration and calling for help. Second, staff may have struggled to identify, either at the time of the admission or after the transfer to the ward, patients who would not benefit from intensive care procedures including resuscitation, and who should therefore not be considered for a referral. These decisions typically involved senior medical and nursing staff, and the patient or his/her family. The use of early warning systems was linked to care management decisions in that patients who would not benefit from a referral to intensive care could be excluded from the early warning system. While the systems did not introduce any formal rules to guide such decisions, staff were expected to assess whether it was appropriate to include a patient in regular bedside observations and the early warning alert system. Such decisions were, however, potentially difficult and indicative of end-of-life care, creating perhaps a specific area of 'recognition and response' where wards may have benefited from a critical care outreach service. Interviews and informal discussions with three critical care outreach nurses confirmed that the purpose of their service was to support wards with all kinds of difficult care management decisions. Their approach is consistent with the guidance provided by the Intensive Care Society (2002) which argues that outreach care is '*a partnership aimed at prevention by education and action*' (p.3).

It was noted that some staff described early warning systems as part of a process that involves a sequence of tasks and events. The systems facilitated the continuity of the work process, thus avoiding disruptions created by failures to interpret the signs or communicate them:

EWS as a stand-alone is meaningless but EWS with the process is very useful. So if you just write a score and don't act on the score, then it's neither use nor ornament. But I think if people follow the process and realise that a score of four means you have to be doing half-hourly, hourly observations, have the patient assessed... it just brings it back to basics really, it's no rocket science or anything. Rapid responder (20)

Once any of these variables reaches a certain threshold, it triggers a response from the nurse who's doing the observations to inform initially one of the medical staff, and then remedial action can be taken... It leads to a sequence of a chain of events. Consultant (2)

That staff recognised early warning systems as process improvement is a notable finding which is consistent with the guidance that recommends the implementation of early warning systems based on their process qualities. As discussed earlier (Section 2.6.3), evidence of the effectiveness of early warning systems is limited, and staff interviews in our study hospitals supported this claim. Evidence of clinical outcomes with regard to cardiac arrests was discussed in nine interviews, but only three respondents were confident that early warning systems had contributed to a reduction in cardiac arrest rates in their hospital. Others believed that early warning systems may have reduced the rate of cardiac arrests, but they either had no knowledge of outcome data, or assumed that it would be difficult to isolate and measure the clinical impact of these systems. Lack of evidence of improvements in clinical outcomes indicates that positive perceptions of the qualities of early warning systems, such as easier detection

of abnormalities in vital signs, offer a convincing explanation for the acceptance of these systems.

8.3.5 Early warning systems and awareness-raising

The previous sections have reported on the poor practice and underlying problems that staff identified with the previous system of bedside observations, and the improvements in work procedures that staff attributed to early warning systems. Both were likely to have facilitated acceptance of early warning systems among staff, but they may reflect two different types of justification. Awareness of poor practice and underlying problems suggests that staff recognised a serious patient safety issue. Focus on the process improvements, on the other hand, suggests that early warning systems may have won some ‘hearts and minds’ if staff found them to be practical and helpful during the course of daily work. Awareness of undesirable and risky practices may be needed for behavioural change, but visible process improvements may have a strong impact in relation to gaining support for patient safety interventions and making staff understand why such a change is needed. It may, therefore, be useful to consider the relative importance of these two factors in terms of explaining the acceptance of early warning systems

Based on the staff interviews, my impression was that the study wards had experienced problems with the consistency of bedside observations, communication of patient deterioration, and timely response. But the early warning systems in the study wards were introduced before I commenced the fieldwork, and it was therefore difficult to establish to what extent staff felt affected by these problems prior to the introduction of these tools. For example, one rapid responder felt that the early warning system was

‘great’ and a ‘fantastic tool’ for detecting and communicating deterioration. When asked whether detection had been a major problem in the past, she replied:

I don't really know if that was why really. I think it was a tool that was found and that this is a great way of showing nurses [what] we can do, and it's a great way as well to get doctors to listen to you. Rapid responder (25)

While most respondents explained the introduction of early warning systems in terms of process improvements, only about half of them specifically mentioned problems that the wards had experienced with bedside observations in the past. Overall, rapid responders, senior ward staff, and staff from patient safety and risk management appeared to be more specific about the problems that they had experienced with bedside observations. These staff groups contributed to auditing, feedback, supervision and monitoring of activities, which perhaps suggests that they had a better understanding of problematic issues that might affect care provision. Staff nurses, on the other hand, appeared to view early warning systems in the context of their daily monitoring routines and approached it in terms of process improvement.

Thus early warning systems may have been useful in demonstrating that work processes, i.e. bedside observations and response to patient deterioration, could be improved. Even though early warning systems had flaws, as I will show later in my analysis, an increased awareness of why they were needed, and how they could help to solve problems, may have helped to embed these systems in the daily practice of the study wards.

8.4 External influences

The above findings suggest that the capacity to build upon the tradition of bedside observations, and the positive perceptions of process qualities, contributed to how staff perceived early warning systems. The third contributing factor that emerged was the external regulatory influences discussed in Chapter 2. These included government strategies to modernise critical care, and the guidance provided by stakeholder groups in critical care and patient safety. The impact of such influences is, however, more difficult to distinguish. The decision to implement an early warning system in the study organisations cannot be explained by one single influence or directive. The SPI commenced in January 2005 and the recommended interventions included setting up a rapid response team. The SPI also identified the recommended minimum thresholds for calling criteria that track and trigger alerts of patient deterioration (Benning, unpublished). However, three of the four study organisations had already had experience of implementing, planning or piloting their own local or regional track-and-trigger system one to two years prior to the launch of the SPI in January 2005. Since my study participants included only three members of staff who had been involved in the development and introduction of early warning systems, these early stages were rarely discussed during the fieldwork. Some interviews and informal conversations, however, suggested that early warning systems were supported by a combination of policy and networking influences in the regulatory space of acute hospital trusts.

When asked why early warning systems were introduced, none of the interviewees mentioned any of the national policy documents or guidelines. However, in one of the study organisations the introduction of physiological triggers was part of a sub-national strategy to improve the management of acute medical admissions in line with the

modernisation of critical care services. The track-and-trigger tool in this organisation was introduced as part of this strategy and coordinated through a multi-agency group:

Early warning score was actually a response to physicians [in the region] getting together ... at that time our consultant physician on our emergency admissions area actually led that group so he had a very active role in the production of the early warning score. Patient safety/risk management (17)

Problems identified in the sub-national strategy included the rising numbers of acute admissions, changes in service delivery following new GPs' and consultants' contracts, and the new European Working Time Directive which reduced junior doctors' weekly working hours. Thus the implementation of the early warning system in the above study organisation may have been significantly influenced by the overall modernisation of critical care services and organisational changes that affected all NHS trusts. Overall, my field observations suggested that Hospital-at-Night (HAN) and outreach services were seen as important in alleviating junior doctors' workload by improving ward nurses' access to advanced nurse practitioners and specialist ITU nurses who could initiate treatment, communicate with medical staff, and perform tasks previously carried out by junior doctors.

Some staff associated early warning systems with research evidence that supported the introduction of physiological triggers, or with similar developments in other hospitals, both of which appeared to raise the credibility of such systems. Early warning systems could also be seen as a result of organisational changes that emerged from clinical governance and patient safety strategies. In one of the study hospitals the track-and-trigger tool was introduced together with not just one, but two major response

mechanisms: the outreach service and a hospital-at-night team. The following quotation by a doctor brings together a range of potential influences:

Certainly the score has been used in other hospitals in this area, and studies have shown that the score does predict patients who are becoming unwell. I think it was started sort of last year at the same time when all the changes were happening especially with the handovers and the [hospital-at-night team] policy, those sort of things were starting and this was introduced as well. Yeah so it's more of a sort of clinical governance and from safety point of view really.

Consultant (8)

Networking opportunities also contributed to the implementation of early warning systems. An informal discussion with a member of staff from patient safety/risk management in one of the study organisations revealed that an opportunity to liaise with a small network of acute trusts seeking to reduce hospital mortality had enabled an earlier start with their early warning system. Similarly, the SPI had been influential, and supported the on-going work in three of the study organisations and contributed to the introduction of track-and-trigger and graded response systems in the fourth. As suggested by a member of staff from patient safety/risk management, the SPI and the support received from the Institute for Healthcare Improvement (IHI) had made the implementation easier:

Well we actually had an early warning scoring sheet before SPI both in the medical ward and in surgery... what SPI did was that the progress was much faster because of the interventions and support we got from IHI.

Patient safety/risk management (13)

Some interviews indicated that the SPI offered special expertise which gave early warning systems credibility:

There was also the Safer Patients Initiative. Obviously, from our point of view, they're using proven safety techniques. Patient safety/risk management (10)

The SPI could also work as a motivation for a hospital trust to develop one charting and monitoring system that would be adopted across the organisation. For example, in one of the study organisations the wards had used a number of different observation charts including an Early Warning Scoring chart:

We had actually used early warning scores, and the Safer Patient Initiative was a catalyst for us to spread much more widely so erm ... that has been another kind of move to actually get that across the organisation.

Patient safety/risk management (17)

Finally, one of the study organisations was in Northern Ireland where hospital trusts were influenced by recommendations (RQIA, 2005) that followed the death of Janine Murtagh, a patient who died as a result of post-operative complications in a Belfast hospital. This patient's death received media attention and led to an inquiry and formal recommendations supporting the adoption of track-and-trigger systems in Northern Ireland. Four study participants in this particular organisation referred to the Murtagh case, suggesting that an early warning system was introduced to prevent such incidents:

Because there was one particular instance of a lady who actually died post-surgery because her observations weren't done as often as what they should have been, and even if they had been done, they hadn't been recorded as to what the problems were. So I think there've obviously been errors made and mistakes made so they're needing to introduce some sort of form that would make people more aware. Staff nurse (26)

Two significant regulatory interventions occurred in 2007 during the last few months of the ethnographic observations and the interviews. The NICE guideline on the management of acutely ill patients in hospitals was issued in July 2007. This guideline

was not mentioned by any of the study participants, but one member of staff from patient safety/risk management discussed the importance of NICE guidance regarding one of the other SPI interventions. Her experience was that release of relevant NICE guidance had been very helpful in gaining support for this intervention:

I think it's going to be a lot easier [...] now that we've had official NICE guidelines saying that this type of patient should have A, B and C. It's cut down the little bit oh that consultant doesn't like this, that consultant doesn't like that. I mean I suppose they could still turn round and say oh well I'm not in agreement but the fact that it's got NICE guidelines attached to it may have a little bit more oomph to it. So that it's quite interesting how perceptions and people have changed in view of that coming out at the same time.

Patient safety/Risk management (16)

I suggest that the NICE guideline (2007) on the management of acutely ill patients had the potential to gain similar support for early warning systems, but that it was introduced too late for an effect to be detected in this study and was therefore not mentioned by any of those interviewed. The same can be said about the NHS Litigation Authority's voluntary risk accreditation scheme that included early warning systems in their risk assessment criteria in April 2007.

All the above regulatory influences, whether imposed by public bodies or stakeholder groups, are indicative of regulatory 'quasi-control' (Green & Welsh, 1988) that builds upon advice-giving to encourage and enable organisations to demonstrate that they take the detection and management of patient deterioration seriously. This advice included government guidance on the modernisation of critical care that influenced regional and organisational strategies, and advice acquired through patient safety networks such as the SPI. The purpose of the advice could be seen as being to make organisational

practices consistent with desirable risk management standards, as identified by the government and stakeholder groups, without increasing the external regulation of acute hospitals (Brady, 2007; Green & Walsh, 1988). Such standards involved the implementation of track-and-trigger systems and rapid response teams. Therefore advice in this context can usefully be understood as a regulatory tool to promote ‘deep compliance and responsibility’ (Brady, 2007, p. 32) in organisations. By adopting an early warning system, the acute trusts demonstrated their ‘desire to do things well’ and meet the expectations imposed by the government and the stakeholders. As described earlier (Section 7.4), the systems created transparency of frontline activities (e.g. an audit trail) that enabled the trusts to monitor and demonstrate accountability for the standards.

8.5 Discussion

In this chapter I have examined influences that contributed to how staff understood the early warning systems. Three themes emerged from the data: the long tradition of bedside observations; internal risk management needs; and external regulatory influences.

In each of the four hospitals the early warning system involved a set of physiological variables, cut-off points, colour coding, and a scoring algorithm. The systems enacted a formal discourse of risk at two levels: first, by identifying criteria that signal risks to patient safety and second, by drawing boundaries that define recommended practice. However, the interviews suggested that early warning systems did not generate an entirely new ‘regime of practice’ (Section 5.9.2.1) on the study wards. First, the new OBS charts were preceded by Temperature-Pulse-Respiration (TPR) charts which

included similar variables and recording methods. Second, the tasks and duties that contributed to early warning systems were based on the well-established ward routine of bedside observations. This context provided continuity because staff were already familiar with the regular observation of patients' vital signs. Further, each of the four hospitals continued to develop their localised system after its launch. The changes included alterations to the OBS charts and the introduction of a rule that allowed the qualified nurses to use discretion (Section 7.3.6) in order to avoid unnecessary calls to ward doctors and rapid responders. Therefore it can be argued that tacit and formal representations of risk together continued to generate 'ways of doing things' which modified, rather than radically transformed, the practice of bedside observations.

It may be relevant to consider the perspective of Berg (1997) regarding formal, or abstract, models of practice and the work that they seek to represent. He argues that two well-established narratives, one endorsing the transformative power of abstract models and the other perceiving them as rigid and totally dependent on human interpretation, have led to antagonistic interpretation of standardisation. Such polarisation fails to acknowledge that practice can be transformed through gradual re-representation of abstract models which may involve both successful integration and problems leading to resistance. Though early warning systems were seen to suffer from certain limitations that will be discussed later, a sign of integration was that the OBS charts appeared to work reasonably well as a routine bedside observation tool. Early warning systems are typically described as an intervention to prevent suboptimal care, late intensive care referrals, and excess morbidity and mortality (Sections 2.6 and 2.7). The severity of potential adverse outcomes explains the weight placed on the early recognition of critical illness, and the tendency to articulate standardisation efforts from this

perspective. Yet studying the use of early warning systems indicated that they contributed to routine daily activities aimed at monitoring patients' condition and their progress. This included, for example, assessing whether a patient was responding to treatment, and if they were ready to be discharged. The findings suggest that an early warning system in its role as a bedside observation tool had different uses, and that providing a critical illness alert was only one of them. The interviews indicated that staff focused on the aspects of the early warning systems that were relevant to their role responsibilities. For instance, the staff nurses discussed the systems mostly in the context of the routine bedside observations, while the medical staff and rapid responders were more likely to bring up issues that concerned intensive care referrals.

Overall, staff found early warning systems useful in improving the quality of bedside observations. A number of long-standing risk management issues were mentioned in the interviews, including variable compliance with routine observations and respiratory rates in particular; difficulty in interpreting early signs of deterioration; failure to obtain help and medical assistance; and consequent delays in referral to intensive care. These themes are consistent with the problem of the deteriorating patient discussed in Section 2.6.1. It appears, therefore, that by introducing an early warning system the study organisations addressed risks that were easily recognisable on the wards. Positive perceptions of early warning systems seemed to relate primarily to their process qualities, and staff had little or no knowledge of improvements in clinical outcomes such as cardiac arrest rates. These findings support the role of early warning systems as a process improvement, as proposed by NICE and expert organisations including the Intensive Care Society and the Resuscitation Council (Section 2.7.2.2).

The third theme that emerged from the analysis of interview data was the potential impact of external regulatory influences. These influences were mentioned less often in the interviews, and mainly by a small number of staff with managerial and/or patient safety roles. However, staff in these roles could be well placed to promote strategies and advice that were intended to change practice, thus creating a broader impact within organisations. The external influences included active participation in patient safety networks, including the SPI, and a 'policy push' delivered by clinical governance and the modernisation of NHS services. Further, the implementation of early warning systems may have been influenced by organisational changes such as the European Working Time directive. The rapid response teams and graded response mechanisms may have offered a method of dealing with task allocation and medical on-call cover following the introduction of the directive that reduced trainee doctors' working hours. I suggest that all these factors contributed to the implementation of early warning systems in the study organisations, and that this process occurred gradually over a period of three to five years. Gradual spread is a credible explanation because it was difficult to locate an exact moment when the organisations began the implementation. For example, in one of the study organisations the idea of a track-and-trigger system was first introduced in 2003, developed as part of internal patient safety and external networking activities, and then supported further by the implementation of the SPI.

The introduction of early warning systems can be interpreted as a move towards regulation that encourages organisations to take more responsibility for risk management. Scholars have introduced concepts including 'responsive regulation' (Ayriss & Braithwaite, 1992), 'enforced self-regulation' (Healy & Braithwaite, 2006) and 'risk-based regulation' (Black, 2006; Lloyd-Bostock & Hutter, 2008) to describe

techniques that foster self-governance in risk management. The impact of advice-giving in the study organisations can be explained by drawing on these concepts. First, the trusts were expected to produce preventative strategies. Thus, once risky practices had been identified and highlighted by the government, regulators and influential stakeholder groups, the organisations needed to show initiative by implementing precautionary measures. Second, the trusts were expected to produce solutions that were comprehensive in their coverage, and at the same time tailored to suit specific environments and risks. Therefore a specific risk, patient deterioration on general wards, was targeted with a 'system' that addressed the process of recognition and response. Third, the hospital trusts were expected to adopt technical and 'science-based' risk assessment tools, i.e. physiological track-and trigger tools. In keeping with the ideas of self-governance, they were given freedom to set standards and design their own systems. Even though the impact of early warning systems on clinical outcomes can be questioned, the above process may have been useful in creating responsiveness to risk management at different levels of the organisation. Such responsiveness, together with the routine context and perceived benefits, may explain acceptance of early warning systems.

8.6 Concluding remarks

It appears that early warning systems created responsiveness to risk management in that staff expressed a willingness to improve the process of bedside observations. The acceptability of the EWS can usefully be explained in terms of facilitating the management of uncertainty by standardising the process of risk prediction. The uncertainty concerned not knowing whether the relevant vital signs were observed as often as they should be; if staff had the skills to interpret the signs; and if they were

successful in obtaining assistance and medical intervention when needed. The interviews indicated that staff perceptions of the ability of the early warning systems to reduce such uncertainty, and thus improve the management of risk, were very positive. The question then arises as to whether positive feedback was generated by a desire to endorse what was, according to the formal risk management standards, perceived as good practice, or whether early warning systems could create a genuine and lasting impact on how risk was understood and managed individually and within teams. Early warning systems were also nested within an old ward routine, the bedside observations, which could influence how staff perceived these systems.

My assumption (Section 5.12) is that meanings given to what each person's responsibilities involved, and what they were answerable for, were established through articulation work, i.e. making sense of why certain work processes were necessary and how they should be carried out. The remaining chapters will explore and discuss this sense-making process, focusing first on understandings of risk and then risk management within teams.

CHAPTER 9: Fourth findings chapter – application of risk knowledge

It's a little bit of a mixed blessing. It certainly helps with the seriously ill patients, but so many of our patients have got EWS scores that would be triggered and they're just routine patients for us. Consultant (4)

9.1 Introduction

This chapter explores how knowledge of risk and its context was generated and applied in the study wards. This knowledge drew on medical diagnosis, treatment and care plans, bedside observations, and knowledge of additional factors such as patients' progress, ability to cope and social circumstances.

Even though the previous chapters reported that staff held very positive views about the early warning systems as a useful process improvement, my analysis suggests that at ward level the systems were adjusted to suit local circumstances. Such adjustments involved interpreting the early warning scores and thresholds in the context of the risk knowledge available on the wards. While the OBS charts captured a series of readings that were up-to-date only for a brief moment of time, other kinds of knowledge of risk were generated, shared, and passed on over a period of days, weeks, months or even years if the patient was repeatedly admitted to the hospital. As the following quotation suggests, risk categorisation reflected a search for a working balance between formal rules and discretionary behaviour in an environment that caters primarily for older, chronic patients:

This raises one of our problems with a generic document like this because a lot of our patients have got a high respiration rate and that is their normal, you know nothing we're gonna do is gonna change that. So although we could have someone with a respiratory rate of high twenties or low thirties, that is the patient's regular respirations and we're never gonna improve on that, so you will get a false reading from the EWS. Senior nurse (31)

I will draw on my field notes and interview data and describe situations that explain how staff adjusted for 'false readings' they received from early warning systems. I observed ward rounds and handovers and how staff discussed the patients' medical condition, their treatment, the procedures they underwent, and the readings for their vital signs. In addition to ward rounds and handovers, I observed how staff processed and discussed the patients' cases as the events unfolded. First I describe how risk assessment depended on each individual case (9.2). Then I explore how staff re-categorised unnecessary alerts (9.3), and how risk assessment was adjusted by watching for additional signs of deterioration (9.4).

9.2 The 'situatedness' of risk

In the section that follows I examine the 'situatedness' of risk and risk assessment. As discussed in Section 5.9.2.2, situatedness implies that detection and management of risk depends on the individual patient and his/her condition, the skills and competencies of staff, and temporal and spatial factors such as availability of medical staff at different times of the day. I describe and discuss two 'trajectories' of illness and care (Section 11.5.1) where the patient's vital signs were elevated due to underlying chronic conditions, and two trajectories where vital sign monitoring contributed to care planning rather than the alert system. In presenting these cases, pseudonyms are used.

9.2.1 Chronic conditions

The interviews and observations suggested that chronic cardiac and respiratory conditions were a risk factor for sudden patient deterioration. Chronically ill patients' baseline vital signs could be permanently elevated and more easily brought to the 'alert' threshold. Older patients were particularly affected by exacerbation of their long-term condition, as well as by minor ailments such as chest and urinary tract infections. Pain and discomfort could also have an adverse effect on vital signs.

9.2.1.1 *Therapeutic procedures and pain*

The first case concerns an elderly male patient whose vital signs triggered one EWS rapid alert and once came very close to the threshold.

[Extracts from field notes:]

Mr Taylor was admitted for shortness of breath and chest pain, and he has been in the hospital for 16 days now. He was diagnosed with right-sided pneumothorax: a pocket of air in the pleural space between the inner and outer layers of the right lung. He has a history of pneumothorax, chronic heart failure, and he has suffered a number of heart attacks in the past. The doctors have inserted a chest drain (a tube through the chest wall and a drainage system) to remove air and fluid from the pleural space. Nurses' handover reports that the drain was bubbling until the doctors 'fiddled with it' – the nurse had clamped the drain and opened it again, after which it continued to bubble. On Monday's ward round Consultant gives instructions to his medical staff to carry out chemical pleurodesis.

Chemical pleurodesis involves inserting an irritant, such as talc or an antibiotic, into the pleural space via a chest tube that penetrates the chest wall. The purpose is to initiate an inflammatory reaction to seal the layers of pleura and prevent further air accumulating in the cavity, therefore preventing recurrent pneumothorax. Once the bubbling had

stopped and the draining had been completed, staff could go ahead with the procedure. Apart from the past medical history, diagnosis, and treatments including drugs, draining and pleurodesis, an additional item of relevant information was provided by field observations and comments suggesting that Mr Taylor was a rather strong-minded and, perhaps, impatient person.

Mr Taylor sits, as usual, in the armchair next to his bed. He is a frail and slightly built man, not very steady on his feet, and he needs nurses' assistance to mobilise. The nurses' handover reports that he is very assertive and quite specific about what he wants and doesn't want from the nursing staff. On Tuesday morning medical staff visit the patient during their review and explain the procedure, pleurodesis, to the patient. Doctor sits on the side of the bed and says that he knows it's painful but it is necessary to carry out the procedure. The doctors take a look at the OBS chart and conclude that Mr Taylor's vital signs are stable and SATS (blood oxygen saturations) are 95% which is rather good considering the patient's health problems. The OBS charts show that Mr Taylor was on four-hourly observations until Monday last week, and during the past seven days the frequency has been twice daily. However, other records show that his respiratory rate and SATS are still monitored four times per day but not at night because he is stable and not on oxygen.

The OBS charts suggested that the patient, who had been in the hospital for over two weeks, was stable and thus the qualified nurses had reduced the frequency of observations from four to 'bi-daily'. However, the wards could use a separate bedside chart for respiratory rates and blood oxygen saturations with patients who suffered from respiratory illness or problems. These forms typically included a column for prescribed oxygen therapy. Therefore the OBS charts did not always show the true frequency of bedside observations. Even though this patient was stable, staff were about to observe a sudden change in his vital signs.

The pleurodesis procedure was carried out on Tuesday afternoon. The nurses' handover mentions that the patient was in pain on Tuesday night and was given pain killers. Early on Wednesday morning the nurse records a drop in his blood pressure which triggers an EWS rapid alert, and together with the on-call medical staff she decides not to administer all the drugs prescribed for this patient's chronic heart failure. This I hear later during a discussion between Consultant and Senior Nurse who explored what had happened and how to advise the nurses about Mr Taylor's medication. Consultant asks to see the OBS chart and Senior Nurse goes to get the folder from the patient's bedside. The recordings from Wednesday morning are unclear – they show the drop in the 7am blood pressure readings, but this is followed by three unclear columns which only give the readings for body temperature. The next full column is for 12noon the same day with a full set of observations and blood pressure back to normal, SATS 99% and respiratory rate 22. Mr Taylor's baseline respiratory rate appears to be permanently elevated at 20-22 breaths per minute.

Drug side-effects and interactions that affect vital signs, as happened with Mr Taylor, appeared to be very common on the study wards. These were often triggered by medication prescribed for chronic cardiac and respiratory illnesses and their symptoms, including oedema (fluid retention). For example, diuretics to reduce fluid retention together with certain drug treatments for chronic heart failure could cause a drop in blood pressure. Finding the right balance between different treatments often involved, as one consultant put it, 'trial and error'.

Consultant asks Senior Nurse to administer all the drugs as prescribed in the kardex. He says the patient suffers from end-stage cardiac failure and that his blood pressure is low anyway. My understanding is that the drop in this patient's blood pressure was caused by a combination of two drugs prescribed for his chronic heart failure. While they discuss the medication, Consultant crosses out an antibiotic and says that the patient has received therapy to create an inflammatory reaction and therefore the antibiotic is unnecessary.

Apart from drug side-effects and interactions, problems could be caused by unnecessary drugs. In Mr Taylor's case, it appears that he had been prescribed an antibiotic to treat signs of infection that were actually caused by a therapeutic inflammatory reaction generated by pleurodesis. The antibiotic could therefore potentially obstruct the healing process. The review of Mr Taylor's medication had thus solved two drug-related problems: a drop in the blood pressure, and possible interference with his management for pneumothorax. However, pleurodesis and the healing process were causing increasing pain and discomfort that began to affect Mr Taylor's mood and respiratory rate.

Wednesday is not a good day for Mr Taylor. He complains about abdominal pain and pain on the drain side. I notice from the afternoon observations that his respiratory rate has increased from his usual 20-22 to 26 – which is getting close to the threshold for the 'red zone' – perhaps because of his pain and the anxiety caused by it. The nurses' evening handover reports that the patient was panicking about the pain all afternoon – *'he is not going to sleep tonight'* – and the nurse-in-charge had asked the doctors to prescribe appropriate pain relief before they finish that afternoon so that the nurses don't need to contact the on-call doctors. The prediction is correct and the patient has a sleepless night. He can't lie down because of the pain and he spends most of the night sitting up in his armchair.

The increase in the respiratory rate may have been caused by increased pain levels, but it may have also reflected the patient's irritation and frustration. Because Mr Taylor's baseline respiratory rate was elevated, even a modest increase could bring the rate close to the threshold. While another patient may have suffered in silence, Mr Taylor 'put his foot down' and demanded attention from nursing staff.

At 1.30am Mr Taylor needs a commode and the nurses assist him. 10 minutes later another patient, an elderly woman, pulls out her intravenous 'line'. At 1.45

Mr Taylor is pressing the buzzer again. Staff, however, must urgently attend the elderly woman and a short argument develops with Mr Taylor, probably about waiting a bit or going to bed, and he says sharply '*Nurse please do NOT argue with me*'. The nurses are saying '*but there is a patient who is bleeding...*'.

This was an example of how vital signs could be affected by a variety of different factors including medical conditions, drugs and procedures, and personal characteristics. Though the changes in this patient's vital signs were serious and medical staff were contacted when the early warning system triggered an alert, staff immediately appeared to focus on bringing the situation under control by adjusting the patient's medication. Thus an early warning alert was not interpreted as a sign of critical illness though it required prompt response to prevent further escalation. The increase in the respiratory rate, on the other hand, was possibly caused by pain and anxiety.

9.2.1.2 Burden of chronic illness

The second case concerns a middle-aged female patient whose vital signs were elevated because of pyrexia (high body temperature), tachycardia (rapid heartbeat) and shortness of breath. Her early warning score stayed at, or close to, the EWS rapid alert for a couple of days.

[Extracts from field notes:]

Mrs Jones was admitted for bronchiectasis, a chest infection, and shortness of breath. Background reading tells that bronchiectasis means abnormal widening of one or more of the airways, bronchi, because of persistent inflammation or infection. Symptoms include tiredness, coughing up a lot of mucus and phlegm, and recurring chest infections. This patient is truly tired and lethargic. She sits in an armchair all day and occasionally lies down on the bed. Her bed is by the window and the bright daylight makes her white hair and pale face fade into the whiteness of the walls and the bed linen. She is very, very still. Mrs Jones is on

oxygen therapy, anti-inflammatory nebulisers (device that changes liquid medicine into a mist that is inhaled through a mouthpiece or a mask), and intravenous antibiotics to relieve her shortness of breath and to fight off the infection. The nurses' handover mentions that she needs nebulisers to help clear her chest and that she would benefit from chest physiotherapy for the same reason.

The wards I observed often cared for chronic respiratory patients with chest infections or pneumonia. Many of these patients easily became breathless and they had little strength to mobilise. Patients sometimes preferred to stay in bed or in a comfortable chair by the bedside. Recovery, however, was facilitated not only by drugs but also exercise, and chest physiotherapy was very important in improving patients' breathing and clearing the airways. Mrs Jones's tiredness and lethargy were impeding her recuperation. She was also in pain and the intravenous antibiotics were giving her nausea.

The Monday's ward round reports that Mrs Jones's early warning score was lingering at or close to the threshold for an EWS rapid alert due to her spiking temperatures, tachycardia and high respiratory rate. The patient had felt sick and refused her oral medication, and she had been given intravenous drugs to treat the nausea. Doctors and nurses discuss Mrs Jones's tiredness and apathy and say that she doesn't do much during the day. Consultant says that they need to establish when this patient might be able to go home. Perhaps later this week or early next week, so *'let's set an estimated date of discharge and see how she takes it'*.

Setting the estimated date of discharge was a way to set targets not only for staff but also for the patient. Doctors on the ward round often asked questions about patients' home life to establish how they would cope at home, and how happy and confident they felt about the prospect of being discharged. If patients were fearful or anxious about leaving the hospital, it could affect their recovery as reflected in their vital signs for

example by increasing their respiratory rate. On the other hand, as some nurses suggested, patients had also been known to slow down their respiratory rate during the bedside observations in an effort to speed up their discharge from the hospital.

By the bedside, Consultant talks to Mrs Jones about her medication. Mrs Jones thinks that her nebulisers are not working as well as she had expected, and she is happy to swap to inhalers. Consultant asks about her home situation and whether she is able to go shopping and do household chores. Mrs Jones says that she does most of the chores herself and goes shopping together with her daughter. Consultant asks if she lives alone and she says no, with her husband. Consultant says that they might be able to discharge her later that week. He asks Mrs Jones if she is experiencing pain, and she describes pain up in the chest radiating towards the armpit.

Though the most urgent objective was to beat the chest infection, the underlying problem was that Mrs Jones's overall health was gradually deteriorating. The infection turned out to be somewhat persistent, and the patient's fatigue and lack of physical strength were not helping.

On Tuesday I shadow the doctors when they check Mrs Jones's recent x-ray pictures and compare them with pictures from three years ago. The recent pictures show that her condition is deteriorating. White areas that indicate consolidation in the lungs have increased, and Doctor says her alveoli are '*full of crap*', referring to fluid in the air sacks that change oxygen for carbon dioxide. By the bedside, Doctor examines Mrs Jones and says that her chest infection is not settling as well as he had expected. Doctor says that if the infection continues, they need to check the blood cultures again and try a combination of intravenous antibiotics. Doctor encourages the patient to eat well and gain strength, but Mrs Jones says she has little appetite – he mentions protein milk drinks, but she doesn't like them – he jokingly suggests McDonalds and manages to get a little smile from Mrs Jones.

Finally the antibiotics began to work and there was a noticeable change in Mrs Jones's vital signs. As the infection eased up, her breathing became less strenuous and her mood began to improve.

On Wednesday the score begins to come down and she is on three daily observations. The scores are still elevated because of her respirations, heart rate and temperature, and she 'desats' (her blood oxygen saturations deteriorate) very easily if taken off the oxygen. On Wednesday the nurses send urine, sputum and stool samples and an MRSA swab to the laboratory. On Thursday and Friday the patient seems to be continuing to make good progress. Her respirations and heart rate are down to her normal readings, and her tachycardia has settled. The patient seems a lot better, a little bit more cheerful, and says that it's been a long time since she's been able to take a deep breath like she is now.

In Mrs Jones's case the changes in the early warning scores reflected the impact of chest infection, and apparently staff adjusted their response accordingly. One indication of this was that the frequency of vital sign monitoring was kept close to the basic frequency of four-daily observations, and not increased to hourly or more frequent observations after the EWS rapid alerts. Further, the vital signs were observed to see how the patient was responding to treatment, and whether she needed further tests to establish a better combination of intravenous antibiotics.

9.2.2 Transition towards the final weeks and months of life

The following two cases focus on situations where chronically ill patients were beginning to move towards the final stages of their life. This transition appeared to be a gradual process where vital sign monitoring played a part. Both stories involve a chronic respiratory patient, and changes in vital signs were particularly useful in measuring the outcomes and benefits of their therapy.

9.2.2.1 *From active to comfort care*

This first story tells of a patient who no longer benefited from some of the treatments he received on the ward. The decision to change his treatment plan evolved gradually and required negotiation between the nursing staff, the medical team, the patient, and the patient's family. Bedside observations contributed to the decision-making.

[Extracts from field notes:]

Mr Watson is an elderly man who suffers from chronic heart failure and chronic renal failure. He was admitted for renal problems but developed pneumonia and breathing problems, and he has been in the hospital for a month now. Mr Watson has not had any hospital admissions for respiratory problems for 10 years. On the ward, he is on oxygen through a mask during the day, and on non-invasive ventilation (NIV) at night. When the patient was taken off the oxygen therapy, his SATS (blood oxygen saturations) had dropped to 50-60% which is significantly below the threshold of 85% that triggers a rapid alert. On the ward round the doctors check the OBS chart and the patient's SATS are 98-100%. Such high readings suggest that the level of oxygen therapy may be too high and needs adjusting.

Establishing the right type and level of therapy to assist breathing was a recurrent theme especially on the respiratory wards where I carried out observations. Oxygen could be administered through a nasal cannula (plastic tube with prongs that are placed in the nostrils), or a mask that covers the nose or both the nose and the mouth. NIV with this patient involved non-invasive positive pressure ventilation that assists breathing by *'delivering a pressurised gas flow through a tightly fitting mask'* (quotation from training materials on one of the study wards). Patients, however, could find tightly fitting masks and assisted breathing uncomfortable.

On Monday the nurses' handover reports that Mr Watson climbed out of his bed in the middle of the night and was found on the floor. He refused NIV and

started arguing with the on-call doctor who came to review him. The patient is not sleeping well, he becomes easily agitated during the night, and occasionally he shows signs of confusion. Apparently Mr Watson is very uncomfortable with NIV. On Tuesday I shadow the doctors reviewing the patient. Doctor explains to Mr Watson that he needs NIV at night because his breathing is weakest when he sleeps and his muscles relax, but Mr Watson complains that the NIV seems to go on for ever. Doctors have instructed that Mr Watson should be on NIV for 4-6 hours every night but recently he has taken the mask off after one or two hours. Away from the bedside, Senior Nurse says that though the patient is unwell, he is stable and therefore NIV could be stopped. Doctor asks whether the family prefers Mr Watson to continue this therapy, and Senior Nurse suggests that it is time to explain to the family that their dad doesn't tolerate NIV any more.

Non-invasive ventilation thus became the key issue to be solved. The ward still continued with the therapy but they sought to engage the patient and his family in the decision-making. Matters were complicated by Mr Watson's fears and inability to express his wishes.

On Wednesday Doctor asks Mr Watson if he is comfortable with NIV and the patient says yes. Staff Nurse says that this is not entirely true and suggests that even the thought of the mask makes the patient agitated. Last night Mr Watson had become so anxious that the nurses rang his wife who stayed at the bedside all night. The nurses had noticed that taking Mr Watson off NIV had not significantly changed his SATS or arterial blood gases (the pressure of oxygen and carbon dioxide in blood).

The nurses' finding that Mr Watson could almost cope without NIV may have been an important turning point. However, the decision to stop NIV was made a day later during the ward round, which suggests that perhaps the junior medical staff wanted the consultant to take responsibility for decision-making. Ward rounds offered a good opportunity for decision-making because they often brought the senior nursing and medical staff together.

On Thursday's ward round the doctors conclude that Mr Watson tolerates NIV and is still dependent on it. His vital signs are stable, SATS are above 90%, and his pneumonia is slowly resolving. Mr Watson is still experiencing breathing problems but they are caused by his chronic renal failure rather than the pneumonia. Senior Nurse says that the nursing staff would need clear guidance and asks whether Mr Watson's NIV should be stopped, arguing that '*we are torturing this man*'. Staff Nurse suspects that Mr Watson would prefer to discontinue NIV but is afraid that both his family and staff might be angry with him. By the bedside, Mr Watson quietly confirms that he is not actually that comfortable with NIV. Consultant suggests that they change NIV to oxygen mask and relieve the feeling of breathlessness with strong pain killers. He also suggests a chat with the family. Mr Watson agrees to all of this and says the family will be visiting at 3pm.

In Mr Watson's case the bedside observations helped to establish whether the patient actually benefited from a therapy that was causing so much anxiety. Risk of patient deterioration, on the other hand, was assessed in terms of the patient's comfort and ease of breathing. A change in the treatment plan was therefore likely to allow lower blood oxygen saturations as long as the patient felt comfortable with it.

9.2.2.2 *Gradually escalating deterioration*

The final case concerns Mr Bennett, an elderly man who suffered from chronic obstructive pulmonary disease (COPD) and atrial fibrillation (rapid and erratic heartbeat). Mr Bennett was admitted for breathing difficulties, and during his stay on the ward his blood oxygen saturations (SATS) dropped dangerously low.

[Extracts from field notes:]

Mr Bennett sits in an arm chair next to his bed, and he is wearing an oxygen mask that covers his nose and mouth. He was only discharged on Saturday and readmitted yesterday Sunday for shortness of breath. He looks puffed out and he

has a pasty grey complexion, but otherwise he looks rather comfortable and talks to Healthcare Assistant (HCA) and Student Nurse while they take his vital signs. His SATS are 80% though his readings are usually between 84 and 90. Mr Bennett looks surprised and says '*that's low*' and we all agree.

Such low readings for Mr Bennett's baseline SATS were explained by his COPD.

Generally SATS below 85% were perceived as a serious warning sign, but for this patient 80% was only a notch below his baseline. Further, there were no signs that Mr Bennett was feeling more unwell than usual. Next staff checked the accuracy of the SATS readings.

HCA gets another SATS machine and puts the plastic clip on the patient's finger. In the meantime, the vital sign monitor fails to read the blood pressure. HCA goes out again to fetch another vital sign monitor and finally we get all the readings. The patient's blood pressure is low and the SATS remain in the low 80s. HCA passes the readings on to a staff nurse who reports them to the doctors on the ward. Because of the faulty equipment, it took 15 minutes to take this patient's observations while it should have only taken five.

My field observations suggested that problems with monitoring equipment were quite common. The wards were short of good quality equipment, equipment could be faulty, it was often left uncharged with an empty battery, and monitors were sometimes on loan to another ward and not returned. The healthcare assistant suspected the accuracy of the SATS monitor and repeated the observations, which turned out to be correct. Mr Bennett's breathing problems continued.

On Wednesday the nurses' handover reports that there had been some trouble in making Mr Bennett comfortable with his 'nippy' (non-invasive positive pressure ventilation) he uses at night. Mr Bennett's family had complained that the mask he is wearing with the nippy doesn't fit properly and makes a whistling noise, disturbing his sleep. The nurses' handover reports that the patient's SATS had dropped to 65% without oxygen but increased to 80% when put back on. On

Wednesday night the patient seems restless, and I hear him coughing and clearing his throat. Overall, it is a restless night on the ward – patients are groaning and sighing and coughing, some stay awake late and keep their bedside light on, one patient is close to death and the family stays at the bedside.

Mr Bennett's shortness of breath and low SATS were apparently a sign of his deteriorating illness. Even though his condition had not changed from his previous admission, he had reached a point where his symptoms would gradually worsen despite drug and oxygen therapies.

Later that week the medical team deliver bad news to Mr Bennett. He was getting ready to go home, which is definitely going to happen, and he will cope at home with his medication, home oxygen, and his own portable nippy for nights. The estimated date of discharge is in a week's time. During the ward round, Consultant examines Mr Bennett and asks if he still gets very breathless. His answer is no, not when sitting up or resting but yes if having a wash or moving about. Consultant says that the patient is on maximum medication but still struggling to do much more than sit in a chair. Consultant tells Mr Bennett that his condition is deteriorating, and that he will become more breathless because his lungs are gradually slowing down. The patient says jokingly that perhaps he should make his will, and Consultant says *'it's not a bad idea – we never know when we are going to go'*. Consultant kneels in front of Mr Bennett, holds his hand and says that *'you must be brave and strong'* and that it's a question of months, perhaps a year. The patient looks ashen and the rest of us standing around his bed freeze momentarily, and then we move on.

Because of Mr Bennett's deteriorating health, his blood oxygen saturations were perhaps moving closer to 80% on a permanent basis. This was an example of how knowledge of patients' vital signs could be generated over a period of time for patients who were re-admitted to the ward.

9.3 Recategorising unnecessary alerts

The above stories suggest that staff adjusted the formal assessment of risk. Decisions to downgrade the early warning risk categorisation were based on a tacit rule of proportionality, seeking to avoid unnecessary measures that did not benefit the process of care. It appears that early warning systems were designed for an ‘average’ patient on general wards, and therefore the risk scores and alerts were typically assessed against the patient’s specific condition and circumstances. For example, it was not necessary to carry out hourly observations on Mrs Jones because the increase in her early warning score was caused by a chest infection and spiking temperatures, and not by critical illness. Equally, regular bedside observations were important in measuring how comfortable Mr Watson and Mr Bennett felt with their treatment, but abnormal readings were interpreted in the context of the patients’ gradual overall deterioration. In the interviews, staff indicated that the early warning systems could be too sensitive and produce unnecessary alerts. These unnecessary alerts typically involved situations where deterioration in a patient’s vital signs required a prompt response and even medical intervention, but where it was not necessary to issue an EWS rapid alert and follow the call-out cascade.

The limitation that was most often acknowledged was that early warning systems frequently triggered alerts with patients who were perhaps unwell but not at risk of critical status. This was typically caused by underlying chronic conditions and old age, which meant that the patient’s baseline readings for vital signs were already outside the normal range or close to the set thresholds:

A chronic renal patient who will score a three just by being alive because they’ve never passed urine or, I don’t know, a chest patient who always breathes

at twenty five. You know, it's not going to take much to get to a four [an EWS rapid alert] so there's obviously room for discretion. Rapid responder (20)

Many of the patients admitted to the study wards were older people and they suffered from chronic cardio-vascular or respiratory conditions, or both, and presented with abnormal readings for one or several of the key vital signs. As this senior nurse pointed out, without knowledge of the patient's baseline, early warning systems could overstate the level of deterioration and the aims set for recovery:

We never have a baseline for patients when they come into the hospital. We assume that the oxygen level will be anything up to ninety eight, ninety nine per cent, but it's very seldom that with one of our chronic chest patients. [...] I think we often have a tendency to over-treat patients. We are trying to get them back to the circulatory status of a thirty year old fit healthy person, and that's sometimes where prescriptive charts like this can fail because we don't take into account the patient. Senior nurse (31)

Staff interviews and my field observations suggested that acute ailments and exacerbation of chronic conditions in these older and chronically ill patients could easily take the vital signs to the yellow, orange and red 'danger zones'. Typical examples included chest and urinary tract infections that spiked a temperature. Patients could also suffer from common problems such as diarrhoea and dehydration that could nevertheless significantly affect their well-being and the vital signs. Such problems required a prompt response from nurses and doctors, but were not necessarily a sign of critical illness.

Another source of unnecessary alerts mentioned in some of the interviews was drug side-effects. For example, patients with cardiac and respiratory problems could suffer from fluid retention. Drugs that were prescribed to remove fluid could have the side-

effect of lowering the blood pressure and making the patient feel light-headed. On the other hand, inhaled anti-inflammatory drugs such as corticosteroids, administered via nebuliser, could temporarily increase the heart rate. As the following quotation by a staff nurse suggests, the qualified nurses needed to take into account the impact of drugs when they assessed patient deterioration:

If a patient's on nebulisers [the heart rate will] hit rocket high. I mean it goes really high, especially when some people don't like the mask sitting right to their face... some people get annoyed with it. If you are monitored the heart will be sitting at a hundred and forty, a hundred and fifty, so my mind would immediately go 'my goodness is there a heart problem' but it isn't. It's just the effect of sulphate of ammonia [in a nebuliser] going in. Staff nurse (18)

Finally, a very ordinary explanation for deterioration in vital signs was physical exertion. Many of the patients on the wards that I observed suffered from limited mobility and they needed assistance with personal care. Simple tasks such as getting out of bed, getting dressed or visiting the bathroom could leave patients 'puffed out' and exhausted:

I have many patients with respiratory disease, and it doesn't take much effort around the bed to put up the respiratory rate, put up their pulse until they've settled down again, it's not necessarily a clinical incident or a clinical deterioration. Consultant (2)

Nursing staff typically avoided taking the routine bedside observations straight after physical exertion as this would not provide accurate results. On the other hand, vital sign measurement and the OBS charts could be used by nurses and physiotherapists to measure how a patient was coping after physical exertion in order to assess whether they were ready to be discharged from the hospital. This, again, demonstrates the range of uses and users of the OBS charts.

9.4 Holistic assessment of patients

The four stories in Section 9.2 suggest that apart from vital signs and aggregate scores, signs of deterioration could be detected by observing the patient's mood and appearance. For example, Mrs Jones's persistent chest infection made her pale and lethargic, and Mr Taylor was visibly anxious because of the pain he experienced. Such visual signs were a very important part of the 'holistic assessment' of patients on the wards because the ability of early warning systems to detect deterioration was perceived to be limited. Examples of such situations were discussed in seven interviews, though nearly all interviewees acknowledged that additional signs of deterioration were used on a regular basis to assess changes in a patient's condition.

Perhaps the most serious perceived limitation of early warning systems was that patient deterioration could go undetected:

It's a tool as well as other things; 'cos I know some patients slip through, you're always gonna get the odd patient that won't score four but they are actually poorly. Patient safety/risk management (16)

One example of how early warning systems could fail to provide an alert for deterioration requiring a rapid response was serious illness that only manifested with a high temperature in the OBS charts. In three of the study hospitals pyrexia, high body temperature, was the only key vital sign of patient deterioration that would not trigger a rapid alert on its own. In these three hospitals a temperature recording at or above 39 degrees Celsius scored 2 in OBS charts, while 4 was needed to trigger a rapid response alert. But according to this rapid responder, the wards often cared for seriously ill patients who only had high scores for body temperature:

It may be a EWS just one because if a patient's got a really, really high pyrexia but he's only hitting one or two but they're really, really unwell. So there's quite a number of them. Rapid responder (25)

Other examples of incidents or conditions that could be associated with low scores on OBS charts included patients who had suffered a fall, and some rare cases of gastrointestinal bleeding where patients still maintained their blood pressure. One senior nurse mentioned an example of false reassurance associated with very low scores:

We had a patient in [another ward] who had a EWS score of one, and a continued EWS score of one, but that patient eventually died. There was no clinical reason to have summoned attention apart from the fact that you looked at this patient and they did not look well, but there was no reason. So it's not foolproof. Senior nurse (31)

False reassurance occurs if staff are genuinely confident that the OBS chart measures deterioration accurately even when it does not. This consultant, like many other interviewees, associated false reassurance with inexperience:

I think the medical staff, the junior doctors newly-qualified can be falsely reassured by the EWS score which they're so familiar with throughout the rest of the hospital, in that if it's less than a certain number, they don't get a call and therefore you think well, perhaps the patient's all right. Consultant (1)

It appears that the systems functioned in combination with underlying knowledge of risk that was generated within teams, drawing on a long tradition of bedside observations. The nurses I interviewed typically emphasised the 'holistic' assessment of patients and the importance of sensory observations (e.g. visual signs, touching the patient) while carrying out the monitoring of vital signs. This was deemed necessary as early warning systems did not include all the signs that could potentially be used to detect changes in a patient's condition. As a member of staff from patient safety/risk

management argued, early warning systems were meant to be used together with other signs:

It's not just an alert; it's to increase compliance with looking at your patient as a whole person as opposed to just somebody that you're gonna do a temp, pulse and blood pressure on, you're looking at many other things now too.

Rapid responder (25)

Staff interviews and field observations demonstrated how staff identified additional signs of deterioration to supplement the formal, standardised boundaries of risk.

Examples of potential warning signs included pale complexion (fatigue, nausea); flushed complexion (high blood pressure and heart rate); skin that feels cold and clammy (low blood sugars); blue lips, fingernails and skin (oxygen deficient blood); a patient not eating or drinking as usual; a patient not mobilising normally e.g. going to the bathroom unaided; and a patient not following his/her daily routines e.g. reading a newspaper. Another important aspect of bedside observations was speaking to the patient and asking how they were feeling:

Sometimes that's what we miss, we don't ask patients anymore, how are you today, how are you feeling. You know, do you have visitors coming up today, do you have grandchildren, how are they [...] and they'll then tell you much more about themselves, and I'm not worried if they've got lots and lots of grandchildren or not, but getting that rapport built up with the patient will allow me a much more holistic assessment of them each day.

Patient safety/risk management (17)

My field notes included a case where drug-induced side-effects apparently raised blood glucose levels and made a patient more confused, drowsy and unwell. Blood glucose monitoring is not part of the routine observations unless individually specified, and the vital signs included in the early warning score gave normal readings with this patient. In

this case the warning signs were first detected by the patient's family and then confirmed by a nurse through sensory observations and taking a blood glucose reading.

[Extract from field notes:]

On Wednesday evening, around 8pm, the family visiting the patient felt that he was unusually confused and tired. Staff Nurse noticed that the patient looked drowsy and unwell. However, his vital signs showed no change and were within the normal parameters. Staff Nurse rang Doctor who came and asked her to measure the patient's blood glucose levels and the BM was 13.1. The patient has no history of diabetes so the result was not good but acceptable under the circumstances. Staff Nurse and Doctor discussed possible side-effects of steroid treatment which include elevated blood glucose levels. They also discussed whether the analgesics, or the combination of steroids and analgesics, are making the patient unwell, and Staff Nurse asks if the patient really needs one of the drugs he regularly takes for stomach problems. Doctor says not to reduce the steroids at this stage, and that the patient had been seen by a cancer specialist nurse who reviewed the analgesics earlier that day. Doctor suggests that they could put the patient on a sliding scale (intravenous insulin and hourly BM monitoring) if the BM continues to rise. Staff Nurse says 'but he is not diabetic' and Doctor says it's still an option. He asks the staff to monitor the vital signs every two hours. There are no further alerts and his blood sugars stay elevated but stable.

On Thursday morning the nurses' handover reports that the BM is elevated presumably as a result of steroid treatment. They also report that the drug for stomach problems has been reduced from 3xdaily to PRN (pro re nata), as needed.

These field notes demonstrate that staff combined early warning systems with sensory observations and additional vital signs, and used this information to adjust the prescribed drug therapy. They also reflect the role of routine observations in monitoring gradual changes in a patient's condition rather than signs of sudden and dramatic patient deterioration.

9.5 Discussion

In this chapter I have discussed how the bedside observations, the OBS charts, and the call-out cascade were used on the study wards. I described how staff could use additional signs of deterioration and their ‘gut instinct’ to justify calls to medical staff and rapid responders, and thus upgrade risk status by ‘going above’ the formal risk categorisation in the OBS charts. I also explored the opposite measure of ‘going below’ the formal risk categorisation by downgrading the alerts for patients who were deemed not to require the response prescribed by the early warning system. Decisions to go below typically occurred with patients suffering from chronic conditions that easily brought the vital signs to the threshold, and patients who were moving from active care towards comfort care. I conclude that staff were responsive to formal representations of risk, such as the risk scoring tool and the call-out cascade, but also to ward-level representations of risk, and used their discretion to re-categorise the risk of patient deterioration.

Discretion can be defined as *‘the legitimate right to make choices based on one’s authoritative assessment of a situation’*, or simply as an *‘an act of choice’* (Feldman, 1992, p. 164, 167). As discussed earlier (Section 7.3.6), the nurses had a legitimate right to make choices based on their professional judgment, though the boundaries of such authorisation were ambiguous. The act of choice, and thus the ambiguity, concerned permission to adjust the call-out cascade when nurses assessed the risk of patient deterioration. Typically, this involved establishing the formal risk category individually for each patient by calculating the early warning score or the number of vital signs outside the normal range, and assessing whether this categorisation was accurate and required the response prescribed by the call-out cascade. In the past the qualified nurses

had held a broader mandate to decide when to call for assistance and medical intervention. Early warning systems first restricted this mandate but later, as the 'regime of practice' continued to develop, became more flexible.

Such changes in the level of control can be usefully explained by adopting Lipsky's (1980) concepts of 'street-level bureaucrats' and client differentiation. Street-level bureaucrats - which include doctors, nurses, teachers, social workers and police officers who are employed by public sector organisations - are frontline staff who deal directly with the clients on behalf of the organisation. Public sector organisations, such as hospitals, are typically expected to process large caseloads, and bureaucratic efficiency is thus sought by establishing organisational goals, performance measures, and rules for processing the case of the 'average' client (Feldman, 1992).

However, as Lipsky (1980) has argued, the complexity of frontline work in these professions and the diversity of cases also require differentiation of clients. As formal rules and standards cannot prescribe all eventualities, and supervisors are not able to attend every situation, discretion becomes an integral part of the work for street-level bureaucrats. This is highly significant because, as Lipsky (1980) has argued, by developing their own rules, routines, and devices for managing the uncertainties of frontline work, the street-level bureaucrats actually reformulate organisational strategy. By doing so, they may seek to impose their own values and norms that define standards of good practice.

The downside of client differentiation procedures is that staff may use discretion in ways that are perceived to be inappropriate, thus prompting organisations to prevent

undesirable (e.g. unfair, costly, inadequate, or too rigorous) practices by introducing controls (Feldman, 1992). The quest for 'responsible' behaviour, as prescribed by organisational standards, typically involves use of control mechanisms that allow discretionary behaviour but limit the variety of ways in which discretion is exercised. Such control mechanisms seek to make client differentiation processes more consistent by introducing routines, supervision and training, and by socialising staff into rules and standards (Feldman, 1992).

Early warning systems match well the above description of a control mechanism. In the past, the study hospitals implemented a generic rule that patients must be observed regularly so that staff are able to detect and respond to changes in a patient's condition. However, it was the responsibility of qualified nurses to establish the right frequency, the thresholds for alerts, and who to contact depending on the level of deterioration. The purpose of early warning systems, in contrast, is to limit the ways in which this discretion is used in the detection and management of patient deterioration. This was done by introducing thresholds and a scoring system that were designed to detect risk of deterioration with an 'average' adult patient on general wards. The positive perceptions of early warning systems, and the good results from audits of compliance, suggest that these systems were often used successfully, and without major problems, in the ward environment. Yet findings in this chapter indicate that this success was partly based on staff capacity to draw on the knowledge generated on the wards and the ability to adjust the systems. Such knowledge, described in Sections 9.2-9.4, was put into practice and handed over in lateral working relationships to enable accurate assessment of patient deterioration. In the study wards, I observed staff exchanging knowledge of patients' diagnoses and medical history, their prognosis, changes in their condition, and their

social circumstances. Even seemingly trivial information such as Mr Taylor's anxiety or Mrs Jones's lethargy emerged as relevant. On the other hand, discretionary behaviour and more flexible use of the tool are difficult to control and increase reliance on staff to assess the risks competently. This reminds us as to why early warning systems were introduced in the first place: concerns over individual failures to recognise and respond to patient deterioration.

My understanding of risk assessment as a collective rather than individual activity was influenced by an ethnographic study by Mattingly (1998) which found that practitioners, in this particular study occupational therapists, frequently engaged in two different kinds of clinical language. First, they used formal 'chart talk' that was structured using diagnostic terminology and a corresponding set of treatments. Second, they frequently engaged in informal 'storytelling' that helped to make sense of a patient's situation and search for explanations, or solutions, that could not be established satisfactorily using chart talk. They could, for example, seek reassurance that a specific therapy was appropriate for the patient, or discuss the cause of injuries on patients who were vulnerable and potentially victims of abuse. Storytelling was a social activity through which staff could individualise a patient's treatment, and to identify '*what is best for a particular patient in a particular situation*' (Mattingly, 1998, p. 279).

I found that OBS charts and early warning scores were accompanied by similar accounts in my study areas. Therefore changes in a patient's vital signs could be described in a coded and numerical format, or 'chart talk', by using the early warning systems and the SBAR structure. This chart talk involved numbers, trends, colour-codes, summary scores, diagnostic terminology to define the reason for admission,

medical history and a brief summary of patients' personal details including age and gender. However, changes in a patient's vital signs could also be described with a story that evolved over a period of time and involved a wealth of other relevant information. Such stories emerged from staff interviews, and from what I observed on the study wards while I was carrying out the fieldwork. Ward rounds and handovers, in particular, involved both 'chart talk' and less formal narratives that came together and served the same purpose: they enabled staff to get a better idea of patients' problems and what was best for each patient. The stories, however, grew from a number of short discussions, or 'narrative fragments' (Johnson, Cook, Giacomini, & Willms, 2000), during the daily ward routines, and eventually it became a task for the ethnographer to pull these fragments together. The four cases in Section 9.2 presented such 'overarching stories' (Johnson et al., 2000) or trajectories/pathways of illness and care (Section 11.5.1). These stories demonstrate the mundane nature and the situatedness of risk, and the role that chronic illnesses and social circumstances played in the assessment of risk. The stories also showed that although early warning scores and alerts are good summary measures, they have limitations in terms of what they reveal about risk, its origins, and its implications.

9.6 Concluding remarks

Positive views about the qualities and benefits of early warning systems suggest that staff found them useful in detecting and responding to early signs of deterioration. Nonetheless, during the course of daily work the physiological triggers often became just one part of the bedside observations, and the formal criteria were amended and occasionally even replaced using other assessment criteria. The recognition of, and response to, risk was adjusted according to each patient's condition and circumstances,

and depended on staff skills and experience. This I described as the ‘situatedness of risk’, which implied that the process of knowledge application, i.e. practice, could vary from one situation to another depending on the patient, staff, and resources available. For example, junior staff could be falsely reassured by a low EWS score if they lacked necessary experience to detect visual signs of deterioration. If such a situation occurred during the night when the teams had lower staffing levels and no doctors on the ward, it could affect how successful the team was in assessing and managing risk. By drawing on both staff interviews and the ethnographic observations, I described how knowledge of risk was generated, put into practice, and handed over in lateral working relationships to enable the assessment and management of patient deterioration. The observational fieldwork enabled me to focus on this on-going teamwork, and how knowledge was ‘assembled’ by joining together information from nursing and medical notes, bedside charts, handovers, ward rounds, and informal discussions during the daily work. Thus it appears that the quality of knowledge generation and application was highly dependent on teamwork. The next chapter (Chapter 10) will explore how the lateral working relationships functioned, and whether knowledge of risk was generated and shared appropriately to manage the risks of patient deterioration.

CHAPTER 10. Fifth findings chapter – shared management of risk

*They need to have that confidence to be able to say
look, I don't care what you're doing now, I need you to
come and give me some advice, I need some help.*

Senior nurse S1_C

10.1 Introduction

This chapter is concerned with risk management as team work. The purpose is to examine what staff expected from each other, and whether there were barriers to effective management of risk as a collective activity. In my analysis I will return to the theoretical concepts of responsibility and accountability.

In the previous chapter I concluded that early warning systems had the potential to improve work processes, but that successful implementation depended on staff ability to adjust and amend the risk assessment tool according to a patient's condition and circumstances. Such knowledge was generated during the course of daily work and passed on during handovers, ward rounds, and informal discussions. Therefore the shared, collective nature of risk knowledge and management seemed highly relevant to the implementation of early warning systems. Next I will explore team dynamics, and whether staff felt confident to contribute to the detection and management of risk in this team context. This chapter presents four themes. First I discuss problems identified with rigid adherence to early warning systems (10.2). Then I explore responsiveness to risk

management within teams (10.3) and what might obstruct team effort (10.4). Finally, I examine how formal rules were negotiated during the course of daily work (10.5).

10.2 Ritualistic compliance

Discretionary behaviour and reliance on risk knowledge on the wards can be seen as evidence of staff wanting to avoid rigid adherence to procedural standards. The interviews suggest that early warning systems had, however, generated some rigidity in bedside observations and their follow-up. This included inflexible and too intensive use of routine observations with patients who did not really need frequent, or a full set of, observations. One member of staff from patient safety/risk management who was responsible for auditing early warning systems had found that OBS charts were often used with every patient admitted to the wards:

I think it's very important for patients who need this but not every single patient needs an EWS chart [...] The flip side of that is that we could actually by putting in such rigidity into an early warning scoring tool for patients who do not maybe need that level of monitoring. Patient safety/risk management (17)

One consultant felt that because the OBS chart created expectations of a full set of observations, it could be difficult to make nursing staff stop certain measurements where they were no longer appropriate. Such decisions needed to be written clearly in the OBS charts and nursing notes, and reiterated if observations were resumed. Avoidance of unnecessary observations could save valuable nursing time, but according to this consultant the measurement of vital signs also caused inappropriate discomfort to terminally ill patients:

If someone is moving more to a terminal phase of an illness, there's still some things you want to keep an eye on but others you can't be bothered with [...] squeezing somebody's arm to an arterial pressure is actually uncomfortable, but you can measure their pulse and their temperature quite easily without too much discomfort to them. Consultant (1)

Another sign of inflexible use of early warning systems was that staff sometimes relied too much on the physiological triggers in the bedside observations. Even though the holistic nature of bedside observations was described by many interviewees, it appears that the OBS charts had, as this senior nurse argued, to some extent replaced, rather than complemented, the sensory observation of patients:

It's a guideline; you're still looking at the patient, that's the one thing that everyone tends to forget. You can be working with a patient all day, and even if you did do obs once in the morning and once in the afternoon, you'll still get a better idea how well that patient is doing just by looking at them and being in contact with them. Senior nurse (31)

Early warning systems had also created some inflexibility with the response to the EWS rapid alerts. The interviews indicated that early warning systems had generated some unnecessary calls to medical staff, and that the number of calls had increased when the early warning systems were first introduced. The suggestion was also raised that the formal level of EWS rapid alerts (e.g. EWS score of 4) may have made staff less responsive to the very early signs of deterioration that the systems were meant to detect. Although this observation was raised by only one interviewee, it could be regarded as a more serious outcome:

This is my only other downside I have seen with the EWS tool is that an inexperienced nurse will be speaking to an SHO or a registrar saying well the patient's not EWSing four but I have concerns, and then them sort of saying oh well I'm gonna wait 'til they EWS four. Patient safety/risk management (16)

Thus two different types of inflexibility may have been associated with the formal thresholds for EWS rapid alerts: first, sending a call-out every time the system produces a rapid alert and second, waiting until the system produces a rapid alert before acting upon the signs of deterioration.

Inflexibility with early warning systems involved, for example, adherence to a standard set or frequency of observations without considering whether the recorded measures would actually benefit the process of care. This quotation by a senior nurse captures well her frustration with staff nurses who were reluctant to change the frequency of observations:

Palliative care people who are dying will get them [observations] done all the time. My argument with the staff is well, if the blood pressure drops a little bit, what are you going to do about it? Are you recording it because somebody's told you have to record it, or are you recording it for the patient's benefit? If you're not going to treat it, don't record it. Senior nurse (14)

The same nurse argued that, overall, decisions to change the frequency of observations were often made by senior (i.e. the ward manager and sisters) and experienced nurses only, which indicates that some staff nurses were happier to 'pass the buck' than to take responsibility for such decisions:

I think there's still a lack of confidence in making that decision to change the frequency, and to write it down that you've changed it, and be responsible for changing it. I still think at the moment it's more senior staff nurses that would do it rather than some of the junior people, and yet they're every bit as competent but just maybe don't feel that it's their responsibility. Senior nurse (14)

This nurse wanted her staff to share such decisions with senior nurses and medical staff, and she did not expect staff nurses to use their discretion in isolation if they lacked the necessary confidence. Responsibility, the way she described it, meant that staff nurses should take the initiative for facilitating and contributing to decision-making that responded to changes in a patient's condition, and for making sure that all decisions were recorded appropriately. It is worth noting that completing the paper work (OBS charts, nursing notes, the care plan etc.) was an important means of informing the rest of the team of the decisions taken.

Perceived inflexibility may also have been associated with too much focus on the rapid alert function, and failure to analyse the 'dynamic picture' of patients against their underlying condition, baseline readings, and additional signs of deterioration. As discussed earlier (Sections 9.3 and 9.4), this could lead to unnecessary alerts or inattention to early signs of deterioration. This raises the question of why staff may have been reluctant to diverge from procedural standards. It is reasonable to assume that increased consistency of procedures can be seen as evidence of procedural standards becoming accepted and immersed in practice. However, rigid compliance is perhaps better explained by a fear of liability. This explanation was summarised by a staff nurse:

There was very much a fear aspect to begin with like, don't get me wrong [the OBS charts] were excellent and they were really good for us to be able to say 'oh right there's something wrong [with the patient] here'. But we did take that literally, I know I took it literally to begin with because I sort of panicked, I thought right this is a legal documentation. Staff nurse (26)

Based on the fieldwork that spanned a period of three years, I came to the conclusion that early warning systems were introduced initially with somewhat strict expectations of compliance. One likely explanation for this is that the study organisations wanted to

ensure that the call-out cascade and a full set of observations became firmly and swiftly embedded into daily practice. This is consistent with my findings (Section 7.4.1) regarding audit activities that focused on ‘key compliance’; i.e. auditing that each round of observations included a full set of vital signs and the summary score. Further, staff training was an opportunity to enforce compliance, and I observed training sessions where true cases of adverse events and patient death were presented to demonstrate the importance of early warning systems. One purpose of presenting such case studies during training was to create compliance:

I think they do come away with that fear and the knowledge as to how to fill in the chart. Patient safety/risk management (25)

It appears that the systems were effective in increasing awareness of the dangers and consequences of substandard practices. In the interviews and focus groups a small number of nurses discussed fears of being reprimanded for non-compliance. Some nurses were concerned that early warning systems could be used as what one interviewee described as a ‘legal tie-me-down to decisions tool’, if something happened to the patient. Therefore it can be argued that it was safer for nurses to take a full set of observations and follow the call-out cascade to the letter.

There was, however, another rationale for continuing bedside observations that was not related to liability and possible litigation, but rather to perceptions about good professional standing and good rapport with patients and their families. One staff nurse argued that stopping regular bedside observations for terminally ill patients could be interpreted as insensitive and uncaring because it gave the impression that this group of patients no longer deserved certain aspects of care. The focus group discussions suggested that not-for-resuscitation orders alone were not enough to clarify whether the

patient should be kept on regular observations or not. It appears that medical and nursing teams did not always communicate effectively about these decisions and, if the qualified nurses were unsure, they were likely to continue bedside observations.

Yet it would be inappropriate to claim that ritualistic compliance and individualistic behaviour were the prevailing outcomes of early warning systems in my study wards. The analysis suggests that team play and discretion played an important role in the bedside observations and the follow-up. Not only were they used to prioritise between the different uses of vital sign monitoring, but they helped staff to manage the complexities of risk assessment and the limitations of early warning systems. In the section that follows, I present one staff nurse's account of responsiveness to risk and the management of risk as a team activity. The purpose is not to judge the quality of care or the decisions taken, but to give an example of a problematic situation and how it could affect staff and the management of risk. The names used are pseudonyms.

10.3 Responsiveness within teams

This case draws on an interview with Lucy, a staff nurse, who once experienced difficulty in raising an EWS rapid alert for a patient whose vital signs were rapidly deteriorating. As Lucy argued, it was a rare incident but useful in showing that staff must take responsibility and show initiative if they identify problems.

[Extracts from Lucy's interview:]

That [incident] was a one-off, yeah; I would say that was a one-off. Hopefully they've learnt from it, because I learnt from it, and I spoke to the rest of the nurses about it because some of the junior nurses that were on the ward. Not to sort of chit-chat about it but just say that was a learning situation, don't just

accept what people are saying in return back to you, if you don't feel it's right then act upon it.

The incident took place early one morning soon after the day shift had started. Lucy noticed that one of the patients, an elderly man, was distressed and seriously short of breath. Even though she was not in charge of this patient's care, she went to the man and asked how he was.

I was going away down to the kitchen to get some water when I heard the man, who's now died, and he was quite breathless. I said I can see that you're not okay but is there anything I can do for you, 'cos his nurse [Anne] was actually in a side room hoisting a patient at that point. The man just said that he couldn't put up with it any longer, he couldn't breathe... I then noticed that his nasogastric tube - he was on nil by mouth and being nasogastric fed - and I noticed that the tube seemed a bit long on the outside, longer than what it should be, so I stopped his feed.

The nurse in charge of the patient's care, Anne, had not noticed any signs of deterioration and neither had the night shift passed on any such information. Lucy proposed that she would take the patient's vital signs, and that Anne should 'bleep' the on-call rapid responders once she had finished in the side room.

So I was doing his recordings, his respiratory rate was 52, his saturations were 79, he was tachycardic as well, he was flushed, he was panicking, you know, he was just in a terrible state [...] we really felt he was deteriorating so rapidly that he was probably going into respiratory arrest and all we were wanting was to prevent that happening.

Apparently a change in the patient's condition had developed in only 15 minutes since Anne last saw the patient, and three of the patient's vital signs were 'on the red'. The patient's respiratory rate alone was significantly above the threshold for a rapid alert, his blood oxygen saturations were below the 85% threshold, and his heart rate was too

fast. While Lucy was taking the vital signs, the on-call rapid responders were handing over from the night to the day shift in a nearby office. The on-call team responded to the bleep by ringing the ward and one of the staff nurses picked up the phone. Lucy heard the staff nurse passing on the details including the vital signs while Lucy and Anne looked after the patient. The on-call team asked the ward to put a peri-arrest call out which would alert all available medical staff and rapid responders of an impending cardiac or respiratory arrest. Lucy, however, felt that it was not appropriate to put out a peri-arrest call.

It shocked me because I knew they were all just there [in the nearby office]. I wasn't prepared to put a peri-arrest call out because if we put a peri-arrest call out for every patient that has an increased respiratory rate and saturations on a respiratory ward we'd be putting out about four or five times in a day. So I said I wasn't happy with that and left the patient and went to phone the [doctor].

By calling a member of the medical staff directly, Lucy bypassed the on-call system. The on-call team had, however, already sent a doctor who arrived soon and was accompanied by one of the other rapid responders. Lucy handed over the information about the key vital signs, described the rapid nature of deterioration and directed the responders to the bay where Anne was looking after the patient.

As they [rapid responders] were walking down the ward they were laughing; in each bay looking, you know, 'doesn't look like anybody's unwell in this bay', which annoyed me because I knew the man was unwell. I said to them I'm glad you think it's funny but I don't think it's funny. I was told to put a call out for peri-arrest, I said, and you lot are just coming in here and laughing and walking down the ward. I came away and just said to Anne if she needed me give me a call.

To Lucy the response from the on-call staff seemed laidback which made her angry and frustrated. The situation was made worse by the on-call team who suggested that details

of the patient's vital signs, and especially the high respiratory rate, had not been communicated during the phone call.

As I walked away [a third rapid responder] came in and she said to me where is this patient that's supposed to be not well. I was angry again, I said well the gentleman's over there and you told to put out a peri-arrest call. ... she said [yes] because you didn't give me all his details about his EWS chart ... I said [the staff nurse had given all the details] because I heard her and so you're lying, and I just walked away from them and went away. After that they couldn't apologise enough.

Eventually, altogether six rapid responders came to the ward to attend the patient whose condition did not improve and who died a day later. What was obvious from Lucy's account was that she felt let down because the on-call team and the rapid responders did not seem to respect the ward nurses' efforts to do the 'right thing'. It appears that what mattered to Lucy was that the patient was classified as 'for resuscitation' and the rapid responders were slow to act upon the alert. Once the responders saw the patient, they understood the seriousness of the situation and apologised to Lucy. Lucy also asked them to apologise to the other staff nurses and the patient.

I think what happened was they realised the seriousness of it all, and they were all trying to do as much as they possibly could to try and reverse things, but nothing was going to reverse. That was how it went on [for several hours] and I just thought well, there you are, an EWS at [a rapid alert] and nobody was prepared to come and act upon it.

Yeah, so that was just an incident where we tried to follow the protocol and it just didn't work.

From Lucy's perspective, the situation could have been handled better by immediately initiating treatment to ease the patient's breathing. She argued that as an experienced nurse she knew what the patient needed, and a quick intervention from someone able to

assess the situation and prescribe such treatment might have stopped further deterioration.

What [the staff nurse who spoke to the on-call team on the phone] told me was that they were busy just now, they were getting the handover and they classed it as a peri-arrest so just to put the call out, and that's what the instruction was, and I thought well, the intervention now that could prevent [further deterioration]... I mean, all I wanted was like some IV [intravenous] hydrocortisone, I knew what the man was sort of requiring and [the doctor] did come down and tell me that's what I can give.

In presenting the above case my intention is to examine how early warning systems were implemented in lateral working relationships, and give an example of problems that staff reported in the interviews. As previously noted (Sections 7.2 and 7.3), early warning systems structured dependence by formalising role responsibilities, duties and tasks with bedside observations and their follow-up. Such rules had the potential to create a smooth chain of activities where tasks and individual contributions followed in a planned order, as prescribed by the early warning system. They could, however, also prompt working 'in silos' by drawing the boundaries of individual responsibilities. For example, a qualified nurse in charge of a bay of six patients could choose to concentrate on their own case load and not look out for patients or staff in other areas.

In the incident described above, Lucy appears to have crossed such boundaries by attending a patient who was not part of her case load. She spoke to the patient, stopped the naso-gastric feed that may have contributed to the breathing problems, informed Anne, the nurse who was in charge of the patient's care, offered to take the vital signs because Anne could not immediately attend the patient, and helped to alert the rapid response team and obtain medical intervention. Because Lucy was not satisfied with the

response she obtained, she questioned and challenged the rapid responders and the on-call doctor in order to speed up the treatment and prevent further deterioration. By doing so, Lucy carried out tasks that were not her responsibility because formally she was only responsible for monitoring her own patients. From an organisational perspective, crossing the boundaries of formal responsibilities was highly beneficial because Lucy avoided rigid adherence where staff only do what is prescribed by their formal duties with bedside observations.

Lucy's actions were, I suggest, evidence of horizontal accountability in lateral working relationships. By her actions, and by arguing that the rapid responders should apologise to Anne and the patient, Lucy indicated that staff were accountable to their colleagues and the patients for fulfilling their responsibilities and doing their best. My argument here is that accountability only becomes meaningful when members of staff contemplate what tasks are included in their respective roles. Lucy's understanding of accountability was expressed through her sense of responsibility; for example, she felt that every patient categorised as 'for resuscitation' required a prompt response when an EWS rapid alert was raised, and that the qualified nurses' concerns must be respected and listened to. Account-giving during the incident comprised record-keeping, handovers, explanations of why the response was delayed, apologies, and tireless efforts to reverse the deterioration. Therefore it involved written and verbal accounts, as well as actions that could be observed, and the purpose was to demonstrate that responsibilities were being fulfilled and taken seriously. It appears that horizontal accountability was integral to the proper functioning of formal rules: if staff were not responsive to risk management within teams, the organisations were unlikely to achieve either horizontal or hierarchical accountability for successfully implementing an early warning system.

10.4 Barriers to responsiveness within teams

The findings in Sections 10.2 and 10.3 suggest that a lack of responsiveness to risk management as a team activity may cause delays, put patients at risk, and increase the workload. For example, Lucy's opinion was that valuable time was lost in chasing the rapid responders, and that the delay potentially postponed efforts to stabilise the patient. It appears that barriers that could impede responsiveness to risk management related to both individual factors and a lack of resources on the wards. I will elaborate on these topics by discussing an extract from my field notes where a healthcare assistant was, as far as I could see, not measuring the respiratory rates.

[Extract from field notes:]

I'm shadowing a healthcare assistant who is taking the bedside observations. This is the fastest round of bedside observations I have seen so far. SATS, blood pressure and heart rate are all taken with the electronic equipment, but I'm slightly suspicious about the respirations. She doesn't carry a watch, and the clock on the wall is not visible from every bed and it doesn't have a second hand anyway. I ask her if she is taking the respirations at all – she looks at me sharply and says yes but she does it so quickly that I can't notice it.

It was relatively easy to see that the most important early sign of critical illness, the respiratory rate, was not being measured accurately. As one of the healthcare assistants I interviewed argued, taking the observations without a watch indicated that the readings for respirations were an estimate or based on the previous rounds of observations.

Anyone that hasn't got a watch is not going to do their obs properly, that's all I can say ... but yeah they do copy [...] There's a lot of cheats as you know but I myself would never, never dream of just filling any old thing in but it takes me longer [to do the observations]. Healthcare Assistant (27)

She also suggested that if staff completed the bedside observations very quickly, it was likely that they did not measure all the vital signs.

When I see people doing them too quickly, I just don't believe that they can do it that quickly when they do the obs. Like for instance when I've seen this staff nurse ... she always [says] it only takes me so and so, and I thought well that's strange but then I noticed she didn't do the flipping resps.

Healthcare Assistant (27)

According to the formal rules, staff who estimated or copied the readings failed to fulfil their formal responsibilities with regard to bedside observations. Further, it can be argued that they failed to fulfil their responsibilities in lateral working relationships because teams relied upon their members to carry out their delegated tasks, and staff on the wards had to trust that the observations in the bedside charts were accurate.

So what might prevent staff from doing their best as employees, bound by the formal rules that prescribe duties and tasks, and as dependable team members in lateral working relationships? One possible explanation for the above compliance issues was 'laziness' as suggested by the senior nurse (Section 8.3.1) who argued that respiratory rates were more arduous to measure because they required manual counting. Qualified nurses also discussed the skill required in taking the respiratory rate without distracting the patient because distraction could alter the rate. Nurses could, for example, hold the patient's wrist and pretend that they were taking the pulse while they were actually counting the breaths. Such accounts suggest that even the qualified nurses could find the respiratory rates awkward to measure. On the other hand, one rapid responder who carried out audits of compliance had come across very basic barriers and misconceptions:

One of the reasons a lot of people gave was that they didn't actually know how to do a respiratory rate, how to record it [...] Another reason why a lot of respiratory rates weren't done was because ... a lot of untrained staff thought they weren't allowed to do respiratory rates, they thought that had to be a trained nurse. Rapid responder (20)

Another possible explanation was that in some hospitals the healthcare assistants were given new roles and tasks (including bedside observations) that did not lead to an increase in their pay. This may have affected staff motivation, as may the nature of routine observations, which was described in the following quotation as boring:

[Healthcare assistants] don't want to do [the observations], [they say] why should I do it I'm not getting paid for it. But if I go and ask them can you do those obs for me because I really need them, they'll go and do them, no problem, they just don't like doing the whole ward or half the ward because it's a very boring, tedious job. Senior Nurse (32)

The demanding daily schedules could equally put pressure on staff to 'cut corners' (Dixon-Woods et al., 2009) and skip over or delay a task that was time consuming. Other reasons include a lack of understanding of the importance of bedside observations and the respiratory rate in particular, which is why early warning systems were introduced. Therefore the reasons why staff failed to comply with early warning systems could be diverse and individual. For example, the healthcare assistant I shadowed may have lacked the confidence and skills to measure the respiratory rate, and perhaps felt that it was a task for the qualified nurses.

What is perhaps more difficult to examine, is the reason why undesirable practice was tolerated in lateral working relationships if it hindered team efforts. Generally, some interviews and informal discussions suggested that undesirable practice was a question of small 'pockets' of problematic behaviour rather than an overarching cultural issue,

and during the fieldwork I observed differences in attitudes between individuals, teams, and shifts. I witnessed negative attitudes among staff only infrequently and these incidents would typically involve a frail older patient. The incidents included staff taking a break and ignoring calls from a patient who was assumed to have reached the final hours of her life; a sleepless patient who felt hungry being teased with sweets; and staff shouting at a male patient who refused to go to bed because he was uncomfortable with his urine catheter. In all these cases the patients' calls for help were eventually attended and they appeared not to have suffered any physical harm; however, some of the incidents suggested uncaring attitudes that were not repressed even in front of an external observer. Such incidents were more likely to occur in the evenings and at nights when ward managers and senior sisters were off-duty. One senior nurse argued that the overall quality of care could suffer in nursing teams that became too insular:

I think some of the staff here have been here too long ... in a nice but critical way, I like having them here, I like the team I've got but I think some of them are too set in their ways [...] I would like to replace some of the staff I have but it's hard getting good staff that fit in well if you like ... Senior Nurse (31)

Problems could also be caused by low staff morale if staffing levels were continuously low, and by bank or agency staff who failed to comply with the rules and norms on the wards. Some temporary staff perhaps lacked the commitment that could be created in stable and supportive working environments. One 'bank' staff member whom I spoke to on the study wards described her role in the care provision by saying that she was only there to '*wash people's bottoms*'. Based on the handful of negative incidents I either observed or discussed with staff, I drew the conclusion that busy work schedules alone could not explain problems with undesirable practice. Rather, problems were caused by more long-standing staffing issues that made it difficult to alter the composition and

dynamics of teams. For example, because of constant staff shortages, the senior nurses had to be more accommodating to staff preferences in order to fill in the weekly and monthly rotas. This could lead to undesirable team compositions, and thus practice.

There was often evidence that undesirable practice was not accepted on the wards, but staff could find it very difficult to address such issues or change the way in which some of their colleagues worked. One staff nurse I spoke to began to cry because she was so distressed about the way some older patients had been treated on her ward in the past. Other staff on the same ward recognised the same issues but overall the feelings they expressed reflected disempowerment. Instead of becoming routinised and accepted, poor performance could therefore create silence and disquiet. The senior nurse quoted above argued that it required time, staff development, and changes in team composition to put things right where problems occurred.

Therefore responsiveness to risk management as a team activity emerged as being highly important. In the incident that occurred between the study ward and the on-call team (Section 10.3), Lucy seemed confident about approaching her colleagues and was apparently trying to improve practice. Her confident and assertive approach suggested that as an experienced staff nurse at the higher end of the nursing grade she had the confidence and authority to raise issues and challenge the on-call team and rapid responders. However, staff on the wards, and especially those on junior grades, were not always in a position to address problems or to question their colleagues' behaviour. This healthcare assistant said that she was unable to talk about the poor practice she saw with bedside observations:

See I can't discuss this with anybody because they think I'm off my head you know ... the senior staff ... but I've seen it, I can see things you know that go on.

I do try and pull my weight and at least I can go home with a clear conscience that I've done everything to the best of my ability, looked after patients to the best of my ability [...] it's frustrating sometimes with the people around you that are not pulling their weight and doing a slapdash job.

Healthcare Assistant (27)

As the above quotation suggests, if staff felt that they could not influence practice on the wards or discuss problematic issues, they were more likely to concentrate on their own performance. Therefore an increased awareness of formal rules with bedside observations, combined with a sense of disempowerment when poor practice occurred, could narrow their understandings of individual responsibility.

Considering these feelings of disquiet and disempowerment, Lucy's response to the problems she identified with the management of patient deterioration was important for a number of reasons. First, Lucy exceeded the formal boundaries of her responsibilities with bedside observations, and she sought to improve practice both within the nursing team, and between the ward staff and the on-call team. Second, she supported her colleague who was perhaps not aware of the problems or lacked the skills, confidence or power to address them. Third, by discussing the incident with the other nurses, Lucy contributed to a more open working culture where staff understood that it was acceptable to speak up and address problems. Horizontal accountability thus included not only the responsibility to take initiative for risk management but also to support others, especially those who may lack the authority and confidence, in this task. Responsiveness to team members' needs was therefore as important as responsiveness to risk.

10.5 Negotiation of formal rules

The fourth and final theme in this chapter explores how early warning systems could offer a benchmark or a justification for raising risk management issues within teams. The findings suggest that while early warning systems could empower staff to take initiative, the negotiation was not necessarily straightforward and quick.

The findings suggest that the OBS charts had the capacity to support risk management because they created expectations of how the bedside observations, record-keeping and decision-making were intended to be managed within the teams. Because standard procedures created transparency of practice, shortcomings could be detected and rectified by appealing to formal rules. For example, one senior nurse whom I interviewed told me about a case of an elderly patient whose rapid heart rate ('tachy' i.e. tachycardia) had not been managed according to this nurse's expectations.

You see I'd been off and I came back in... we had a lady who had been running a tachy of a hundred and thirty plus for three days and we were doing [the obs] on a regular basis and telling the doctors, telling the doctors, nothing happening.

I said she cannot sustain this, I said she's elderly, she is not going to sustain this rate for much longer. Senior Nurse (32)

The senior nurse had returned from leave and found out that the ward doctors had not acted upon the EWS rapid alerts, and apparently the nursing staff had not contacted the rapid response team. As discussed in Section 8.3.4, patients who would not benefit from intensive care procedures could be excluded from the early warning system, but such decisions were made by the medical staff and recorded in medical and nursing notes. My impression, based on the end-of-life care that I observed on the wards, was that

there was no protocol for this process. For example, in one of the other hospitals I observed a young trainee doctor who was very keen to continue active treatment with a seriously ill patient while the nursing staff proposed comfort care. It appears, however, that no changes had been made to the care management of the patient with tachycardia described above:

I really to this day do not understand the rationale for why nothing was done [...] one of her other medications could have been increased to try and have an impact on this ... whether everybody was waiting for a consultant decision or whatever I do not know. Senior Nurse (32)

One of the reasons (as in Mr Watson's case, Section 9.2.2.1), may have been that changes to care management had not been discussed, or processed yet, within the medical team. Because no decisions to 'go below' the formal risk categorisation had been recorded in the patient's medical or nursing notes, and the patient was for full active treatment and resuscitation, this senior nurse felt that the medical, the rapid response and the coronary care teams should be involved immediately. After the nurse intervened, nursing staff began a close monitoring of the patient's heart rate and the doctors changed the medication. Staff were therefore prepared for the possibility of a cardiac arrest.

I said she's definitely going to go off and she did, but they were all aware so that's how come they were able to resuscitate her and bring her back, but unfortunately it wasn't a very successful resuscitation. Senior Nurse (32)

The patient eventually suffered a cardiac arrest and was resuscitated, but died soon afterwards. The senior nurse's views suggest that the information from the bedside observations could have more promptly influenced the decision-making regarding the patient's medication and care management. Since no decisions to change the plan or the

patient's resuscitation status had been made and handed over, the senior nurse felt that it was her responsibility as the 'patient's advocate' to follow the standard procedures:

My consultant said what did you bother for, and I said because she was for all active treatment, she is somebody's mother, and nothing was documented anywhere to say that I shouldn't ... I'm my patient's advocate, and I said if nobody else will do it that's my job, I will. Senior Nurse (32)

While the early warning system helped to initiate an intervention after a three-day delay, it could be argued that the system did not link sufficiently with care management and the mechanisms relating to resuscitation orders. Overall, the interviews and field observations indicated that decisions to cease active treatment, to move to a palliative care pathway, and to exclude patients from regular bedside observations, were complex and time-consuming, and that the early warning systems did not offer guidance for these situations. Such decisions were typically made by senior medical and nursing staff together with the patient or the patient's family. Therefore it appears that where formal rules were lacking or ambiguous, early warning systems were perhaps less likely to support risk management as a team activity. As discussed earlier (Section 10.2), ambiguity over formal rules could generate ritualistic compliance such as reluctance to change the frequency of observations.

Participants' accounts also linked early warning systems to expectations that concerned appropriate transfers of patients. In the following quotation a senior nurse describes an incident where a patient was transferred to the ward despite a high EWS score. This nurse was not satisfied with the medical assessment unit which had neither stabilised the patient first, nor informed the ward of the high score.

I wouldn't transfer a patient unless I knew they were comfortable. Sometimes if it's an end of life situation and you are moving them to a side room or to a quiet area so that the patient and their relatives can get a bit of peace and quiet and that's fine, but this patient was still being actively treated so I would have expected them to have stabilised her first ... her temperature was down, pulse was up, respirations were up, and the saturations were down, so I would have said that she wasn't appropriate for a transfer at that time and the [senior nurse] I spoke to on [the medical assessment unit] agreed with me.

Senior Nurse (31)

Even though the knowledge of the patient drew on the vital signs, this nurse also mentioned that the patient's EWS score had been well above the threshold for an EWS rapid alert. Therefore the early warning system introduced a simple summary measure, the aggregate score, that could be used to assess and negotiate the appropriateness of transfers.

10.6 Discussion

In this chapter I have explored risk management and bedside observations as a team activity. My conclusion is that early warning systems have the potential to improve practice in organisations, but that the effectiveness of these systems is established in lateral working relationships.

The interviews indicated that early warning systems were useful if they provided a backup and justification for the action to be taken, but at the same time allowed arbitration. Often decisions concerning appropriate action were straightforward and required little discussion. For instance, the standard frequency of bedside observations was two to four times per day which was appropriate for most patients. In contrast,

decisions to exclude patients from a full set of observations and the alert system could be complex and time-consuming. The findings suggested that solving the more complex situations could be facilitated by teamwork, but that collective action was sometimes impeded by a lack of responsiveness to risk management needs within teams. Barriers to teamwork included a sense of disempowerment; lack of confidence; lack of motivation; relaxed attitudes towards risk management; inappropriate skills mix and team composition; and high workloads on the wards. For example, junior nurses who spent more time with the patients, and were thus well placed to observe signs of deterioration, may have sometimes lacked confidence to raise risk management issues. Decision-making in unclear or problematic situations was facilitated by assertiveness and authority, and the senior and experienced qualified nurses seemed to hold a central role in the efficient management of risk. Despite the mundane nature of bedside observations, this task generated a major nursing responsibility which involved supervising healthcare assistants and less experienced qualified nurses; liaising with the medical team and rapid responders; and linking early warning systems with care management decisions. Demanding daily schedules could, however, reduce the time available for coordination and supervision of work.

These findings can be usefully explained by examining the assumption that accountability in organisations exists in both hierarchical and horizontal working relationships. Firstly, accountability related to hierarchical structures in terms of fulfilling the responsibilities, and meeting the standards, as prescribed by early warning systems. Secondly, accountability was applied to lateral working relationships in which, I suggest, staff were answerable to their colleagues for prudent and appropriate use of early warning systems, thus avoiding false reassurance, unnecessary alerts, ritualistic

compliance, 'buck passing', and any undesirable practices that increased risk, created unnecessary work, and caused discomfort to patients. Further, accountability implied that staff should be responsive to calls for help and assistance, and supportive of their colleagues who might lack the skills or power to address risk management issues. Responsibility in lateral working relationships thus concerned willingness to 'pull one's weight' and to take initiative to ensure efficient management of risk. Accounts of performance could be provided in writing (e.g. completing the OBS charts and nursing and medical notes), verbally in handovers and informal discussions, and by acting upon risk. Thus my understanding of accountability goes beyond record-keeping and dialogue, and includes the conduct itself. For example, a considerate and prompt response to calls for help can be interpreted as indicating that staff take their risk management responsibilities seriously.

I suggest that accountability in the ward environment is closely tied to the dependencies of lateral working relationships (Roberts, 1996) that typically involve staff with different job roles and grades. As team members, staff depend upon their colleagues and even unequal power relationships may involve horizontal and socialising forms of accountability. For example, I observed instances where consultants, who spend relatively little time on the wards, engaged in a dialogue with, and depended upon, junior doctors and qualified nurses who knew more about the patients and their circumstances. As Roberts (2001) has argued:

'One of the vital benefits of face-to-face accountability between relative equals – what I have termed socializing forms of accountability – is that it allows us to test and challenge our own and others' assumptions through dialogue' .
(p. 1567)

Though Roberts refers only to 'relative equals', I see negotiation and advice-seeking between different staff groups and grades as socialising forms of accountability. Therefore this type of accountability may occur even when the power relationship is unequal because the lateral working relationships involve expectations (Whitaker, Altman-Sauer, & Henderson, 2004) that are reciprocal. Such expectations can usefully be understood as 'mutual accountability' (Bardach & Lesser, 1996) whereby each individual has performance expectations of other members of staff. In hierarchical accountability such expectations are typically based on a formal contract, such as contracts of employment. In contrast, with mutual and socialising forms of accountability the expectations may be 'non-contractual' and based on team arrangements and tasking, or they may be based on perceptions of ethical or collegial conduct. Thus accountability does not necessarily involve formal powers to audit and discipline other members of the team, but staff may still question each others' performance and pass judgments. I suggest that mutual expectations of accountability are highly significant to the functioning of formal rules because they create responsiveness to risk management as a team activity. This is of importance in healthcare settings where the character of work is profoundly collective.

I will elaborate on potential barriers to such responsiveness by drawing on theories of accountability and responsibility. The way in which some staff responded to procedural standards suggests that early warning systems may have created an increased sense of responsibility for following the formal rules, but a reduced sense of responsibility for risk management as a collective activity. This may occur if members of staff feel that they are obliged to comply, or if they are reluctant to use their professional judgment even when they know that discretionary behaviour is acceptable. Under such

circumstances, procedural standards may foster ritualistic compliance (Boyne, Day, & Walker, 2002) that superficially fulfils the obligation but fails to achieve greater accountability, desired performance, or ethical behaviour as intended by those who introduced the standards. Roberts (2001), influenced by Foucault's analysis of power, describes such an impact as the 'individualising processes of accountability'. This implies that organisational accounting practices make staff aware that their performance can be scrutinised, and such transparency can create '*narcissistic pre-occupation with how the self and its activities will be seen and judged*' (Roberts, 2001, p. 1553). Pre-occupation with the self can provoke defensive behaviour, such as 'scapegoating' and 'buckpassing', and avoidance of personal responsibility by demonstrating strict adherence to formal rules (Harmon, 1995).

The individualising forces of accountability have been associated with three kinds of 'pathologies' (Harmon, 1995; Roberts, 2002). First, if staff feel that they are under *obligation* to follow formal rules, they may choose to take responsibility only for performing the duties that are derived from those rules. Similarly, they may take responsibility for achieving only those goals and outcomes that are specifically prescribed by the authority who introduced the rules. For example, some staff nurses perhaps felt that their obligation was to use the OBS charts primarily to achieve the formal goals set for vital sign monitoring as an EWS alert system, and measuring a full set of observations two to four times per day were given a high priority. As a result, the bedside observations were sometimes carried out ritualistically.

Second, by expressing strict adherence to formal rules when they carry out their duties, staff may renounce their *moral agency*. 'Agency' implies that a person possesses '*the*

power to cause events to happen through the voluntary exercise of one's will' (Harmon, 1995, p. 19), which suggests that staff can influence the way in which duties and tasks are carried out. With early warning systems, some staff surrendered their moral agency by adhering to simple rules of routine observations as defined by the OBS charts, and by avoiding ambiguous rules that concerned, for example, excluding patients from early warning systems and full bedside observations. Therefore they avoided making or proposing changes that were not easy to justify and explain by formal rules, which I described as 'buck passing', i.e. shifting the responsibility for difficult decisions to somebody else.

Third, staff may accept *accountability* for only those duties and outcomes that are derived from formal rules. Thus they may accept that they are only answerable for key compliance and all the rules that dictate the use of the alert system. Strict adherence to formal duties and rules may, however, have unintentional outcomes such as unnecessary observations that drain already stretched nursing resources and cause discomfort to patients. It is reasonable to assume that if obligation and accountability are viewed primarily in relation to the alert system, staff may not perceive that they are personally responsible for causing unnecessary observations or discomfort. Rather, discomfort and extra work can be perceived as an expected, albeit unfortunate, outcome of prescribed patient safety measures.

These pathologies that affect a sense of obligation, agency and accountability apparently emerged when staff prioritised precise rules, such as key compliance, over vague rules that concerned decisions to adjust frequencies or to exclude patients from regular observations. Pathologies also emerged when staff prioritised the narrowly

defined goals of the alert system over the more generic goals of bedside observations and risk assessment. It can be argued that formal rules introduced to achieve greater accountability may, in fact, lead to narrow and rigid understandings of individual responsibility.

10.7 Concluding remarks

In this chapter I have examined the impact of early warning systems on the management of risk as a team activity. My conclusion was that early warning systems can support the management of risk with bedside observations, but that rules that enforced compliance with the OBS charts and the call-out cascade may have, to a certain degree, been detrimental to an individual sense of responsibility. I suggested that organisations therefore needed mutual and socialising forms of accountability to tackle negative outcomes that counteract the benefits staff associated with early warning systems. Such alternative forms of accountability relate to responsiveness to risk management needs in lateral working relationships. However, my assumption of lateral working relationships as the counterforce of the ‘individualising effects’ of hierarchical accountability rests on the assumption that lateral working relationships function well, and generate a mutual sense of responsibility and accountability. Therefore, in order to control the problems created by formal rules, staff must feel that they can raise and negotiate risk management issues in lateral working relationships. Nonetheless, my findings suggest that the capacity to act in this way could be affected by factors such as team dynamics and professional boundaries.

CHAPTER 11: Discussion and conclusions

‘What we need to account for is not our individual actions but how these interact with one another; the consequences, intended and otherwise, of our actions for others both near and far’.

(Roberts, 1996, p. 55)

11.1 Introduction

The aim of this thesis was to develop a better understanding of the functioning of early warning systems by approaching them as a regulatory technique. My assumption was that early warning systems, similar to other procedural standards, create expectations of desirable practice and provide the means against which conduct can be assessed and made accountable. Early warning systems are an important example of such tools because they are used to detect and manage acute patient deterioration on hospital wards. Concerns have been raised about the quality of patients’ bedside observations and vital sign monitoring, and advice has been given recommending the implementation of early warning systems.

In this chapter I provide an overview of my research approach and a summary of the findings. I discuss the implications of the research, and focus on themes that emerged relevant to understanding situations where early warning systems may fail to achieve accountability. I reflect on the methods and ethical challenges of conducting ethnography on medical wards, and conclude by contemplating the significance of the study and the need for further research.

11.2 Overview of research approach

In this study I have adopted a research approach that has not previously been applied to procedural standards in healthcare. The approach can be described as a combination of health services research and sociology, with a specific focus on risk, governance, and public administration. I perceived healthcare practitioners primarily as public servants who are answerable for complying with rules and standards, and examined the social processes and structures that relate to accountability in organisations. The purpose was not to overlook the role of professionalism in building a sense of accountability in the workplace, but to focus on an under-researched aspect of procedural standards: their functioning as regulatory tools in an institutional context.

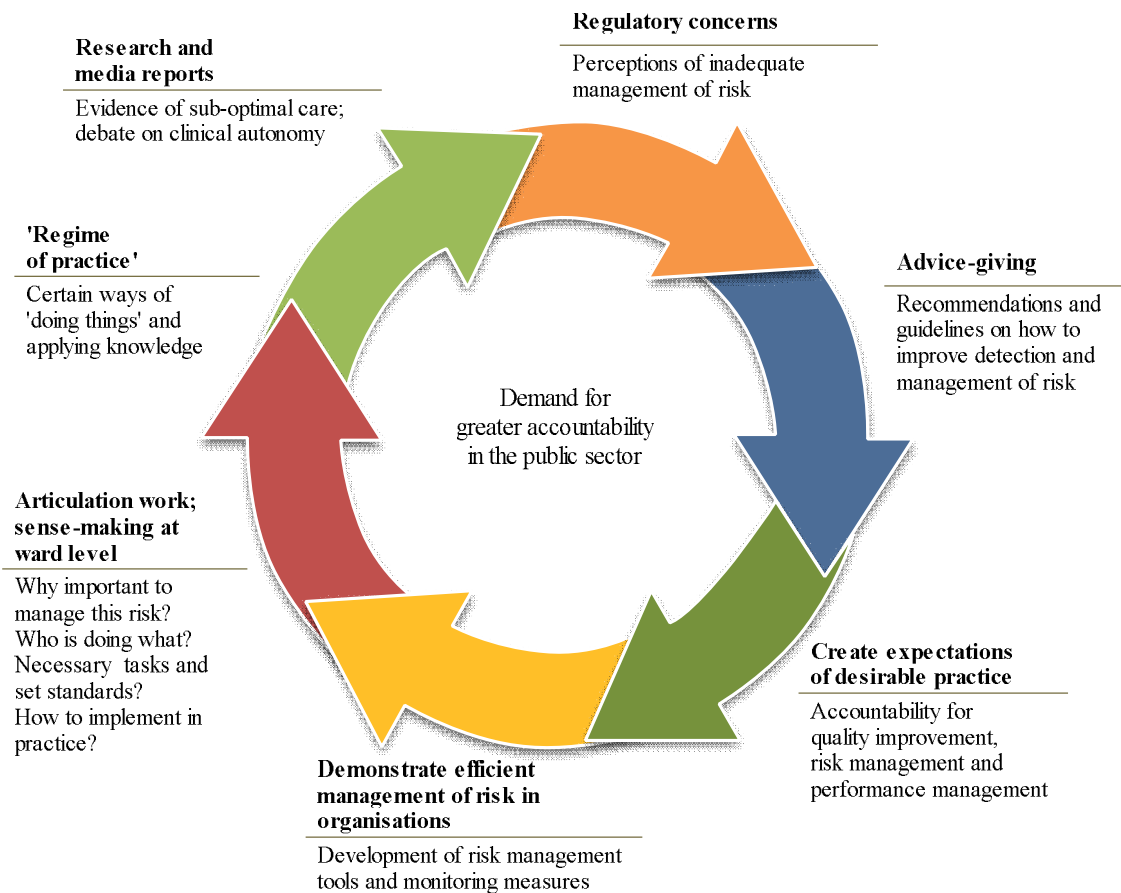
My study of early warning systems commenced with a broad view of patient safety interventions in four acute hospitals as part of the evaluation of the Health Foundation's Safer Patients Initiative (Benning et al., 2010). The original research question – *'how does organisational culture respond to efforts to manage patient safety?'* – and the background that consisted of both clinical and policy developments, focused my attention on the governance of risk in healthcare. While I initially approached early warning systems as a clinical tool in medical and nursing practice, the review of literature opened up a different perspective.

This perspective integrated the clinical context with regulatory concerns and government policy, and longstanding efforts to coordinate and standardise care provision for the purposes of efficiency, effectiveness and, more recently, patient safety. I distinguished between three different types of standards, and concluded that efforts to reform care provision have coincided with a growth in procedural standards. I suggested

that the purpose of procedural standards is to improve the consistency of care processes, and provide the means against which practice can be scrutinised and made accountable. In my study I approached standardisation as an effort to control how knowledge of risk and its management was generated and shared: for example, early warning systems prescribed how bedside observations should be measured, recorded, interpreted, handed over, and acted upon. Accountability, I suggest, was therefore sought in relation to knowledge of risk and risk management. Knowledge application emerged as the key element that linked macro-level considerations of desirable practice with sense-making in organisations, and the concepts of risk and accountability. I examined constructs of appropriate practice at different analytical levels – individual, group, organisational, and national – to establish links and interdependencies. My approach can be described as ‘meso-level research’, the lack of which has been acknowledged in scholarly work on both risk (Tulloch, 2008) and accountability (Frink et al, 2008).

Figure 11.1 summarises my understanding of accountability as a mechanism which aimed to create expectations of good practice and elicit changes in how the risks of patient deterioration were managed. The mechanism was induced by regulators’ concerns that practice in organisations may fall short of desired standards, and it involved advice on how to improve the detection and management of risk. Regulation is understood broadly as a multitude of formal and social controls that exist in the regulatory space (Parker, 2000) of hospitals, and is thus not limited to state regulation. Organisations can demonstrate conscientious management of risk by implementing the advice, but they can meet the expectations only if frontline practice changes accordingly. The study hospitals made an effort to follow the advice and implemented an early warning system, but did clinical practice change as a result?

Figure 11.1 Accountability mechanism



11.3 Summary of research findings

My analysis began by exploring the daily life on the wards and the nature of risk in that environment. Perhaps the single most significant factor that influenced 'risk work' on the wards was the predominantly elderly and frail patient population that suffered from chronic illness and multiple pathologies. Yet the early warning systems, which were introduced to manage the risks of patient deterioration, appear to have been designed for the 'average' adult patient on general wards. Accountability for these systems was operationalised through *hierarchical* structures by establishing role responsibilities and the standards of appropriate practice, and by promoting compliance through monitoring,

auditing, training, and supervision. The systems also seemed to restructure and strengthen dependence in lateral working relationships, and to emphasise risk management as a team activity. My conclusion was that early warning systems operationalised accountability *horizontally* by clarifying how staff were expected to detect and manage patient deterioration collectively. The findings suggested that compliance with bedside observations had improved as a result, but I questioned whether this implied that the systems had improved knowledge of risk and how it should be managed. Therefore I developed a number of questions to be addressed in the remaining chapters:

- Did early warning systems generate shared understandings of risk and how it should be managed?
- Did they increase responsiveness to risk?
- Did they change the way staff managed risk as a team?

In my analysis I focused on the ways in which early warning systems worked as part of day-to-day risk assessment. The interviews indicated that staff held very positive views about the ability of early warning systems to control the uncertainties of risk management by improving the consistency, detection and communication of patient deterioration. However, positive feedback was not sufficient to convince me that early warning systems had been successful in changing the way in which risk was understood and managed individually and within teams. Because early warning systems were embedded into an established ward routine, the bedside observations, it was reasonable to assume that established ways of ‘doing things’ were likely to have influenced how staff used these systems.

Traditional ways of employing discretion and tacit knowledge were highly valued at ward level. Not only was discretion an established part of the bedside observations, but it was also needed to compensate for the technical limitations of early warning systems. The fieldwork generated evidence about the way in which the physiological triggers and the call-out cascade worked together with tacit knowledge of risk that was based on skills and experience of working on medical wards. The tacit knowledge concerned a 'holistic' assessment of patients which examined physiological measures together with sensory observations and information about personality, lifestyle issues and social circumstances. My field observations suggested that knowledge relevant to management of patient deterioration was generated over a period of time, and was therefore subject to specific temporal and collective influences. This implied that efficient management of patient deterioration depended on how successful teams were in generating, sharing, and acting upon knowledge of risk.

Overall, positive perceptions and improved compliance relating to processes indicated that early warning systems may have been successful in achieving accountability for risk management, and that these systems had become a part of clinical practice.

However, it appears that early warning systems had, to some extent, been problematic in that they generated strict adherence to formal rules and defensive behaviour.

Therefore, although early warning systems may have been successful in increasing compliance with formal rules, this did not necessarily improve responsiveness to risk management as a team activity.

Roberts (1996) describes such an impact as the individualising effect of hierarchical accountability, which implies pre-occupation with one's own performance and rigorous

attentiveness to formal rules and scrutiny. My analysis suggested that this type of behaviour could hinder teamwork, increase the workload, and cause discomfort to patients. On the other hand, the findings indicated that staff knew how to be responsive to management of risk as a team activity, which was illustrated by discussing Lucy's efforts to solve a problematic situation with an EWS rapid alert (Section 10. 3). This I interpreted as evidence of mutual, socialising forms of accountability in lateral working relationships, also described as horizontal accountability, which built upon mutual expectations of each person's responsibilities as a team member and a colleague. It involved very basic considerations such as prompt responses to calls for assistance, but also responsiveness to the needs of the individuals who lacked confidence, skills, or resources to manage risk. Accounts of how each person performed could be given and received in writing, i.e. using the paper-trail of OBS charts and case notes, or verbally in conversation and handovers. Further, I perceived the conduct itself as a means of giving an account because, by acting upon risk, staff could demonstrate how seriously they took their risk management responsibilities. Risk work emerged as a profoundly collective activity, and it appeared that formal rules worked better if staff were responsive to risk management needs within the team.

The question then arises as to whether staff could have drawn more on team skills and capacities to improve the functioning of early warning systems? A number of problematic issues emerged from the data suggesting that management of risk could be impeded by generic negative conditions of teamwork, such as heavy workloads.

Therefore the implementation of early warning systems was affected by a range of issues, some of which related to the systems themselves while others were caused by the working environment. Overall, it seems that efforts to meet regulators' expectations of

appropriate conduct were not always compatible with the practicalities and pressures of daily work. Because early warning systems seem to hold many positive qualities, it is worthwhile exploring the areas of contestation and contemplating potential solutions. In the section that follows, I discuss themes that summarise the key findings in terms of understanding why early warning systems may fail to achieve accountability as prescribed by formal rules. My approach is different from previous research on procedural standards in that practitioners' responses were analysed as reflections upon accountability and responsibility in an institutional context.

11.4 Key implications of the research: restraints on the accountability mechanism

The concept of responsibility is useful in understanding how formal controls are established in organisations, and how staff deal with such controls during the course of their daily activities. As Day and Klein (1987) have argued, '*one cannot be accountable to anyone, unless one also has responsibility for doing something*' (p. 5). Formal responsibilities are typically defined by accountability forums, such as employers, regulators and professional societies, and these responsibilities may vary depending on the forum. Apart from formal controls, responsibilities are also derived from subjective definitions of for what, and to whom, people feel responsible (Dunn, 2003).

Weaknesses of accountability mechanisms can be usefully explained by examining the tension between formal and individual definitions of responsibility. I present three themes that are highly relevant to understanding how staff exercised responsibility with bedside observations and early warning systems: conflicts of accountability; restricted responsibility; and conditions of teamwork.

11.4.1 Conflicts of accountability

Standardised tools such as early warning systems can make risk assessment appear objective, thus potentially avoiding the weaknesses and inconsistencies of individual judgment. As discussed earlier (Section 2.8) by adopting these techniques, doctors and nurses can be seen to become subordinated to preventive technologies and risk-centred governance. However, my findings suggest that practitioners approached early warning systems in relation to established ward practices and risk knowledge. As discussed earlier (Chapter 6) the numerous sources of risk, the complexity of assessment, and heavy workloads made ‘risk work’ a demanding task on the wards. My study suggests that in such an environment, some uncertainties may be transformed into calculable risks by using a scoring tool, while others can be managed only by using professional judgment. If doctors and nurses felt that early warning systems measured risk reliably and helped to manage the uncertainties of risk work, they were able to reconcile formal and subjective definitions of responsibility. However, as the systems could fail to manage the uncertainty, staff saw that it was their responsibility to utilise other methods of risk management. This included tacit knowledge, discretionary behaviour, and proactive measures to negotiate formal rules. As O’Malley (2006) argues, uncertainty can be used as an opportunity to assert the importance of professional judgment and maintain, or reclaim, the expert role. Depending on their knowledge, confidence and professional power, practitioners may move alongside the risk-uncertainty ‘continuum’ and argue for discretionary decision-making.

From my analysis, I noted that staff could separate the ‘bedside observation’ function from the ‘early warning alert’ function, and thus separate the OBS charts from the scoring system and the full call-out cascade. Different interpretations of the purposes of

early warning systems can, however, create conflicting accountabilities. For example, at management level, the hospitals wanted these systems to be used primarily as an alert mechanism for the detection of patient deterioration. In order for the OBS chart to function as an alert system, it is necessary to take a full set of observations and calculate the score at regular intervals. Staff, on the other hand, may prefer to use the OBS charts to fulfil a range of different role responsibilities that originate from ward routines and professional training. These include using bedside observations, and thus the OBS charts, to assess patients' progress with their treatment, need for further therapy, and ability to cope at home after discharge. Further, staff apparently used the systems to detect different types and degrees of patient deterioration that included, but were not limited to, signs that suggested a pending critical illness. Thus the risk of patient deterioration could refer to problems that were less serious than a cardiac or respiratory arrest, but that nonetheless required a prompt response. Staff may have felt that their role was to use OBS charts to satisfy clinical needs that related to an individual patient's assessment and care management, and that such duties did not always necessitate taking a full set of observations or sending a call-out.

These findings are consistent with Yakel's (2001) proposition that 'artefacts of accountability' that have diverse uses and users may lead to conflicting accountabilities. In her study of radiological reports, she found that radiologists preferred to provide a comprehensive and neutral record of results from which the clinicians could draw their own conclusions. Clinicians, on the other hand, felt that the radiologists should take more responsibility for analysis and conclusions that assist with clinical decision-making. In Yakel's study, conflicts of accountability arose from a number of factors. For example, radiologists saw that their role was to satisfy the scientific, legal and

administrative requirements set for radiology reports. They also adopted a language and style of reporting that Yakel describes as conservative and risk-averse. Clinicians, on the other hand, expected the radiologists and their reports to contribute primarily towards clinical decision-making. Therefore conflicts of accountability arose from differences in how staff understood their responsibilities.

11.4.2 Restricted responsibility

I adopt a more detailed analytical approach to conflicts of accountability by drawing on three ‘pathologies’ of responsible behaviour: the paradox of obligation, agency, and accountability (Section 10.6). I suggest that conflicts of accountability were harmful if individuals felt that exercise of responsibility was restricted by early warning systems.

11.4.2.1 The paradox of obligation

The study organisations introduced early warning systems as an attempt to achieve what they perceived as responsible behaviour relating to bedside observations. However, scholars including Braithwaite (1999) and Harmon (1995) have argued that a demand for greater accountability, and reliance on control to achieve it, can in fact risk a loss of responsibility in organisations. This is based on the assumption that the essence of individual responsibility is that people feel empowered to exercise moral choice, and the exercise of responsibility is typically perceived as an exercise of discretion and an act of empowerment (Dunn, 2003; Dunn & Legge, 2000; Harmon, 1995). By assuming that moral judgments can be deduced from formal rules, organisations that introduce procedural standards may potentially restrict the ‘moral agency’ of their employees. The adjective ‘moral’ can be defined as

‘of or relating to human character or behaviour considered as good or bad; of or relating to the distinction between right and wrong, or good and evil, in relation to the actions, desires, or character of responsible human beings’.
(‘Moral’, Oxford English Dictionary)

Thus, if individuals feel that they are obliged to comply with formal rules, accountability mechanisms may restrict moral agency by undermining individual preferences and moral judgments, which can be detrimental to a sense of responsibility (Dunn, 2003; Dunn & Legge, 2000; Harmon, 1995). My analysis suggests that early warning systems introduced a new set of rules that limited the discretionary powers held by nurses and doctors. The systems did so by seeking accountability for vital sign monitoring as an alert mechanism, thus competing with the diverse uses of bedside observations that all contributed to the process of care. Harmon (1995) calls this the ‘paradox of obligation’ which means that individuals feel obliged to prioritise certain formal duties. It appears that such a paradox affected a sense of individual responsibility in the study organisations in that some staff engaged in unreflexive use of principles and ritualistic compliance.

11.4.2.2 The paradox of agency

The second paradox presented by Harmon (1995) is that efforts to seek accountability may ignore the dualistic nature of responsibility that consists of both individual and collective responsibility. This paradox is applicable to the problem of ‘many hands’ (Bovens, 1998) in healthcare where multi-disciplinary team work and involvement of many staff and units may lead to fragmentation of accountability, and difficulty in identifying the responsible individuals. Harmon (1995) argues that accountability mechanisms can obscure the relational nature of responsibility by attributing individual responsibility and thus blame. This implies that if individual account-giving concerns

potential or detected failures in activities that actually depend upon many hands, it may prompt individuals to demonstrate the integrity of their own practice in comparison to others, thus provoking solitary and defensive approaches to accountability. As a result, individuals seek a sense of security by demonstrating that they can meet the organisation's expectations, and measure personal successes and failures against these expectations and the performance of others (Roberts, 2001).

My study suggests that early warning systems appear to have generated fear of liability and thus, defensive behaviour. This typically occurred with decision-making that was not supported by simple and unambiguous rules and guidance, such as the more complex decisions about excluding patients from the alert system and bedside observations. Although staff expressed no fear of scrutiny with regard to audit activities, it is reasonable to assume that record-keeping and standardisation increased the transparency of clinical practice, and made staff more aware that their performance could be scrutinised. Comments made by those who described the OBS charts as a legal 'tie-me-down to decisions' tool suggested such responses.

11.4.2.3 The paradox of accountability

Perhaps the most serious implication of a conflict between the formal and subjective definitions of responsibility is that it may affect how staff express answerability for the outcomes of their actions. This is described as the paradox of accountability (Harmon, 1995). If staff feel that they are not allowed to decide on the most appropriate ways to fulfil their obligations, they may not recognise or accept accountability for certain outcomes. The paradox of accountability is particularly compelling when formal rules create outcomes that are unexpected or undesirable. My findings suggest that early

warning systems may have generated some negative outcomes that these systems were not intended to produce. These included unnecessary bedside observations, inappropriate referrals to intensive care, and discomfort to patients.

Staff rarely discussed negative outcomes in the interviews in ways that would have expressed personal responsibility and regret. Discomfort to patients was mentioned only by one consultant who emphasised that he made an effort to avoid and correct practices that lead to unnecessary observations. Medical staff, some senior nurses, staff from patient safety/risk management, and advanced nurse practitioners also mentioned the need to exclude some patients from regular bedside observations and the alert system, and these comments typically related to unnecessary observations, unnecessary call-outs, and inappropriate intensive care referrals. Staff nurses, on the other hand, were unlikely to mention any of the negative outcomes. A valid point was raised by a nurse who argued that excluding terminally ill patients from regular bedside observations could be perceived as uncaring by patients and their families. This brings us back to the problem of multiple and conflicting accountabilities, and that actions can be justified in a number of different ways depending on how staff express their obligations and moral agency.

Overall, my conclusion is that staff recognised how formal rules could restrict the exercise of responsibility, and that their responses reflected efforts to overcome the paradoxes of obligation and agency. Firstly, staff discussed the different uses of bedside observations which implied an obligation to consider the best way to use vital sign monitoring with individual patients in different situations. Secondly, they discussed different ways of increasing the accuracy of bedside observations (e.g. additional signs,

holistic assessment) so that signs of deterioration were detected and unnecessary call-outs avoided, and by doing so they expressed their moral agency. In other words, staff acknowledged that they had the ability to influence a course of action and improve the detection of patient deterioration.

11.4.3 Conditions of teamwork

While the previous two themes relate to problems that can be seen to be caused by the implementation of early warning systems, the negative conditions of teamwork are a generic issue that can affect any aspect of care provision. However, the two should not be separated because early warning systems, as discussed in Section 7.1, were intended to improve risk management by restructuring and clarifying the dependencies of lateral working relationships. It can be argued that efforts to improve teamwork were integrated into the procedural standard. Nonetheless, my conclusion is that some of the problems were so deep-rooted that they could not be resolved by introducing an early warning system.

Relevant problems on the wards were caused by a combination of individual attributes and a lack of organisational resources. At individual level problems were caused by skills deficiencies. The key problem appeared to be the expanding role of healthcare assistants which was not matched by appropriate changes in training and pay. While healthcare assistants were expected to accept more responsibility for bedside observations, this task may offer little job satisfaction, and hospital-based training sessions may not be sufficient to provide the necessary skills. As a result, auxiliary staff may lack motivation and confidence to contribute to this task to their best ability. My overall perception was that experienced healthcare assistants who held tacit knowledge

of signs of patient deterioration seemed to engage well with this task, suggesting that knowledge and expertise could facilitate empowerment.

Lack of confidence and empowerment also affected staff nurses. This could relate to inexperience and fear of ward hierarchies, but I specifically noted a lack of acknowledgement and discussion of substandard care. Even when a colleague of relatively equal standing was observed to perform badly, staff apparently found it difficult to address this issue. The interviews and ethnographic observations suggested that substandard care were related to undesirable team composition and dynamics. This created small pockets of poor practice, and on a few occasions I observed situations where the team allowed unprofessional conduct. These situations occurred during night shifts when staffing levels were low and senior nurses were off duty. One senior nurse acknowledged that there were problems relating to team composition, and also mentioned the importance of training and professional development in improving conduct. This nurse explained that it could be difficult to change shift patterns and engage staff in continuing professional development, and that this was partly due to staff shortages.

The above issues related to problems that were caused by the restructuring of care work, insufficient resources for training and supervision, and staff shortages. It is not realistic to assume that early warning systems could have resolved any of these issues, but it is worthwhile contemplating how these conditions may have affected the exercise of responsibility. I suggest that the impact was similar to the paradoxes (Section 11.4.2) in that it restricted the moral agency of staff and their ability to influence the course of action and the outcomes. Such an impact would have prevented staff from intervening

when poor practice was observed. Furthermore, skills deficiencies may have prevented staff from performing to their best ability. For example, it could be speculated that the healthcare assistant who failed to measure respiratory rates lacked the necessary skills, and was too embarrassed to admit this.

11.4.4 Need for dialogue

The extent to which discretionary powers, and thus the subjective definitions of responsibility and moral choice, should be restricted represents a long-standing debate in the domains of public administration and the professions. Within the public administration discourse, the ‘strong rationalist’ perspectives argue for obedience to orders and the use of hierarchy, rules and sanctions to constrain the discretion of public officials (Harmon, 1995). Those who oppose the strong rationalist view, on the other hand, argue that good governance is guided by personal and professional values and achieved through moderate control mechanisms. A well-established argument is that the increasingly complex problems experienced in the public sector require technical competence and knowledge gained from the ‘professions of public administration’, and that individual performance is best judged by other professionals (Dunn, 2003).

Accountability for responsible behaviour is therefore achieved through profession and by empowering individuals in terms of allowing discretion while, at the same, accepting that some level of formal control is needed. This view is similar to the type of accountability fostered in the nursing and medical professions, and typically reflected in debates about whether uncertainty in clinical decision-making should be managed using professional judgement or decision-support systems (for example see Dowie & Elstein, 1988, and Thompson & Dowding, 2001).

This complex web of accountabilities, and the difficulty in establishing the 'right way' to exercise responsibility, suggests that formal rules alone may not generate greater accountability and desired practice. The study organisations acknowledged this, and encouraged discretionary behaviour to compensate for weaknesses that they identified with early warning systems. However, the notion of discretion raises a different set of problems. As Roberts (1996) has argued, inner codes of responsibility may be based on local customs that are inappropriate and outdated, and tainted by schisms and conflicts within working communities. Further, it is difficult to provide guidance on how to exercise discretion appropriately, and individuals may have very different views about their obligations and moral agency. Therefore, the question arises as to whether we should draw the conclusion that any efforts to achieve greater accountability for responsible behaviour in organisations, whether by formal rules or granting discretionary powers, are doomed to fail.

On the contrary, Roberts (1996) has argued that accountability can be operationalised by endorsing a combination of hierarchical and horizontal accountability, and by encouraging dialogue. While hierarchical accountability can be effective in enforcing rule compliance, which is needed in organisations, horizontal accountability is required to facilitate shared decision-making and to avoid the individualising effects of hierarchical accountability. On the other hand, poor teamwork may hinder a sense of accountability in lateral working relationships. One way to alleviate these problems is to use dialogue (Harmon, 1995; Roberts, 2002) as a mechanism of accountability. I understand dialogue as communication which is structured so that all parties can contribute, even though not necessarily on equal terms, to decision-making. The purpose of dialogue is to work towards mutual understanding and create trust among

those who participate in an accountability relationship (Roberts, 2002). If the dialogue is successful, the participants engage in a process of public reasoning to overcome the conflict and to reach an agreement (Roberts, 2002). This process may reinforce the traditional, hierarchical forms of accountability by making them more inclusive. It may also create opportunities to address issues that obstruct risk management within teams.

A need for dialogue was raised by a senior nurse (p. 244) when I discussed the reluctance of staff nurses to change the frequency of observations. This senior nurse emphasised that it was important that staff saw it as their responsibility to prompt appropriate and timely decision-making. Therefore, if nurses felt unsure or uncomfortable about changing the frequency, they could exercise responsibility by raising this issue, liaising with other members of the team including senior nurses and medical staff, and by recording the decisions made by the team. This finding demonstrates that staff can exercise responsibility by showing initiative, and that responsible behaviour can be defined as an aptitude for mutual and shared decision-making. I suggest that accountability mechanisms may function better if opportunities for dialogue are formally recognised and built into the system.

Based on my analysis I have identified a number of areas where the opportunities for dialogue could be improved:

- Early warning systems facilitated communication when signs of patient deterioration were detected. However, the systems were less effective in generating dialogue in ‘non-urgent situations’, i.e. outside the EWS rapid alerts and the call-outs. The routine bedside observations offered an opportunity for staff to establish how these systems were best applied to each patient, thus avoiding rushed decision-

making and inappropriate responses in emergency situations. Two topics and two sites emerged as highly relevant: frequency of observations and exclusion rules; and nurses' handovers and the ward rounds.

- Although nurses were expected to mention alert scores and signs of deterioration in their handovers, I rarely observed discussions about the frequency of observations for each patient. Including discussion about frequency and whether this needed revising might have prompted shared decision-making, and supported those who were reluctant to make such decisions. Nursing handovers offered a good opportunity for dialogue because team structures were less hierarchical compared to those including members of the medical teams.
- Medical staff routinely checked the OBS charts during the ward rounds to see whether patients were making progress with their treatment. However, at these times, nurses and doctors rarely discussed the frequency of observations, whether a full set of observations was needed, and whether any exceptions were to be made in terms of the call-out cascade. This could involve either excluding the patient from the alert system, or raising the threshold for EWS rapid alerts. Including these topics in team discussion could have created better understanding of exclusion rules, a method for formalising such decisions, and an opportunity to seek reassurance or raise problematic issues. However, even if dialogue were to be encouraged, staff nurses may still lack the confidence to engage medical staff in discussions. Therefore efforts to introduce regular items to ward rounds should be endorsed and led by the senior nurses.
- It appeared that ward-based training (as opposed to general training sessions for all adult wards) may have been more appropriate for generating learning where staff could ask detailed questions that related specifically to their own ward environment.

The implementation of early warning systems was influenced by the patient profile and the risk work on the wards. Therefore it might have been useful to create opportunities for trainers and staff to discuss the complexities of risk assessment, and set rules for adjustments and exclusions. Further, unless ward doctors attend these sessions, it would be difficult to address issues that relate to the call-out cascade and response to calls for medical assistance. The training session targeted only nursing staff, and new trainee doctors were told about early warning systems in their induction.

- The audits of early warning systems concentrated on key compliance, which involved checking that all items on the OBS charts were completed and the score calculated on each occasion. Auditors could also check how staff had responded to EWS rapid alerts by examining the medical and nursing notes. While key compliance is a good basic measure, audits could have incorporated other measures, such as the frequency of bedside observations and whether they had been revised appropriately. Further, immediate feedback on the results of the audits appeared to prompt positive results. Therefore the auditing could be combined with training activities, again involving questions and dialogue.

11.5 Reflections on methods

In the section that follows I contemplate the limitations and strengths of my empirical study. I discuss the qualitative design and methods of data collection, and the ethical challenges of ethnographic research on medical wards.

11.5.1 Data collection methods

The chosen qualitative design was decided by the research team prior to the commencement of my PhD studies. Therefore it was not possible to weigh different design options or opt for quantitative methodology. Ethnography offered a combination of data collection methods - interviewing and participant observation - which together proved crucial to understanding how early warning systems were used in the ward environment.

Interviewing was highly valuable because it allowed exploration of staff perceptions of risk and the more subtle aspects of discretionary behaviour. The staff interviews embodied a rich narrative that was difficult to capture through participant observation and notetaking in a hectic ward environment. Furthermore, discussing early warning systems in confidential one-to-one interviews provided an opportunity to include sensitive topics - such as past incidents and problems, or situations that related to end-of-life care and resuscitation status - which may have been inappropriate to discuss in the ward areas.

Participant observation proved valuable for two main reasons. First, it provided a method of identifying key informants and recruiting medical and nursing staff for interviews. Second, early warning systems became understandable and meaningful only after observing the monitoring process, patient profile, and the nature of work on medical wards. As a non-clinical researcher my ability to record and interpret medical and nursing information was limited. However, I could not ignore the clinical details since much of the work on the wards, and thus interactions, concerned patients' conditions and progress. During the gathering and writing up of ethnographic data I

began to detect themes that turned into short stories of patients whose illness ‘trajectories’, or pathways, resembled each other. In each story I recorded a trajectory, a sequence of events involving care provision and interactions, which lasted a couple or more days during the week I carried out fieldwork. They usually consisted of snapshots of information and observations from ward rounds, handovers and informal discussions with staff, and offered only a partial view of a patient’s stay on the ward.

Recording even partial illness trajectories allowed me to follow how staff including nurses, doctors, physiotherapists, specialist cancer and respiratory nurses, and social workers worked towards the assessment, treatment and discharge of patients. The purpose of these stories was to record the nature of care provision on the study wards, and the risks and uncertainties staff managed in their day-to-day work. There is much to be gained from these short illness trajectories because they describe mundane representations of risks that are likely to influence how staff respond to formal risk assessment tools such as early warning systems. For example, standard risk assessment tools may be adjusted in everyday use to take into account the patient’s age or chronic illness. Patients’ illness trajectories can therefore explain the factors and circumstances that influence application of knowledge in clinical practice. I also observed how staff carried out the routine monitoring of vital signs and the ways in which the signs of deterioration were followed up, but even these ‘EWS stories’ began to grow into short stories of illness and care which added meaning to the description of the use of early warning systems.

Because the fieldwork lasted only one week in each site and was very hectic, simultaneous analysis and theoretical sampling were not considered to be feasible. I felt

that emerging themes and topics could be site-specific, and altering the recruitment strategy and the topic guide might not work when moving from one hospital site to another. Overall I tried to cover all the topics in the guide, but the focus and depth of the interviews varied. I knew many of my study participants from Phase 1 fieldwork and was keen to (re)interview those whom I saw as ‘key informants’. Because I was able to return to the field, I felt that I was a ‘traveller on a journey’ (Sherman Heyl, 2007, pp. 370-371) with my study participants. However, I was not able to co-construct knowledge by repeatedly returning to my informants as is typical of the process of ethnographic interviewing.

11.5.2 Research ethics and the vulnerability of patients

In conducting my empirical study, the biggest ethical challenge I experienced was the vulnerability of frail older patients on the study wards. The main implications for my study were two-fold: how to deal with informed consent and evidence of substandard care. I found these issues particularly difficult because older people may suffer from cognitive and sensory impairment that limit their ability to express individual needs and preferences.

Based on my observations it appeared that most of the patients on the study wards were elderly. This is consistent with Hospital Episode Statistics (HES) which show that the majority of admitted patients in General Medicine are 60 years of age or older (HES, 2009). Decreased well-being among older people is often associated with ‘frailty’ which can be understood as functional decline with indications of poor physical health and co-morbidity; disability; vulnerability or lack of strength and resilience; poor mental health functioning including cognitive impairment or depression; dependence on others for

activities of daily living; and old age (Markle-Reid & Browne, 2003). Decreased well-being in old age is also caused by physiological changes that alter the way the body responds to drugs and other therapies. Confusion is one of the key indicators of frailty and studies have, for example, found that patients who suffer from dementia are at an increased risk of falls (Buchner & Larson, 1987; Myers, Baker, Van Natta, Abbey, & Robinson, 1991). Not surprisingly, research suggests that older people are disproportionately affected by adverse events in hospitals (Brennan et al., 1991; Davis et al., 2001; Forster et al., 2004; Thomas & Brennan, 2000; Vincent et al., 2004).

As discussed earlier (Section 5.7.2) all patients were briefed about the study, and the consent for carrying out participant observation by a patient's bedside was typically obtained verbally by a member staff. I followed a basic rule that if a patient declined the request, I would not record any aspects of care provision that involved this patient. However, many of the older patients in the study areas suffered from acute or chronic confusion, and it was therefore difficult to establish whether all patients were able to understand the purpose of the study and the role of the researcher. This raised the question of how to draw a line between observations that are necessary for studying patient safety, and observations that may compromise the privacy of patients who lack the capacity to consent.

This issue was discussed with my supervisory team, and it was agreed that excluding observations that involved staff caring for potentially confused patients would be inappropriate in a study that examined patient safety on wards that care primarily for older people. The research governance approvals allowed me to carry out ethnographic observations, but these approvals did not remove the possibility of ethical conflict

because staff and patients could not object to my presence on the ward. To me this was a complex issue because my ethnographic observations of ward activities recorded events that, even though anonymised, related to the care of individual patients. On the other hand, I strongly felt that observation of ward activities, including the use of early warning systems, was not meaningful unless I also observed the patient profile.

I sought to address this dilemma by recording trajectories of illness and care which were highly representative of what I observed on the wards. Thus a description of one patient's illness was very similar to many others. My 'storylines' were concerned with the process of care and events that told about the difficulties of risk assessment and management. I was selective in what to include in my field diary and, when I analysed and reported my ethnographic field data, I reflected upon each illness story and my recall of data collection to identify any cases and details that I considered should not be disclosed. Ethnographic observations can generate sensitive material that may need to be edited to protect the privacy and dignity of study participants even when the data are anonymised. Such reflection should continue as long as the researcher is in contact with his/her field notes.

A different ethical problem emerged when I observed situations where the quality of care could be perceived as substandard. This concerned patients of all ages, but was particularly important in relation to frail older people who were not able to object and complain. In Section 10.4 I briefly discussed such situations, including an incident where staff did not immediately respond to calls from a frail older patient who was assumed to be close to death. None of the incidents appeared to have put patients at risk of physical harm, but they nevertheless raised the question of the ethnographer's role

and responsibilities as a researcher and as an individual. During the fieldwork I became 'sensitised' to risk, and my general approach to this issue was to mention to staff if I noticed that a patient may have needed help. This could be done by raising a question, e.g. 'have you noticed that...', and I believe that this is the most appropriate way for an ethnographer to intervene. On the single occasion when I questioned a member of staff about her conduct, her initially friendly behaviour became reserved and I felt that, after this, the nursing staff became more conscious about my presence and fieldwork. Therefore efforts to impose my own value judgments had an immediate negative impact on my field relations.

11.6 Concluding remarks

This final section will discuss the key conclusions, limits of the study and recommendations for future research.

11.6.1 Conclusions

In my study I have approached early warning systems as procedural standards that seek accountability for a certain type of conduct in the detection and management of clinical risk. Even though the review of background literature suggested that the underlying motivation is to prevent harm to patients, my analysis and findings suggest that it is important to distinguish between clinical risk, such as patient deterioration, and the uncertainties associated with appropriate management of that risk. While the functioning of standards such as early warning systems is typically assessed by detecting changes in knowledge-transfer, compliance and clinical outcomes, this thesis argues that it may also be useful to examine how successful these tools are in helping staff and organisations to cope with uncertainties of risk management. My conclusion

was that the uncertainties concerned staff capacity to detect signs of deterioration, the frequency of vital sign monitoring, exclusion rules, and the ability to obtain assistance and medical intervention when needed. Teamwork is a fundamental component of risk management, and therefore it is important to examine the capacity of early warning systems to address uncertainties that relate to individual concerns about one's own, and others', performance. It is the uncertainty of collective work, rather than clinical risk itself, that brings actors and accountability forums together.

I suggest that problems occurred where early warning systems failed to manage this uncertainty. Firstly, the systems may fail to measure and quantify risk reliably, thus increasing reliance on alternative (e.g. holistic) methods of risk management. This I described as moving along the risk-uncertainty continuum (Section 11.4.1). Secondly, increased demands to explain and justify one's own conduct with respect to formal rules may create stress and dysfunctional behaviour (Section 11.4.2). Therefore, instead of supporting competence with risk management, early warning systems may generate uncertainty by making individuals unsure about the acceptability and adequacy of their own conduct. Thirdly, focus on one's own conduct (Section 11.4.2) and the negative conditions of teamwork (Section 11.4.3) may affect responsiveness to management of uncertainty within teams. From a managerial perspective, the above problems may lead to hidden practices that escape the structures and mechanisms introduced to achieve accountability for set standards, thus reducing the transparency of practice and creating uncertainty regarding the conduct of staff.

Dialogue (Section 11.4.4) can be seen as an effort to alleviate these uncertainties.

Overall, dialogue offers an opportunity to gain relevant information, to negotiate

different interpretations of risk, and to seek reassurance. The examples I gave regarding situations where dialogue could be improved focused on the mundane, routine aspects of vital sign monitoring. I suggest that dialogue and mutual accountability for the day-to-day management of early warning systems, such as specifying the frequencies and exclusion rules, are important in building confidence that risk is being managed appropriately. Routine bedside observations, which may be regarded as tedious to conduct, may enable organisations and their staff to prevent and prepare for emergency situations, and reduce the fear of being implicated in poor management of risk. It could be argued that the regulatory focus on the alert system may have overshadowed an equally important issue relating to the daily management of early warning systems within teams. Managing the mundane can help practitioners, trainers and managers to control uncertainty, or '*fight it back*' (Bauman, 2006), as it may be difficult to manage all aspects of clinical uncertainty.

11.6.2 Limits of the study and recommendations for future research

Two important new lines of inquiry emerge from this PhD thesis, which demonstrate the limits of the study and suggest scope for further exploration of the data used in this thesis and also additional investigation in further research projects.

Firstly, the question arises as to whether sociological studies of risk management in the health service could contribute to the development of better risk management tools. I suggest that efforts to improve risk management in healthcare organisations could be taken forward in the future by examining accountability expectations in relation to the uncertainties of clinical practice. This is particularly useful in situations where decision-support systems, such as early warning systems, fail to function reliably. The developers

of these systems may perceive individuals as highly rational decision-makers who base their assessment of risk on physiological and clinical risk factors. However, we can achieve a better understanding of alternative approaches to risk work by acknowledging that practitioners do not become mere functionaries of standardised systems, and by examining the contestation, fears and dysfunctional behaviour caused by uncertainties of risk management. Interest in the analysis of uncertainty has already been expressed in studies of governmentality, as is shown in the works of Pat O'Malley (2006; 2008). Further analytical considerations include how different conceptions of risk and its management can be arbitrated if organisational tools and strategies cannot produce reasonable consensus, a topic which has been addressed in the systems theory approach to risk and especially in the works of Niklas Luhmann (Zinn, 2006). Understanding the difficult, seemingly even irrational, aspects of risk work may facilitate the successful development and implementation of decision-support systems. Further, analysing accountability for the management of uncertainty could broaden the perspective to incorporate managerial responsibilities, such as accountability for audits and training, which have an impact on how risk is managed collectively in organisations.

Secondly, practitioners' ability to move along the risk-uncertainty 'continuum' should be examined in the context of sociological theory regarding the progression and nature of contemporary administrative systems of healthcare. This includes the competitive relationship between scientific and practical knowledge in medicine since the Age of Enlightenment, as described in 'The Birth of the Clinic' by Foucault (1994), and how scientific medicine and the process of institutionalisation have been harnessed to promote professional dominance in areas of specialist knowledge. The double-edged sword of specialist knowledge is examined in the works of Eliot Freidson who argued

that expertise can be used both as '*a mode of advancing the public interest*' and '*a mask for power and privilege*' (Freidson as cited in Bosk, 2006, p. 644). Perspectives equally worthy of note have been provided by authors such as David Armstrong (1995) who describes changes in administrative systems as a move from '*bedside medicine*' provided in the patient's home, to biomedical '*hospital medicine*' and more recently to '*surveillance medicine*' based on the surveillance of normal populations (p. 393). Alongside these changes the healthcare practitioners', organisations' and regulators' focus appears to have shifted from individual patients and their illnesses to risks associated with illness management.

Consideration of risk and uncertainty, within the larger context of healthcare governance and organisation as set out above, could be used to further explore the key themes and topics examined in this thesis.

Appendix 5.1a An example of OBS chart

| KEY | | 0 - 1 : Routine Observation 2 - 3 : Inform Nurse in Charge and hourly observation 4 or new red risk : See flow chart overleaf and monitor patient | | NAME: |
|-----------------------------|---------|---|--|-------|
| ASU: | | DATE: | | |
| | | TIME: | | |
| RESP. RATE | 36+ | | | |
| | 31 - 35 | | | |
| | 21 - 30 | | | |
| | 9 - 20 | | | |
| | < 8 | | | |
| SpO ₂ | 93+ | | | |
| | 90 - 92 | | | |
| | 85 - 89 | | | |
| | < 85 | | | |
| Inspired O ₂ | 5% | | | |
| TEMP | 39° | | | |
| | 38° | | | |
| | 37° | | | |
| | 36° | | | |
| | 35° | | | |
| | 34° | | | |
| | 210 | | | |
| BLOOD PRESSURE | 200 | | | |
| | 190 | | | |
| | 180 | | | |
| | 170 | | | |
| | 160 | | | |
| | 150 | | | |
| | 140 | | | |
| | 130 | | | |
| | 120 | | | |
| | 110 | | | |
| | 100 | | | |
| | 90 | | | |
| | 80 | | | |
| | 70 | | | |
| | 60 | | | |
| 50 | | | | |
| HEART RATE | > 170 | | | |
| | 160 | | | |
| | 150 | | | |
| | 140 | | | |
| | 130 | | | |
| | 120 | | | |
| | 110 | | | |
| | 100 | | | |
| | 90 | | | |
| | 80 | | | |
| | 70 | | | |
| | 60 | | | |
| 50 | | | | |
| 40 | | | | |
| 30 | | | | |
| NEURO RESPONSE | Aer | | | |
| | Verbal | | | |
| | Pain | | | |
| | Unresp | | | |
| UO < 30mls/hr (3hrs-) | | | | |
| SCORE (with all obs) | | | | |
| BM | | | | |
| PAIN (see chart on back) | 3 | | | |
| | 2 | | | |
| | 1 | | | |
| | 0 | | | |
| Nausea Score (0-3) | | | | |

Appendix 5.1b An example of call-out cascade

- 1 • If vital signs in yellow repeat observations and compare with the patients normal observations.**
- 2 • If vital signs in red or 2 yellows please bleep outreach nurse stating you have identified a 'patient at risk'.**
- 3 • If the outreach nurse is not available or on duty please contact the house officer.**
- 4 • If the outreach nurse or Doctor is unable to attend after 30 minutes bleep 700 - Anaesthetist on call.**
- 5 • At night please inform the matron.**

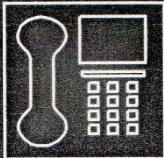

Appendix 5.2 Examples of Situation-Background-Assessment-Recommendation (SBAR) tools

As part of an observation chart:

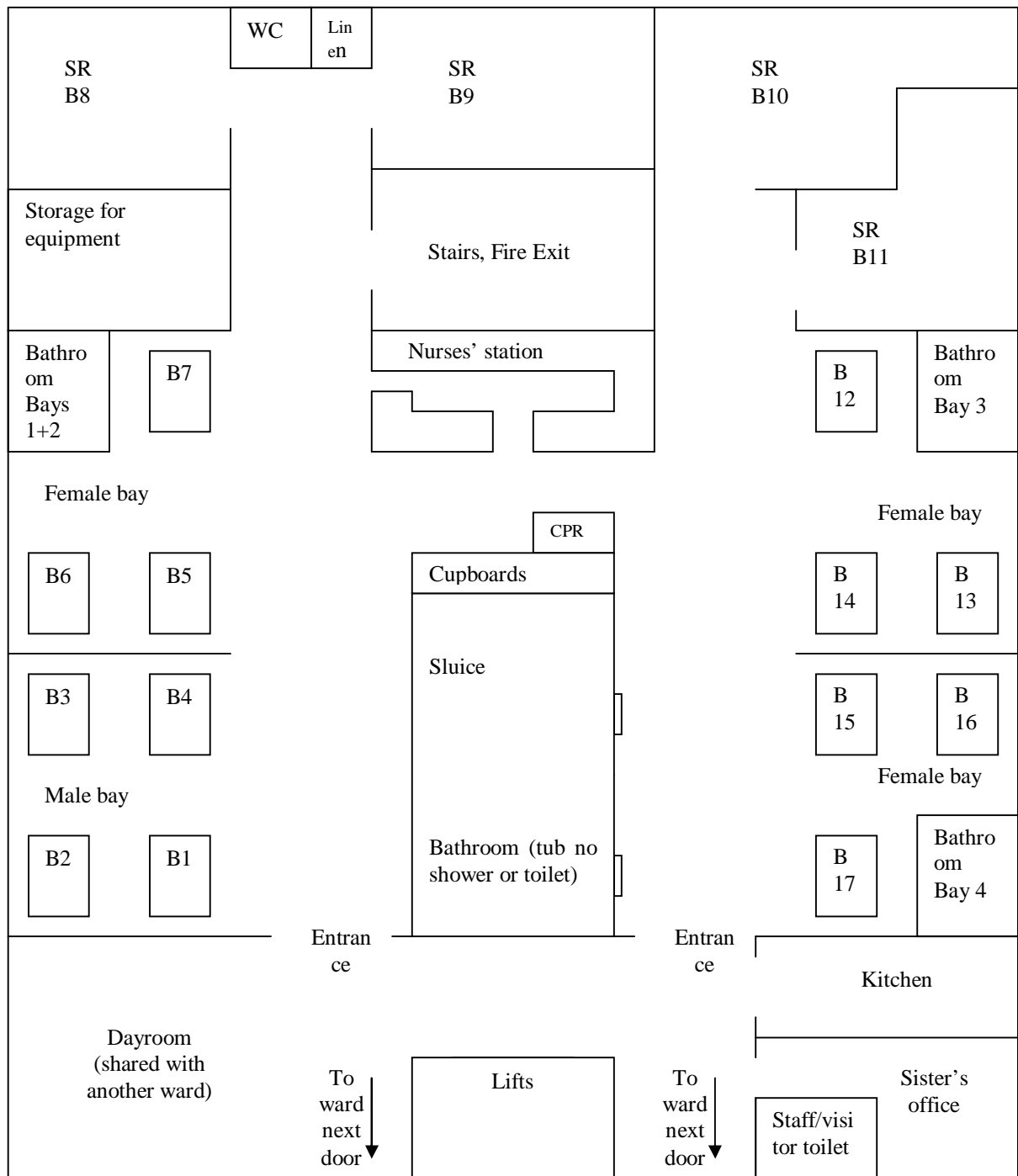
| SBAR Reporting | | | |
|--|---|---|--|
| Before Calling: <ol style="list-style-type: none"> 1. Assess the Patient 2. Review the chart for appropriate Doctor to call 3. Know the admitting Diagnosis 4. Read the most recent progress report and the assessment from the prior shift 5. Have available when speaking to the Doctor: Obs Chart, Fluid Balance chart, Allergies, Drug Kardex, labs/results, Code Status | | | |
| S | B | A | R |
| Situation : <ul style="list-style-type: none"> > State name and Ward. > The problem is..... > I have assessed the patient, vital signs are.... > I am concerned about... | Background : <ul style="list-style-type: none"> > Date of admission and diagnosis. > The patient's mental state is..... > The skin is..... > The patient is on Oxygen or not | Assessment : <ul style="list-style-type: none"> > This is what I think the problem is..... > The patient is deteriorating > The patient is getting worse and we need to do something | Recommendation: <ul style="list-style-type: none"> > I suggest/request that you..... > Are there any tests needed? > Is there anything else we can do? > When will I call you again |

Appendix 5.2 Examples of Situation-Background-Assessment-Recommendation (SBAR) tools



As a generic guideline to be kept by the phone:

|  SBAR REPORTING ATTENTION ALL TEAM MEMBERS  | |
|---|---|
| <p>For good communication about patients between all health professionals use the SBAR tool</p> <p>Before calling:</p> <ul style="list-style-type: none"> 1 Assess the patient 2 Know the admitting diagnosis 3 Read the most recent progress notes and the assessment from the prior shift 4 Have appropriate documents available e.g. Nursing and Medical Records, EWS chart, Drug Kardex, Allergies, IV fluids, resuscitation status | |
| <p>/ For an acute event use the SBAR acute incident report form /</p> | |
| S ITUATION | State your name and unit I am calling about <u>patient's name</u> The reason I am calling is: |
| B ACKGROUND | State the admission diagnosis and date of admission Relevant medical history A brief summary of treatment to date |
| A SSessment | State your assessment of patient eg vital signs, EWS score, mental state, mobility |
| R ECOMMENDATION | I would like <u>(state what you would like to see done)</u> Determine timescale Is there is anything else I should do? Record name and contact number of contact |
| <p>DON'T FORGET TO DOCUMENT THE CALL</p> | |

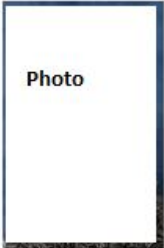
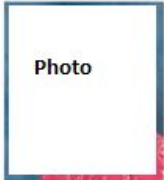
Appendix 5.3 An example of ward layout



Appendix 5.4a Patient information sheet

| | |
|--|--|
| <p>Patient information sheet</p> <p>Version 8 16 March 2006 Page 1</p> | <h1>An evaluation of a patient safety initiative on hospital wards: Information for patients</h1> |
| <p>UNIVERSITY OF BIRMINGHAM</p> | <p>Background A study is currently taking place on the ward you have been admitted to. This study is trying to look at the effects of a programme (the <i>Safer Patients Initiative</i>) to improve patient safety in hospitals.</p> |
|  | <p>The study involves researchers watching life on the ward for a week. The researchers would be sitting around observing what happens. A researcher may sometimes wish to be present when staff are looking after you. You do not have to let the researcher observe. The researcher will ask if you mind her being there. If you do, just say so – it's no problem.</p> |
|  | <p><u>We would be grateful if you would take time to read this information sheet.</u></p> |
| <p>A study:</p> <ul style="list-style-type: none">• To look at the effects of a patient safety programme• Researchers will be on the ward for about a week | <p>What does the study involve? The study involves observing life on the ward for about a week. The observations are being undertaken by researchers who are not involved in patient care. They have had police checks to ensure that they have no convictions.</p> <p>If you are approached by researchers they will introduce themselves, explain who they are, and ask your permission before doing any observations. You do not have to agree to be observed – please just tell the researcher. You do not have to give a reason. If you wish to withdraw part way through being observed that is no problem either – again, please just tell the researcher.</p> |
| | <p>Confidentiality <u>No names will be recorded either of staff or patients.</u> No recording equipment of any kind will be used on the wards – the researchers will have notebooks only.</p> <p>The researcher will be respectful of patient and staff privacy and will take care not to be intrusive. The researcher will withdraw at any time at the request of staff or patients, or if they sense any discomfort.</p> |
| | <p>Risks of taking part We do not anticipate any medical harm as a result of participating in this project. There might be some discomfort at being observed. If this occurs the researchers will withdraw.</p> |

Appendix 5.4a Patient information sheet (continued)

| Patient information sheet Version 8 16 March 2006 Page 2 | Benefits of taking part This study will help us to identify how practices in relation to patient safety might be improved. |
|--|--|
|  <p>Photo</p> | For further information Please ask any member of the team if there is anything that is not clear or you would like more information or discussion. The researchers who will be on the ward include Anu Suokas (a PhD student) and Emma Pitchforth (a lecturer in Social Science and Health) - please feel free to contact either of them. The findings will be published as a report to the Health Foundation, in professional journals and on the project web site, as well as being disseminated more widely. It is hoped that the findings will inform practice, policy, legislation and regulation in this area. We will be happy to provide you with a copy of the study findings if you would like this. Please contact any of us for a copy. |
|  <p>Photo</p> | What if you have any concerns? If you have any concerns or other questions about this study or the way it has been carried out, you should contact any of the investigators listed below or the hospital trust complaints department. |
| <hr/> <p><i>We will 'hang out' on wards conducting observations and informal chats with staff.</i></p> <hr/> | Study team <i>Please feel free to contact any of us</i> |
| | Contact details |

Appendix 5.4b Staff information sheet

| |
|--|
| <p>Staff information sheet</p> <p>Version 8 16 March 2006 Page 1</p> |
| <p>UNIVERSITY OF BIRMINGHAM</p> |
|  |
|  |
| <p>A study:</p> <ul style="list-style-type: none">• To describe and assess the effects of the <i>Safer Patients Initiative</i> and to explain why it has worked the way it has• Using observations and interviews |

An evaluation of a patient safety initiative on hospital wards: Information for staff

Background

The Health Foundation, a charity with an interest in improving safety in healthcare, has launched a *Safer Patients Initiative*. This is being run by the Institute of Health Improvement in four trusts in the UK, including the one you work in.

Researchers from the Universities of Birmingham, Leicester and the School of Pharmacy are responsible for the evaluation of the *Safer Patients Initiative*. We aim to describe and assess the effects of the *Safer Patients Initiative* and to explain why it has worked the way it has. As part of the evaluation we wish to observe and talk to staff on hospital wards so that we can understand whether the initiative has affected practice and understand staff views. We aim to include one hospital ward in each of the four trusts involved in the *Safer Patients Initiative* in our evaluation.

We would like to carry out observations on your ward, which would involve watching staff (including you) as they work. We would also be interested in hearing your views in an interview. We wish to interview hospital managers and health professionals, including doctors, nurses and hospital pharmacists, of all grades.

We would be grateful if you would take time to read this information sheet.

What does the study involve?

The study involves observations and interviews of staff who are involved in caring for acutely ill patients on a hospital ward. The observations would be undertaken by researchers. This is *not* an audit and we are not interested in assessing the performance of either the ward or members of staff; we are concerned only with an evaluation of the *Safer Patients Initiative*.

We plan to visit the ward three times over the course of three years, and plan to stay for around a week each time. While we are on the ward we plan to approach staff to be interviewed about their views on patient safety. We aim to interview 10-12 people of varying professional backgrounds each time we visit.

There will be an opportunity to meet us before we start and we would be delighted to discuss any aspect of the study with you. You are also most welcome to contact us by email or telephone (details on the back of this information sheet).

Appendix 5.4b Staff information sheet (continued)

| Staff information sheet Version 8 16 March 2006 Page 2 | |
|---|---|
| <div> <p>Photo</p> </div> | <p>There is no obligation on you either to take part on the observations or the interviews. If you prefer not to take part in this study, that is no problem – please just let us know when you meet us, and we will omit you from the observations and the interviews. If you wish to withdraw from the study at any time, please just tell the researcher.</p> |
| <div> <p>Photo</p> </div> | <p>The observations A researcher will 'hang out' for a week on the ward, discreetly observing normal life on the ward. We will not interfere with your work and we will have no direct patient contact. Researchers may ask questions whilst you work and jot notes.</p> <p><u>No names will be recorded either of staff or patients.</u> The researcher will be respectful of patient and staff privacy and will take care not to be intrusive. The researcher will withdraw at any time at the request of staff or patients, or if they sense any discomfort.</p> |
| <p>_____</p> <p><i>We will 'hang out' on wards conducting observations and informal chats with staff.</i></p> <p>_____</p> | <p>The interviews If you are asked to take part in an interview we will try to find a quiet room where we can talk to you about your views on patient safety and whether the <i>Safer Patients Initiative</i> has affected any of your views or any of your practices. With your consent, the interviews will be tape-recorded and later transcribed.</p> <p>The anonymised observations and interviews will be analysed by the project team (see back page for contact details) using qualitative techniques.</p> |
| <p>_____</p> <p><i>Interviews will explore your views of the initiative and your beliefs and ideas of safety</i></p> <p>_____</p> | <p>Confidentiality Observations and interviews will be anonymised. No names will be noted. No recording equipment of any kind will be used on the wards – the researchers will have notebooks only.</p> <p>The interviews conducted away from the ward will be tape-recorded as this helps with the type of analysis we will be doing. Recordings used in interviews will be numbered (no name will be used) and any identifying names, place-names and so on used during observations or interviews will be altered when a transcript is made. In reporting quotations, details such as gender/grade of the participant and the people and the people being referred to may be altered as a further assurance of anonymity. The tapes are destroyed as soon as the tape has been transcribed and checked so that there is no record of the voice.</p> <p>There is only one exception to the assurance of confidentiality, and that is the extremely rare circumstance where it is evident that a criminal act involving deliberate infliction of harm has occurred. Observers' own professional code of conduct would require that they intervene in the unlikely event that they saw something being done in a dangerous way.</p> |

Appendix 5.4b Staff information sheet (continued)

| Staff information sheet | |
|--|--|
| Version 8 16 March 2006 Page 3 | We would emphasise that this study is not an assessment of individual performance and we will not be reporting information that could lead to individuals or wards being identified. |
| Study team <i>Please feel free to contact any of us</i> | Risks of taking part We do not anticipate any medical harm as a result of participating in this project. There might be some discomfort at being observed. If this occurs the researchers will withdraw. |
| Contact details | Benefits of taking part You might welcome the opportunity to share your views on patient safety. Your views may also identify how practices in relation to patient safety might be improved. |
| | For further information Please ask any member of the team if there is anything that is not clear or you would like more information or discussion. The researchers who will be on the ward include Anu Suokas (a PhD student) and Emma Pitchforth (a lecturer in Social Science and Health) - please feel free to contact either of them. The findings will be published as a report to the Health Foundation, in professional journals and on the project web site, as well as being disseminated more widely. It is hoped that the findings will inform practice, policy, legislation and regulation in this area. We will be happy to provide you with a copy of the study findings if you would like this. |
| | What if you have any concerns? If you have any concerns or other questions about this study or the way it has been carried out, you should contact any of the investigators (see side panel for contact details) or the hospital trust complaints department. |
| | |

Study in progress

- An evaluation of the *Safer Patients Initiative* is taking place in this hospital.
- This involves researchers observing patient care.
- It will not affect patient care or professional work in any way.
- If you are approached by researchers they will introduce themselves, explain who they are, and ask your permission before any observations.
- You do not have to agree to be observed – please just tell the researcher. You do not have to give a reason.
- Researchers will not be recording names and any information they collect will be anonymous.
- Leaflets and further information about the study are available from researchers, or contact: Project Manager's contact details

Appendix 5.6 Staff consent form

CONSENT FORM

Title of Project: Evaluation of Health Foundation's Safer Patients Initiative

Name of Researcher:

Please initial box

1. I confirm that I have read and understand the information sheet dated
(version) for the above study and have had the opportunity to ask questions.

☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time,
without giving any reason, without my medical care or legal rights being affected.

☐

4. I agree to take part in the above study.

☐

Name of Participant

Date

Signature

Name of Person taking consent
(if different from researcher)

Date

Signature

Researcher

Date

Signature

1 for participant; 1 for researcher

Appendix 5.7 Examples of situational maps

ONE PART OF A SITUATIONAL MAP: NON-HUMAN ELEMENTS/ACTANTS

Material

- Medical technologies:
 - Devices: DinaMap, infusion pumps, light box, NIV, drips etc.
 - Pharmaceuticals
 - Hygiene products, soaps, alcohol gel etc.
- Infrastructure: electricity, heating, air conditioning, water, sewerage, buildings, waste disposal etc.
- Computers, phones and fax machines, stationery
- Intranet and internet
- Forms and folders, written guidelines and protocols and policies
- Linen and towels, bedding
- Furniture and furnishings
- Whiteboard

Non-material (systems and concepts)

- Incident reporting system
- Protocols and guidelines and policies
- Infection control, barrier nursing
- Risk management systems
- People management systems
- Bed management system
- CPD
- Training structure: JHOs, SHOs, Foundation 1+2, registrars, student nurses
- Multi-disciplinary team work, teamwork arrangements
- Care pathways
- Managed care; 24hour care
- Off-duty list, rotas
- Ward rounds, wavers, handovers, regular/formal meetings
- Body of knowledge, specialty (e.g. respiratory medicine)

Appendix 5.7 Examples of situational maps (continued)

| |
|---|
| MAPPING PROCESS, ACTION AND BOUNDARIES |
|---|

Example: the case of the MRSA+ patient on the main ward

Understand the context:

- Resources: main ward + a limited number of siderooms
- Seriously ill patients must be nursed on the main ward – easier to monitor because not enough staff to provide one-on-one nursing

Identify the aspects of risk (patient&situation):

- Age, morbidity, prognosis = very unwell and unstable
- MRSA+ and bodily fluids = very infectious
- How to prioritise?

Recognise the interventions:

- Unwell and unstable: intensive input, keep on the main ward
- Cross-infection: barrier-nurse, ideally in a sideroom
- How to prioritise?
- NB: Both approaches are standard practice on the ward and well established – easier for the staff to recognise compared with new inventions such as SBAR

Choose the appropriate response:

- The staff recognised the risk and the different options and weighed them
- Negotiation, argument
- Initially the staff agreed that the main ward was the most appropriate place
- Temporal aspect: the patient was deteriorating and moving towards palliative care >>> sideroom became more acceptable

Response:

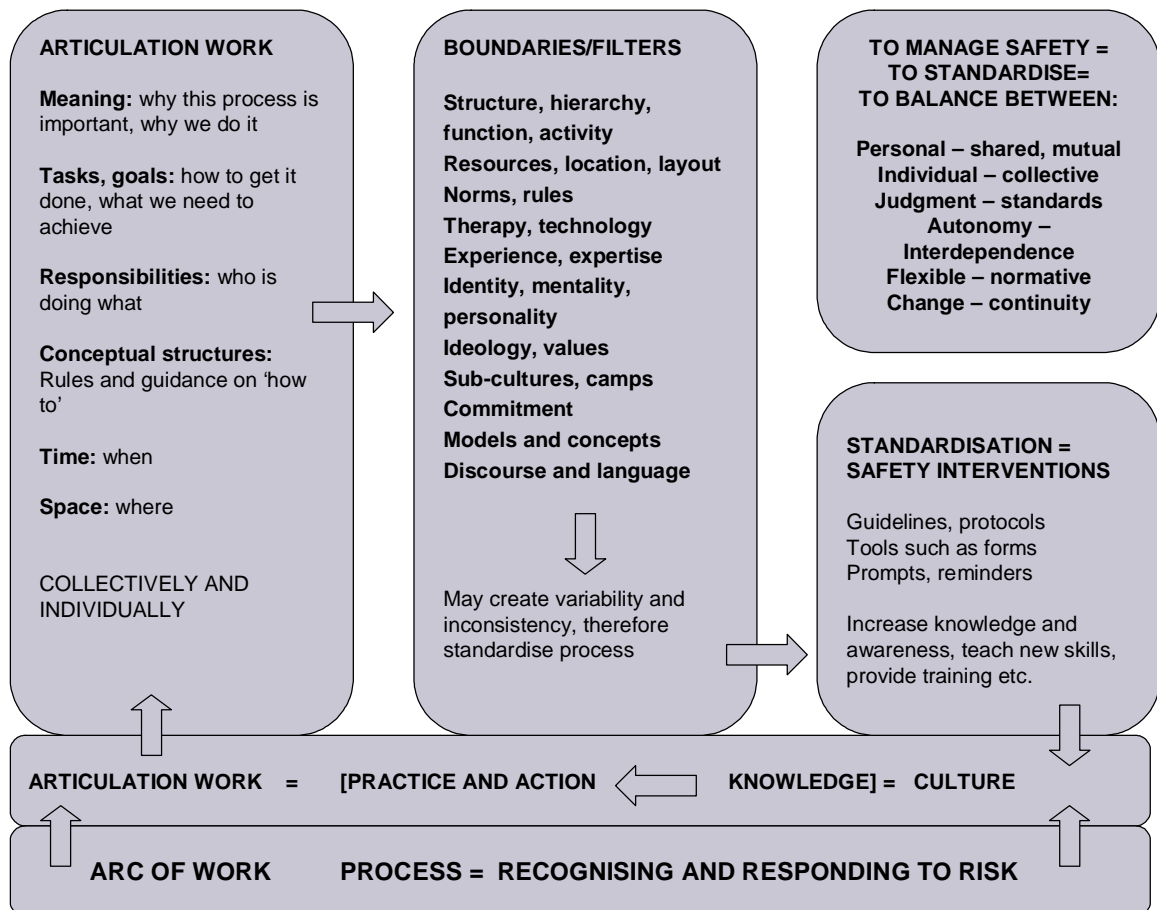
- The patient stayed on the main ward: this approach ‘won’: why?
- The doctor made the decision
- Negotiation&argument: was about risk and response but it took place across different boundaries

What boundary?

- Structures&hierarchies: medical staff higher up in the hierarchy and more independent >>> authority and power
- Models&concepts: the way the staff categorise the patients (respiratory patient – MRSA+ patient – palliative care patient – critically ill patient, NB: categories overlap), concept of barrier-nursing, concept of safe practice, concept of MDT care, concept of team work

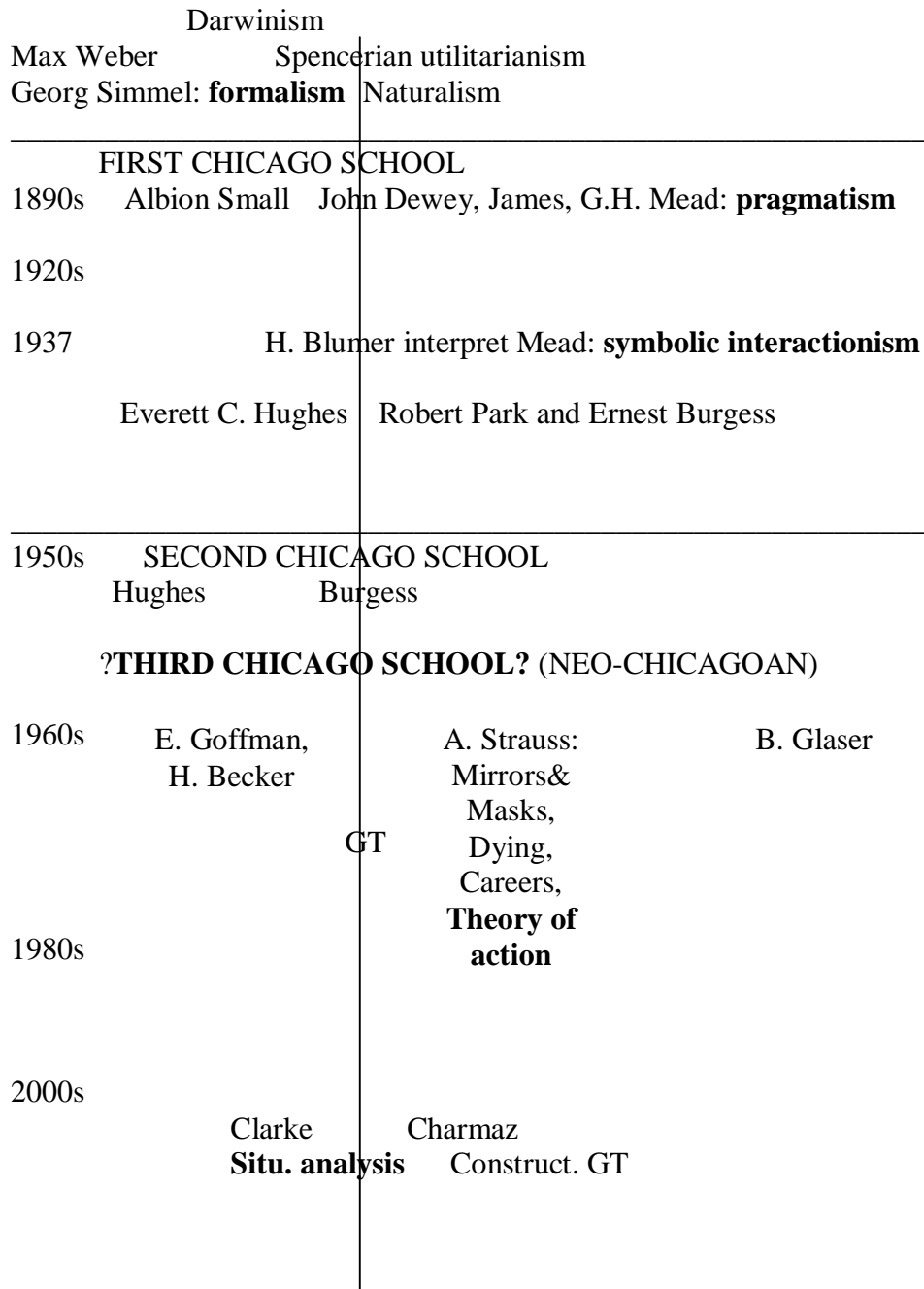
Appendix 5.7 Examples of situational maps (continued)

IDEAS FOR THE TOPIC GUIDE



Appendix 5.7 Examples of situational maps (continued)

MAPPING OF THEORY



Appendix 5.8 Topic guide for interviews

| Questions to be included in the schedule |
|--|
| <ol style="list-style-type: none"> 1. Why was EWS introduced? 2. What is EWS designed to do and what is the purpose behind it? 3. Has EWS improved the [stated purpose e.g. the monitoring of vital signs]? How, why 4. How important is EWS? 5. What kind of uses EWS may have for different staff groups? |
| <ol style="list-style-type: none"> 6. Please explain what EWS involves and explain what happens within each step? (Go through the form with the respondent) 7. Why was SBAR introduced? 8. What is SBAR designed to do and what is the purpose behind it? (Go through the protocol on paper) 9. Can you tell me what else you can do to monitor vital signs (what work practices or actions support the same aim)? 10. How was the monitoring of vital signs carried out before EWS was introduced? 11. Can you describe what the follow-up was like then? 12. How would you compare EWS and the previous system? |
| <ol style="list-style-type: none"> 13. Can you tell me about the rules and guidance on how to carry out the monitoring of vital signs? 14. Do the staff receive training on how to carry out the monitoring? 15. How would you describe the principles of good practice? 16. How well would you say the staff follow the good practice? |
| <ol style="list-style-type: none"> 17. Who decides when and how often EWS is carried out? 18. Can you influence these decisions? 19. Can staff prioritise and use their own judgement? When, how |
| <ol style="list-style-type: none"> 20. Who are responsible for the monitoring of vital signs and the follow-up? 21. What are their roles and tasks in terms of EWS? 22. Do you feel that the tasks and responsibilities match staff skills and abilities? 23. Are you satisfied with the way the staff work together when they work their way through the monitoring and follow-up? 24. Has SBAR improved the follow-up and communication? How, why? |
| <ol style="list-style-type: none"> 25. You have been using EWS for [e.g. over a year, two years] now. Have you experienced any problems or barriers during that time? 26. What about the follow-up and SBAR? |
| <ol style="list-style-type: none"> 27. Is there anything that facilitates the use of EWS or makes it easier to use? 28. EWS is part of the monitoring of vital signs. Is there anything you think could make it work (even) better as part of that process? 29. What about the follow-up and SBAR? |

Appendix 5.9 Coding framework

The themes under **‘recognition’** included:

- The purpose and importance of early warning systems
- Different uses of early warning systems: e.g. a training tool, bedside observation chart
- How staff completed the relevant charts and forms
- Setting the frequency of observations
- Use of tacit knowledge
- Interpreting vital signs in context with a patient’s condition (situatedness)

The themes under **‘response’** included:

- How staff handled EWS alerts and requests for assistance
- Early warning systems as an ‘arena’ for staff to come together and negotiate
- Empowerment

Generic themes:

- EWS training
- Audits and feedback

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