Mobile phone use in hospital care practices: boundary work, spillover and empirical ethics

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A thesis submitted in partial fulfilment of the requirements of the University of Brighton and the University of Sussex for the degree of Doctor of Medicine

April 2016
ABSTRACT

Strategic drives and policy initiatives position mobile technology – or mHealth - as a means of addressing current healthcare challenges. However, mobile phones differ from other health technologies due to their ‘ground-up’ adoption, personal ownership and multiplicity of purpose. Prevailing paradigms in mHealth research cannot account for the range of ways mobile phone use is enacted in the hospital setting and therefore cannot support the level of enquiry required to explore new possibilities for care and learning.

By adopting a ‘practice’ approach that draws focus to how mobile phone use is enacted in situ, this research reconceptualises care and phone use as sociomaterial practice, enabling the mutual shaping of mobile phones and social practices to be described. To achieve this end, the ward round was selected as a ‘case’ through which the mobile phone use of patients, clinical staff and students could be observed. Ethnographic methods of observation were combined with interviews to collect data from two different wards within the same hospital trust over a six month period in 2013. The primary research question addressed was “How are mobile phones being integrated into healthcare practices in the hospital setting?”

Findings from this research show that phones are enacted as transient members of the ward round; visible at moments, then hidden from view. They contribute to the distributed and shared nature of care, loosening the constraints of time and space that are so critical to the ward round whilst simultaneously reproducing them. As such they play an important role in boundary work and in enabling and constraining boundary ‘spillover’. Participants using mobile phones on the ward found ways to benefit from the potentialities of mobile phone use but also had to engage with the complexities of spillover, how to ‘be’ on the ward and how to use phones appropriately.

This research shows that the spaces and rhythms within which care is enacted on the ward produce ‘boundary work’ which mobile phone users learn to negotiate. Each episode of use is distinct, contingent and requires nuanced judgements that balance possibilities with safety and ethics. The thesis concludes by arguing top-down hospital safety and quality efforts are likely to struggle to address all the variables of situated practice relevant to
mHealth. Nonetheless, working with, rather than against mobile phones in care practice requires an appreciation of empirical ethics and open discussion to allow new practices to emerge whilst safeguarding the interests of all involved.
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PREFACE

This dissertation is original, unpublished, independent work by the author, Bethany Davies. The fieldwork and interviews reported in chapters 4 and 5 were covered by National Research Ethics Service (NRES) approval, reference 13/YH/0079 and the Medical School Research and Ethics Governance approval, reference 12/238/DAV.
ACKNOWLEDGEMENTS

I would firstly like to thank my supervisory team, Dr Inam Haq, Dr Mary Darking and Prof. Flis Henwood for their unflagging support from beginning to end and their belief in me and my abilities. I am especially grateful to Inam and Mary for the hours of their time, and for sending me back to the drawing board to take the analysis that bit further each time I thought I had nailed it. A wonderful and inspiring double act. I would also like to thank Flis for her kindness to a complete novice in the world of STS, and for making my brain hurt (in a good way). Additionally I am indebted to Inam and the medical school for allowing me the opportunity to undertake this research within my work as it would never have happened otherwise.

I also owe thanks to the MEU, especially Wesley for our innumerable conversations while trying to get my head around methodologies and analyses – the equivalent of the corridor-consult in bucket loads; and to the whole team for providing knowledge and moral support along the way.

I am very grateful to the hospital for their R+D support and help, and the two field sites for welcoming me in, especially the ward manager C_ for her enthusiasm and going out of her way to get me started. That was enormously helpful when I was anxious about doing fieldwork for the first time.

And finally, thank you to all those who took the small people off my hands, and gave me time, peace and cups of tea with which to finish this – my parents, my mother in law and DB especially.

Bethany Davies

April 2016
AUTHOR’S DECLARATION

I declare that the research contained in this thesis, unless otherwise formally indicated within the text, is the original work of the author. The thesis has not been previously submitted to these or any other university for a degree, and does not incorporate any material already submitted for a degree.

Bethany Davies

22nd April 2016
**DEFINITIONS**

The following table describes the various abbreviations and acronyms used throughout the thesis, including the references to interview participants and fieldwork episodes.

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<thead>
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<th>Description</th>
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<tr>
<td>app</td>
<td>Smartphone application</td>
</tr>
<tr>
<td>BNF</td>
<td>British National Formulary</td>
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<tr>
<td>ECG</td>
<td>Electrocardiogram</td>
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<tr>
<td>EPR</td>
<td>Electronic patient record</td>
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<tr>
<td>F1</td>
<td>Foundation doctor, year 1</td>
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<tr>
<td>F2</td>
<td>Foundation doctor, year 2</td>
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<tr>
<td>GMC</td>
<td>General Medical Council</td>
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<tr>
<td>HCA</td>
<td>Health care assistant</td>
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<td>ICT</td>
<td>Information and communication technology</td>
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<td>MWR</td>
<td>Medical ward round</td>
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<td>NIH</td>
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<td>NRES</td>
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<td>PACS</td>
<td>Medical imaging technology</td>
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<td>PDA</td>
<td>Personal digital assistant</td>
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<td>PIS</td>
<td>Participant information sheet</td>
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<td>MP</td>
<td>Medical patient</td>
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<td>MS</td>
<td>Medical staff member</td>
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<td>R</td>
<td>Researcher</td>
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<td>Surgical ward round</td>
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CHAPTER I: INTRODUCTION

1.0 Background

“The adoption by society of new technological devices is a relationship of mutual shaping, where technology accommodates, but also transforms existing social practices. The telephone use, like the use of other technological objects, is a constructed complex of habits, beliefs and procedures embedded in elaborate cultural codes of communication. The uses are a distribution of competences and performances between people and devices, the result of how people project their respective social worlds onto technologies and what their justifications and fears are.”

It is widely recognised that mobile phones are shaping both the provision and experience of health services as well as many other areas of social activity. However, understanding and evidencing mobile phone use presents a number of challenges. As a technological device the mobile phone constitutes a product or tool, but as part of social practice, the significance and relevance of mobile phones can take on a spectrum of meanings. The question then becomes one of how to account for and describe this spectrum.

Mobile phone use and mhealth are part of a general trend of increased technology use in health, health services and medical practice. The breadth of this trend is represented by a diverse range of innovations such as telecare and telehealth; medical devices and biomedical engineering; and health information systems such as the electronic patient record (EPR) and medical imaging technology (PACS) which have all at times formed part of government policy around achieving efficiencies in health provision. Most of these technology-enabled interventions have been driven from top-down, whether research-led or from central policy. Associated technology dissemination has thus been centrally or institutionally driven and coordinated. This contrasts with the use of mobile phones and the internet in health, which in terms of both use, and technology dissemination, have been ‘ground-up’. Although policy initiatives to support and encourage mobile phone use have become driven by national and international health organisations and given the label mHealth, uptake and usage of mobile phones by health professionals, patients and carers is harder to describe and understand.
It could be argued that the extent to which mobile phones are in use within health service contexts has surpassed the extent to which researchers have managed to capture and explore the implications they hold, and the extent to which patient communities, educational bodies, healthcare institutions and professional bodies have been able to respond to their use. There are a number of reasons why mobile phone use presents challenges to researchers seeking to fill this gap. Even within the social sciences, it has been recognised that mobile phones are worthy of study, but are ‘elusive’ to capture.\(^5\)

There are many factors contributing to this: the ground-up spread and uptake, the opacity of use where onlookers cannot tell what is being done on the device, the stochastic patterns of use, the personal nature and ownership of devices, the diversity of affordances available. This contrasts greatly with many mHealth or mobile learning studies, which focus on a single project or a single application, are institutionally supported, are themselves grounded in evidence, and usage is ‘known’ or can be described.

To be able to respond in a way that supports users and meets the reality of what is happening on the ground rather than having a disjuncture between policy and practice, requires knowing or finding out what is actually happening: the complexity of practice in its situated entirety rather than single facets of mobile phones.

These challenges hold theoretical implications for mobile phone research, as the questions that can be asked or addressed may be restricted by the theoretical lens of study. There is a need to draw on interdisciplinary research to address challenges described, both methodologically and theoretically. There are different ways of viewing or theorising technology e.g. as a tool or an ensemble.\(^6\) The medical literature shows a tendency to deal with the social and technological separately and as different spheres of knowledge. Mobiles can be understood in isolation. To an extent, individual perceptions of mobile phones and their use can be accounted for. However, the convergence of these in use – or ‘practice’ – is less known.

There is a body of research that suggests studying technology and social practice apart from one another neglects consideration of the ways they are mutually shaped. Social studies of technology, education and management research, in contrast, draw on a ‘sociomaterial practice’ perspective which best counters such tendencies.

Choosing a sociomaterial practice perspective has implications for the methodological choices to be made. Capturing practice requires capturing activity as well as cognisance, and context as well as individual parts and players. This excludes a number of approaches,
such as simulation or surveys, and provides a rationale for the growing place of case study and ethnography within studies of technology or practice. There are implications for the object of study as well. Medicine can be described as a ‘set of contingent practices and negotiations.’ Therefore, this research uses a conceptualisation of care practices, using ward rounds as a specific example to study.

1.1 Purpose of the study and research questions

The aim of this research is to explore the phenomenon of mobile phone use in healthcare practices through an examination of their routine use. It will consider how and why clinicians, students and patients are using mobile phones within the clinical setting, and how this use contributes to care practice. It aims to explore the opportunities created by mobile phones for healthcare, and contribute to our understanding of how mobile phones are being integrated into care practices in the hospital setting. The main research question is therefore:

- How are mobile phones being integrated into healthcare practice?

In order to operationalise this research question it was divided into sub-questions in order to capture the range of participants involved:

- How are mobile phones being used by clinical staff in the delivery of professional care?
- How are mobile phones being used by medical students in their practices of learning to care for patients?
- How are mobile phones being used by patients in support of self-care?

1.2 Rationale for the study design

The study design and its rationale will be described in detail in chapter 3, but a synopsis of the main research decisions are elaborated here. Firstly, this study uses a qualitative case study approach as it allows the capture of complex social phenomenon in context. Ethnographic methods were employed to explore practice in action, including action, lack of action, interaction and reaction as well as cognitive reasoning. Practice is ‘messy’ and
requires research methods that can handle the messiness. A hospital was chosen as the research site as it provides a concentrated environment of care activities and participants to enhance richness of data. Furthermore, the ward round was selected as an example of a care practice with a concentrated number of participants in one combined activity that is open and amenable to researchers. This leads on naturally to the next decision, as participants in the study reflect participants in the ward round, whether in its delivery, as a learner or experiencing it. It is also important to stress that the study set out to capture as many dimensions of mobile phones in practice as possible, rather than focusing on one aspect: a broad ‘brush stroke’ of use. This contrasts to the mHealth literature, but reflects the reality of the multiplicity of phone functionality and the simultaneous opacity of use. Additionally, as with Mazmanian’s “collective consequences of use” and Katz’s second and third order effects, it is worth exploring implications which may not be visible at an individual level.8, 9

The aim of this research design is to capture the ways in which mobile phones have been integrated into healthcare practice, with a particular focus on the part mobile phones play in care practices, and the new opportunities and responsibilities this creates.

1.3 Significance of the study

This study will contribute to the understanding of how and why mobile phones are used by clinical staff, patients and students. It will describe patterns of mobile phone use and behaviour specifically within healthcare and the hospital, and how this is perceived by different participants. It will develop examples of how mobile phones can contribute to and alter healthcare practices.

It will allow conceptualisations of mobile phones that have been developed in the non-medical literature to be explored within healthcare.

It is enacting an important change in research culture as it uses a conceptual lens empowering and giving voice to both patients and technology

It will add to the literature on participant observation in healthcare and the related issues of insider/outsider, and the ethical and practical considerations.

It will contribute to the medical education literature on professional and ethical aspects of phone use in health care, informing policy.
1.4 The structure of the thesis

This study consists of 7 chapters. Chapter 2 provides a critical review of the literature pertaining to mobile phones both in healthcare and in other disciplines, as well as the conceptual understanding of care practice upon which this study is based. Chapter 3 describes the methodological framework and methods used in data collection and data analysis. Chapter 4 reports how mobile phones were used in the ward round; chapter 5 the effects of, and the processes underpinning this use. Chapter 6 discusses the findings in the light of the literature and chapter 7 concludes with the limitations of the study and recommendations for further research.
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| Chapter 6 | Discussion |

| Chapter 7 | Conclusion |
CHAPTER II: BACKGROUND AND LITERATURE REVIEW

2.0 Purpose of the chapter

This chapter will review the literature relevant to the need for this study, and the rationale for the conceptual framework and approach that has been chosen. The first section (2.1) describes the general trends in mobile phone ownership and use that have led to the phenomenon under study. The second (2.2) describes the research within healthcare specifically; it draws on studies from the nursing and medical literatures, including medical education, health informatics and professional practice. The third section (2.3) reviews the social sciences literature regarding mobile phone use, including bodies of work on organisation and management, information and communication technology, communication science, and science and technology studies. The last section (2.4) summarises the research on taking a practice-based approach to care and technology, setting out the conceptual framework that underpins this study.

2.1 Introduction

Healthcare is rapidly changing with the introduction and implementation of a wide range of technologies, from the tangible, such as biomedical engineering and medical devices, to electronic patient records and digitally-simulated reality for teaching and learning. It is important to acknowledge the new challenges thrown up by such changes to how care is practised.10 Given the primacy of evidence-based medicine and accountability in the current era, accounts of technology in use and understandings of the implications of such use at levels locally and more broadly, individually and collectively should be sought.11 One such phenomenon has been the widespread uptake of mobile phones by the general population and specifically within the healthcare context, about which there are still great deficits in knowledge and understanding.

This uptake is shown through ownership statistics: 92% of UK adults own a mobile phone and the proportion that are Smartphones is also on the rise with an accompanying increased use of mobile data.12 Worldwide the information and communications technology (ICT) statistics reported mobile cellular subscriptions for an average 96.2 per 100 population in
2013, with penetration rates in Europe at 126.5%. This compares to 33.9% worldwide (although 82.1% in Europe) in 2005. Active mobile broadband subscriptions stood at 67.5% in Europe in 2013.13

In addition to this spread, the diverse functionalities that mobile phones offer can bring new and unexpected change to the scenarios in which they are used. According to the management literature, mobile phones are disruptive: they are a radical innovation, a “new-to-the-world product” which “disturb[s] prevailing customer habits and behaviours in a major way”.14 They drive change in professional practice and social expectations,8 and can alter patterns of work, how information is retrieved, how people communicate and mediate social relationships.15 “Always-availability” causes “boundary rearrangement” with public and private activities leaking over into previously separate arenas.16 A perceived increase in autonomy is counterbalanced by increased social and professional expectations as individual behaviour results in “shifting the norms”.8

Such changes demonstrate a number of reasons to study mobile phone use specifically in the context of clinical care. It is also pertinent to appreciate the historical context, as until 2009, the NHS did not allow the use of mobile phones within clinical areas. This was revoked in their 2009 guidance, which advised that “patients will be allowed the widest possible use of mobile phones in hospitals, including on wards.”17 Matching the general trend in mobile phone uptake, mobile phone ownership amongst clinical staff and students is now widespread. Estimates of Smartphone ownership through surveys range from 75–91%,18-20 depending on user group and increasing year on year.20, 21 Furthermore, mobile technology now is largely recognised as offering important new opportunities for organising, delivering and receiving care. There is a top-down, strategic drive for mobile technology within healthcare, for patients, staff and students:

“Innovative educational technologies, such as e-learning, simulation and smart-phones, provide unprecedented opportunities for health and social care students, trainees and staff to acquire, develop and maintain the essential knowledge, skills, values and behaviours needed for safe and effective patient care.” (The Department of Health’s framework for technology enhanced learning, 2011)22

This chapter describes how mobile phones are currently studied in health research and sets out an argument for expanding the methodological scope of such research in order to understand how and why mobile phones are used in health care practices. It explores how mobile phones feature within the healthcare literature, noting certain key areas that have
predominated such as mHealth initiatives. Within this literature I argue that the way in which research on mobile phones has been positioned and the questions on which it has focused address questions of mobile phone usage, as opposed to use. However, quantifying and apportioning types of usage to clinical groups holds different implications for understanding healthcare to understanding how mobile phones are used. For this reason, concepts that enable the study of use are discussed in more detail through a focus on social studies of mobile phones and the theories they employ which may be valuable to understanding mobile phone use in healthcare. Furthermore, the chapter discusses how understanding mobile phone use in context produces different understandings of (health) care practices that offer important insight into the phenomena of mobile phone use in health. This insight is likely to differ substantively from that generated from typical mobile health research designs that employ conventional methods for evidence generation such as randomised control trials.

### 2.2 Mobile phone use in the healthcare literature

Exploring mobile phone use within healthcare first requires a review of the healthcare literature. The primary discourse on mobile phones in health currently is that of mHealth, both within the research literature and within strategic and institutional agendas. The remit of this study is markedly different to the majority of the mHealth research, and as such, this literature needs to be explored to explain the alternative approach and perspective taken here.

#### 2.2.1 mHealth in research and policy

Firstly, what is mHealth? A useful working definition can be taken from the US Department of Health and Human Services which defines mHealth as “the use of mobile and wireless devices to improve health outcomes, healthcare services and health research”. The current challenges facing the NHS include a growth in service demand which exceeds funding, and a need to improve healthcare quality and safety, made apparent by the Francis report into the failings of the Mid-Staffordshire NHS Foundation trust. Finding innovative ways in which to deliver health services is seen by policymakers as an essential part of the solution, one arm of which may be mHealth. Positioned as able to improve access, efficiency and quality of healthcare, it is claimed mHealth may transform “when, where and how” healthcare is delivered. However, as the US National
Institutes of Health advise, research has lagged far behind the consumer demand for mHealth, with a consequent lack of the underpinning science and knowledge of the benefits, risks and impact on health outcomes. They also describe the difficulties in conducting research in this field that have been experienced, such as issues of privacy and confidentiality.

Looking to the research literature there is an abundant but heterogeneous array of studies that fall under the banner of mHealth. Finding a way to navigate through this can be challenging. The World Health Organisation (WHO) categorises mHealth in terms of interventions, such as mSurveillance, mTreatment and mDisease Management. However, the Johns Hopkins Global mHealth Initiative suggests a framework consisting of three layers for mHealth: the patient, the health care provider and the health system. With these they move beyond the standard approaches in the literature which address mHealth in terms of the device used, the format of a specific intervention (e.g. text messaging) or by individual disease e.g., diabetes or HIV. They use “building blocks” to support a more “technology neutral” way of describing mHealth solutions.

According to this framework we see mHealth research categorised in the following ways as in table 2:

**Table 2 Categories of mHealth research**

<table>
<thead>
<tr>
<th>Category</th>
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<tbody>
<tr>
<td>patients</td>
<td>behaviour change</td>
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<tr>
<td></td>
<td>client education / access to information</td>
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<tr>
<td></td>
<td>sensors / activity monitoring</td>
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<td></td>
<td>self-reported data</td>
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<tr>
<td>health providers</td>
<td>provider workplanning and scheduling</td>
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<tr>
<td></td>
<td>provider to provider communication</td>
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<tr>
<td></td>
<td>provider training and education</td>
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<tr>
<td></td>
<td>electronic clinical decision support (including protocols, checklists and algorithms)</td>
</tr>
<tr>
<td>health systems / management</td>
<td>workforce monitoring or human resource management</td>
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<tr>
<td></td>
<td>real-time data streams and financial transactions</td>
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<tr>
<td></td>
<td>supply-chain management</td>
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Behavioural interventions show mixed evidence of benefit. For example, smoking cessation may be aided by text messaging support, but reminders for daily medication adherence have small effects at best. Reviews are hampered by the quality of the trials as well as the amount of data available, the narrow scope of individual trials and their heterogeneity on a number of aspects, from the participants, the setting, the device used through to the intervention features themselves. The Cochrane reviewers urge caution due to the “significant information gaps regarding the long-term effects, acceptability, costs, and risks of such interventions.”

The health systems and management category includes interventions to improve health care processes, such as remote monitoring of staff through a mobile device, or data collection carried out remotely. It also includes those technologies that facilitate communication between health care providers and patients (often represented as ‘consumers’ in this context), such as text messaging of appointment reminders, and notifying sexual health patients of their test results. This category can also include the use of mobile phones to support clinical research aiding trials through supporting patient recruitment in the first instance, followed by: increasing opportunities for collecting data, monitoring adherence, reducing face-to-face contact time over the course of the trial, providing information to participants to make it more convenient and potentially more likely that they would adhere to protocol. This category of health management research should also include implementation issues such: as data protection and security; the challenges for scaling-up from small-scale pilot studies to large-scale programme delivery; examining the impact on providers and patients of integrating new technologies into their daily routines; the effect on required infrastructure to support new technology; and the effect on patient flow and models of care. These topics have received less attention in the literature but are of crucial importance.

These areas of study have the potential to contribute invaluable information to understanding of mobile phone ‘usage’ in specific aspects of healthcare as it occurs in relation to specific groups (i.e., concerning quantifiable data), but there remains much to be learned about the range of phone ‘use’ that occurs within a healthcare context and involving multiple groups. Much of the spread of mobile phone use to date has not been strategically or institutionally-led, which means that individuals have had to negotiate their own patterns of behaviour and practice that are contextually and socially appropriate to take advantage of the opportunities offered by mobile phones for the delivery and practice of healthcare. A description of this process and the “putting into practice” of mobile
phones is missing from the literature currently, potentially due to a technocentric bias within the mHealth literature. From this standpoint the studies focus on technology effects, and ascribe to a view of technology as “exogenous, homogeneous, predictable and stable”.

### 2.2.2 The social aspects of mHealth

An alternative approach that is taken within the medical literature focuses on human interactions with technology, and focuses on how humans understand and use technology in various circumstances. These include studies which explore the consequences of mobile phone use, and stand out from the majority of mHealth studies due to the critical stance they adopt toward the technocentric message that the mHealth literature offers. Examples of the main categories into which these fall are described below.

**Patient safety**

The first category is that of patient safety. For example, an interventional study introducing smartphones for clinical communication in acute medical teams raised concerns about junior doctors’ ability to deliver patient care as a result of the disruption brought to rounds by the phones. Likewise, a cross sectional survey found that 19% of residents believed that they had missed important information because of distraction from smartphones. Looking historically, this is similar to the literature regarding the use of pagers where issues of patient safety were highlighted with respect to interruptions brought about from pagers and phones. More concerning is the report of a near-fatally prescribing error related to smartphone use, due to the interruption afforded by an incoming text message to the smartphone upon which a medication change was to be placed. Although this is just a single report, the potential harm is so grave that it requires consideration.

**Unprofessionalism**

The second category is ‘unprofessionalism’. Examples have been described of unprofessional behaviour with smartphones, occurring both during interactions with senior staff and with patients. Wallace et al described how mobile phones “disrupt the normal patterns of medical education and patient care”, and raised “concerns over professionalism and privacy”, in their study of medical student and staff attitudes. Beyond these few reports of actual detrimental effects, are a multitude of reports of concern around misperception and unprofessional appearances. Concerns around perceptions of use and
misconstrued activity notably start to appear with handheld devices where they are absent in the EPR literature. Davies et al described how negative social feedback and perceptions of misuse had inhibited student use of handheld computers in the clinical context. Robinson et al that drawbacks of smartphones included the potential for perceptions of ‘unprofessionalism’ when used in the clinical environment. Payne et al conducted an online survey study of medical students and junior doctors in the UK, exploring self-reported uptake and application of smartphones in clinical use. One of their main themes was the negative aspects of smartphone use in the clinical environment and they concluded by specifically identifying a need for further investigation of “physician concerns regarding patients’ perceptions of mobile phone use in the clinical environment”. Their follow up research in 2014 combined interviews with survey data, and again found unprofessionalism to be a recurring theme, specifically how other clinicians and patients viewed smartphone use. This then translated directly into how and where the participants used their smartphones. However the study did not actually include the ‘others’ view i.e. the opinions of patients and senior staff. The majority of these studies are limited by their methodology, with an over-reliance on questionnaires. Nevertheless, they raise an interesting concept in perceptions of misuse as it resonates with the tensions produced by having a ‘black box’ technology in circulation with such a range of capabilities. The opacity of purpose and potential misconception provoke the need to explore the actual consequences of mobile phone use in the clinical setting for the patient experience.

Consequences for the patient experience:

This leads on to the third category of consequences, those for the patient experience. There is a scarcity of research into this field as yet regarding mobiles, but it is worth looking to previous experiences of technology within healthcare to see if any parallels may be drawn, such as electronic patient records (EPR) and handheld computers (PDAs). For example, there were concerns raised in EPR studies about the effect of its use on physician-patient interactions. The EPR became the 3rd party in the consultation. Behaviours by both physicians and patients were altered, and clinicians voiced concerns of the detrimental effect of this. In contrast patients were more concerned about pragmatic risks such as the server going down, computer hacking and who else could access their personal records, rather than effects on their clinical interaction.

Morrison et al specifically looked at the effects of EPR use within ward rounds, wanting to contrast the single user nature of EPR systems with the group activity of the ward round,
conceptually similar to this study. They used video recordings with video-based interaction analysis. However, they focused solely on the staff, and did not include patients in the recordings, interviews or analysis because they were typically unconscious or otherwise inactive due to the severity of their condition. They found that group formation and resulting nonverbal communication was an important factor in negotiating contributions and flow of the ward round, but that this was affected by the introduction of the technology. They suggested that the solution to this disruption was through awareness, finding a balance between the technology and adjusting patterns of interaction around it, rather than abandoning or altering the technology.60

Looking then at mobile technology specifically, there are some similar concerns voiced around the effects of mobile technology on face to face clinical interactions.61 As with the triadic relationship created by EPR, Alsos found that the physician’s attention was consumed by the use of a handheld computer, which accompanied by poor action transparency, inhibited patients from fully discussing issues or asking questions. This resonates with Rettie’s concept of absent presence and the discomfort associated with relative inconsequence, discussed in more detail later in this chapter.62 However, Houston et al in contrast found no such issues raised by their patients, with the majority holding positive attitudes towards the clinical use of handheld computers.63 Additionally, Patel et al described how they found patients to be supportive of their physician using technology, and more so than the healthcare workers predict. An important concept was that of caveats, such as “not abusing the privilege by playing games”.64 A key difference between the literatures is an interesting lack in the EPR data of concerns regarding misuse; either by the patients or by clinicians concerned that patients may misconstrue their activity. This seems to become an issue with handheld mobile devices alone, supporting the difficulties inherent in extrapolating directly from desktops to mobiles.

Medical education and mobile phones: learning with and learning how-to

There are a growing number of mobile phone learning and practice initiatives within medical and healthcare education being delivered at both a pre- and post-qualification level. 41, 57, 65 This is supported by a centrally driven agenda for technology enhanced learning within healthcare.22 Some are institutional initiatives such as Ellaway et al, where the medical school issued students with a laptop and an iPad or iPhone.66 Other studies describe the metrics of personal smartphone ownership and use of medical apps.18, 56 A few explore some deeper and more interesting concepts, such as the pedagogical basis for using
mobile devices, describing how mobile devices might facilitate medical student learning and teaching, learning “with” mobile phones. Fuller and Joynes describe their students accessing learning resources to fill in ‘dead time’, similar to Green’s Lazarus time, preparing for patient encounters and learning experiences made them more ‘memorable’.

Our own previous work on PDAs described the opportunistic and contextual learning that mobile devices afford, in accord with Fuller and Joynes’s findings. Student learning was enabled through learning in context, consolidation through repetition and making use of wasted time – Lazarus time again. Hardyman et al describe how, in their study, Smartphones supported independent practice, trainee discourse with seniors and the transition from student to qualified doctor. Underpinning educational concepts such as Lave and Wenger’s situated learning, and Eraut’s workplace learning are likely to be highly important in an understanding of mobile learning in the professional clinical context, but the studies to explore this are not being done. However, theories of mobile learning within educational research do describe how the appropriation of technology leads to “tensions with existing technologies and practice”. In formal educational settings, it has been shown to facilitate a shift in control from the teacher to the learners and to alter the “social rules and conventions [that] govern what is acceptable”. Wu describes how smartphones impacted on trainee education, as trainees became “more global, less local”.

In contrast to a student-centred shift in formal settings, smartphones in the clinical setting made it easier for supervisors to take over, and limited trainee autonomy. They also made teaching sessions easier to coordinate, but trainee attention within those sessions was more divided, with teaching and learning effectiveness reduced due to the interruptions facilitated by phones. Given the concerns around professionalism and misconstrued use, as well as the findings in the education literature, the call for the need to address learning ‘how to’ as well as learning ‘with’ mobile phones is slowly gaining ground. As Fenwick argues, learning is more than acquiring knowledge, it is a process of “participating more wisely in particular situations” through recognition, accommodation and improvisation, “attuning to what matters”.

The knowledge to inform and provide support for learners is not yet in place. There is a need for studies such as this to explore the implications of smartphone use in the clinical environment, and the “learning-how” in order to inform both the care institutions and the learning institutions so that appropriate support may be provided.
2.2.3 Limitations of the healthcare literature.

In the preceding sections I have reviewed the healthcare literature pertinent to mobile phones, describing the prevailing conceptualisations of mHealth and issues around patient safety, professionalism, the patient experience and learning with mobile phones. From this, it is clear that the research to date has tended to deal with mobile phones as an autonomous exogenous force. It assumes that it is a predictable and unchanging technology, unaffected by social context and human agency. It lends itself to looking for common features and deriving generalisations and predictions about impacts and outcomes. This however ignores the context-specificity and “obscures the multiple, messy, complex and dynamic aspects of technologies at work”. It makes a number of assumptions: that people have the technology, that there is a benefit, that there are not consequences that need considering. It fails to acknowledge the complexity of phone use in practice, focusing on predicted outcomes without allowing for the possibility of unpredicted ones.

The human-centred approach alternatively taken in the medical literature, referred to as the social shaping of technology also has limitations. Technology here is understood as being socially defined and produced, with priority given to human agency and social-cultural and historical contexts. This comes at the cost of underestimating the importance of the specifics of the technology and its agency.

Neither approach satisfies the complexity of technology in practice. Research needs to recognise that not only is technology “embedded in some time, place, discourse and community”, but also that the technology itself has agency and its role must be recognised. The social and the material are intertwined, inseparable and neither should be privileged at the other’s expense. Looking at other technologies in healthcare supports this, such as the work by Pols on telecare. In this we can see how technologies are not passive or predictable when introduced into healthcare, but their identity is a result of how users try to make them work, and of the new possibilities that they open up. They can “only be understood in the context of their use in particular practices […] because this is where they ultimately evolve and take their shape”. An alternative approach to address these problems is needed, and this can be achieved through a sociomaterial practice lens. This will be explored later on in this chapter. This will also allow us to open up consideration of knowledge in practice, such as Pols’ “know-now” – the knowledge that patients (and other participants in care) develop for interpreting and dealing with new situations, and Fenwick’s that learning to do medicine is “learning the art of tinkering”.

In summary; mobile phone use is expanding rapidly including in clinical care contexts, and there is a top-down strategic drive accompanying this. However, there are significant information gaps, and given the “enthusiasm” with which mHealth is being implemented, further research is required. However there are a number of challenges in filling the gap in knowledge and evidencing mobile phone use in medicine and healthcare. These arise from the intrinsic nature of mobile phones with their great diversity of affordances, their personal and one-user character, the autonomous nature of use, and the spread of use over both time and space. Difficulties also arise from the need to study healthcare in action, with the associate issues around confidentiality, privacy and safety. This lends to a need to see what more can be taken from the non-medical literature and explored within the clinical context for relevance and applicability.

2.3 Social studies of science, technology and society

Given the restricted conceptualisations of mobile phones within the health literature, it is valid to look to other fields of research to explore the area further. De Souza e Souza refers to them as the “the most pervasive technology in contemporary society”, and fields of research such as those of organisation and management studies, communications, information technology offer knowledge in terms of concepts, theoretical frameworks, methodologies that may inform the study of mobile phones in health in a way that moves beyond the current confines. For example, Orlikowski used an example of mobile communication to show how a sociomaterial approach allowed a focus on a different set of issues and influences, opening up new knowledge that would have been hidden otherwise. But regardless of their perspective and particular field of origin, a number of studies from these genres stand out as being particularly informative for the research question in hand. These are described in detail below.

2.3.1 Rhythms of use

Nicola Green drew on a three year ethnographic study using observational fieldwork and interviews to explore the relationship between mobile technologies and time. She argues that in addition to their spatial effects through supporting distanced social relationships, mobile technologies have wrought social change in aspects of time. Like Sørenson and Pica, she applied the idea of rhythms to analyse the temporal organisation effected through mobile use, describing 3 categories: rhythms of mobile use itself, of integrating mobile phone use into everyday life, and of the relation between everyday use and
institutional social change. She illustrates how “always-availability” causes “boundary rearrangement” with public and private activities blending and blurring having previously been separate. Activities become organised according to time rather than space which she showed to have both the potential for both advantage and detriment. She demonstrates how mobile phone use is embedded in “local temporalities associated with social and cultural relationships”. She refers to “Lazarus time”, time which through the use of mobile technology has become productive. She concludes that having shown the temporal changes effected by mobile technologies, the issue arises as to the consequences of these changes; and that these will be individually, socially and contextually dependent.

This holds application for healthcare as there are a number of boundaries that can be envisaged: how do participants’ personal and public lives and roles intersect in the mixing pot of the hospital ward? Equally the concept of wasted time, or Lazarus time has strong relevance for this study, as time management has already been cited as a driver for mobile phone use by clinicians; and students report that making use of wasted time is a key motivator in using mobile technology. It would be interesting too to explore the time spent waiting by patients and how mobile phones can feature within those periods. Green’s study also has important methodological aspects to draw upon, as it employs ethnographic methods to explore mobile phone use in practice, lending weight to the decisions made for this thesis.

### 2.3.2 Rhythms of interaction

Sørensen and Pica used a case study approach underpinned by sociotechnical theories and situated cognition. They explored the interactions of professionals with and through their mobile devices in varying workspaces, using operational policing as their example. They found that coupling/decoupling is required, shifting attention between the real and the virtual dependent on the unfolding situation. Activity and place are important determinants of how and which mobile devices are used, with rapid transitions occurring. They suggest “rhythms of interactions” as a way of characterising these patterns of behaviour, where rhythms are the “alternation in intensity of being busy”. Rhythms reflect “improvisation meeting routines and […] institutions meeting situations”.

This may be applicable in healthcare practice as there are patterns of coupling and uncoupling for all, with participants having to juggle the demands on their time or attention. There are rhythms to work and care on the hospital ward that vary between actors and activities, and the integration of mobile technology into these warrants
Reddy and Dourish used an ethnographic study to explore how information seeking specifically is integrated into practical everyday medical work, viewing it as an “aspect of the competent practice of hospital staff”; there are many parallels with the research question being asked here. They used the concept of rhythms, similarly to Green and Sørensen, but based on the work by Zerubavel, describing the social rhythms in a hospital. They describe large scale rhythms and finer grained ones, finding that the rhythms themselves both are a source of information and a source of conflict. Decoupling is also an interesting concept, separating the seeking from the providing of information. Rhythms of use may therefore be a useful analytical approach to how mobile phones are integrated into care practices.

This contrasts with Mazmanian et al in their study of knowledge professionals (such as investment bankers) who were continually ‘switched on’. They used an interview-based, grounded theory approach in their research examining mobile email devices and professional autonomy. Their participants describe using their devices “everywhere / all the time”, experiencing tension between their personal autonomy and their professional commitments. Patterns of individual use lead to collective consequences with a shift in the norms of how work is done and expectations.

### 2.3.3 Managing the paradoxes

The idea of consequences and conflicts leads on to work by Jarvenpaa and Lang. They conducted 33 focus groups of 222 mobile device users in four countries (Finland, Hong Kong, Japan and the USA). Their position is that the impact of mobile technology has both positive and negative features, but that these are essentially interlinked: you cannot have the good without the bad, or vice versa. Expectations conflict with reality creating “paradoxical” user experiences. Users of mobile technology vary in their purposes and goals which not only change over time, but which are heavily influenced by the technology itself and their social and cultural contexts. With use, conflicts arise due to the technology paradoxes, provoking the development of coping strategies. They identified a number of these that they classified as either avoidance or confrontative techniques. They are also context dependent, “their ability to manage conflict and cope with the technology challenge are once more influenced by situational context factors”.

The paradoxes are a useful lens for exploring the consequences of engaging with mobile technology, with engaging/disengaging particularly resonating with the questions of this
study. So too do the strategies that users develop to overcome problems that arise through
the paradoxes.
2.3.4 Social norms for using mobile phones

The idea of a shift in norms leads on to an exploration of the literature around social norms and their negotiation. Much of the literature regarding the social norms and acceptability of using mobile phones relates to communication, whether by voice conversations, text messaging or emails. Geser discusses how choosing to take calls rather than turning off the device is “offensive” disengagement; it signals the relative importance of partners within a co-local interaction. Taking a call implies that the “they are not significant enough to deserve exclusive attention” whereas “switching off the cell phone is the new way to show deference”. From Jarvenpaa’s users, “the call comes first. I am there in person… but it feels that it would have been better to call and not bother to come in person”, and from Plant: “people who are present at the time will feel abandoned by the person who has answered the mobile.”

Palen et al conducted a study of 19 first time phone users, whom they followed intensively for the first weeks after acquiring their mobile phone, with interviews and call behaviour data. As with Geser, they also found that “the user decides, consciously or otherwise, what face takes precedence … choosing to be behaviourally present in a different space from one’s physical location may be perceived as inconsiderate by those in the space.” They were specifically talking about making or taking telephone calls, but this could also apply in principle to other actions using a mobile phone, especially if not signposted by the user, as the user has chosen to distance themselves from the physical presence to the virtual one instead. This is also discussed by Rettie, who uses Goffman’s frame analysis as part of an exploration of the temporal and spatial effects of mobile phone communication. The use of mobile phones “creates absent presence in face-to-face interaction as presence is diverted to phone interaction.”

Attention is a limited resource; in choosing to take part in a phone conversation, attention is focused on that particular “framed experience, becoming engrossed”. This is then at the expense of those present in the physical frame, from whom attention has been withdrawn. This experience of neglect or relative inconsequence itself is uncomfortable, let alone the added discomfort of witnessing the switching of “face” by the phone user. This is good resource for talking about the patterns of mobile phone use in the care context. There are ‘Times’ when clinicians need to be focused, ‘engrossed’ in what is being said (either by not being interrupted by their bleeper / phone or paradoxically...
focusing on that specific phone call without distraction), as well as for patients and students.

2.3.5 Boundaries and spillover

The issue of boundaries is common to the issues described of mobile phone use within the medical literature, although they are not recognised as such. The organisation and management literature describes how individuals enact their daily life in a number of different domains, each of which holds a particular meaning and role for the individual. For example, that of doctor in the work domain, and parent in the home domain. These dimensions of everyday life are separated by boundaries, limits that may be spatial, temporal, emotional or cognitive. Ashforth described further boundaries that warrant consideration, such as work-work and work-third place. This is a useful step for considering the boundaries that may be created by the hospital ward as a social domain. This may be labelled as ‘work’ for one participant, but may be ‘being a patient’ for another.

Boundaries between roles are created and maintained through repeated socio-technical practices of individuals and collectives, so called boundary work. Boundary work determines how far domains may be integrated or segmented, as boundaries vary as to their flexibility and permeability. Individuals develop their own “personal realm configuration” which is constantly in flux, influenced by the demands and expectations on them, contextually situated. The concept of spillover is the extent to which participation in one domain impacts on participation in another. The potential for spillover is increased by the permeability afforded through mobile phones as they reconfigure time and space limitations, blurring boundaries. Wajcman et al investigated specifically how mobile phones affect the nature of boundaries between home and work. She argues that mobiles afford “considerable control” over the flow of communication, and participants can regulate how contactable they are. Spillover may be bi-directional, may be both positive and negative, and is classically described in terms of the work/family or work/home divide. For example, Wajcman et al demonstrated how mobile phones allow “intimacy at a distance”, maintaining “relationships while geographically separated”.

Exploring spillover and the varying boundaries experienced by participants within the specific setting of the ward is warranted, as is the ‘how’ they navigate boundaries and boundary crossing. Taking the idea of role boundaries, boundary work and spillover gives a language and a conceptualisation for their experiences as they integrate mobile
phones into their daily lives and practices, and the “strains and gains” that they are balancing.

In summary, the non-medical literature offers many useful perspectives and conceptualisations of mobile phones that may be applicable within healthcare (see Table 3). Managing social consequences is an important part of the care relationship; healthcare professionals and students have a duty to their patients which includes being polite and respecting their dignity, as well as to their colleagues. However, the context of the healthcare arena means that these issues may not be directly transferable. Beyond the normal social norms, ideas of duty, power, responsibility, trust and accountability unique to the doctor-patient, student-teacher, student-patient relationships have an influence on behaviour and decisions. The research approach taken must be able to take these into account, and warrants an explication of the conceptualisation of care that is embedded in this study.
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<td>Robinson et al&lt;sup&gt;56&lt;/sup&gt;</td>
<td>Medical students</td>
<td>Smartphones</td>
<td>User behaviour and perceptions</td>
<td>Questionnaire</td>
<td></td>
</tr>
</tbody>
</table>
2.4 Care practices

Reconceptualising care

Traditionally health care is “the prevention, treatment, and management of illness and the preservation of mental and physical well-being through the services offered by the medical and allied health professions.” But this definition of healthcare is simplistic, unidirectional and fails to represent the complexity of care. This is not surprising, as it is the normative description within the dominant literature, with active care givers and passive care recipients. Even a move to viewing care recipients as customers instead still neglects the work done by patients. It also fails to acknowledge the complex interweaving of interactions, between people, place and matter that healthcare is. Using the example of something as common and simple as venous cannulation, it matters which make and size of cannula is selected, which vein is chosen, whether and where the patient has been cannulated before, the ambient temperature of the ward, the skill and confidence of the practitioner, what is happening in the adjacent bed. Ascribing to the tendency to separate out facets of the situation for study as in the mHealth literature fails to capture this complexity. It also fails to recognise and explore the disruption that technology brings to care. As Pols argues in relation to telecare,

“When technologies are let out of their boxes, they may create troubles – or possibilities – that were not there before. As a consequence, the same technologies may perform in different ways in different practices. Their identity is never ‘given’ by their design alone, but is the result of practices in which users try to make the technology work, and technologies open up unexpected possibilities for acting”.

As discussed in 2.2.1, current research approaches in the medical literature are inadequate for capturing a comprehensive picture of mobile phone use in healthcare, with all its complexity and disruption. Looking to the STS literature, they achieve this by talking about care and technologies in a different way, talking about care in practice. It is this lineage that this study draws upon. This allows a move from individual project evaluations or assessments of predetermined outcomes to look at the broader picture, allowing unexpected, unanticipated effects to be described. This is especially important for phenomena such as the mobile phone which do not respect normative boundaries, and
hence require a boundary crossing theoretical perspective. It redresses the deficiencies of alternative approaches where the quality of care in medicine usually comes down to terms of interventions and clinical trials, or ‘big’ ethical issues.\textsuperscript{93} Instead it is argued that making a methodological shift to look at the day-to-day practice of care raises questions of quality and values in ‘new ways’, and consequently makes a theoretical shift in the understanding of what care is.\textsuperscript{95}

**Sociomaterial practice perspective**

Using a sociomaterial practice lens facilitates analysis of a flow of interaction as it takes place holistically, including all the participants, both material and social. As a conceptual lens, it gives not only a description of what people ‘do’ with regard to other people (i.e. focus on communication and purely social interactions) but a consideration of the role of setting, environment and artefacts more generally, including the mobile phone. It allows exploration of how mobiles themselves “produce and sustain practices, often in ways either overlooked by humans or assumed to be controlled by humans”,\textsuperscript{96} and how practices can be altered by ‘disordering elements’, such as the mobile phone. Bringing this specifically into the medical context, Fenwick describes how “materials actively influence clinical practice”, which means that learning to do medicine includes learning to acknowledge that technologies create new and often conflicting ways to practice.\textsuperscript{7}

**2.4.1 Knowing in practice.**

Practice links doing and knowing; it is situated and adaptive. Practice is more than an activity, more than carrying out a routine set of actions. Practice involves doing, but also involves knowing and innovating as well.\textsuperscript{97} Practice consists of a complex web of elements both material and immaterial. The situated ‘doing’ of practice is fundamental, acknowledging the embedded nature of practice within a particular set of circumstances. As Sole and Edmondson say:

“Central to the practice perspective is acknowledgement of the social, historical and structural contexts in which actions take place”.\textsuperscript{98} Actions are always performed within a setting, not in isolation; the location in space-time-circumstances matters.
Further to this is recognition that practice is adaptive to the context in which it is enacted. Each time a practice is performed, the exact context and conditions are unique, leading actual practice to diverge from espoused practice. Practices are a ‘bricolage’ of multiple elements, tailored each time to a set of particular circumstances. Gherardi positions this as ‘situated rationality’, adapting activities to changing contexts, so that it is “once again performed for another first time”. Practice involves negotiating particular circumstances each time the practice is performed, adapting and refining it to that specific situation; like Fenwick says, it matters how often the patient has been cannulated at that site and then which cannula you choose to use. There are methodological implications that follow from this, as to understand the varying, adapting performances of a practice requires capturing the contextual circumstances in which they are embedded.

2.4.2 Shared understanding: the sociality of practice

But despite these continual adaptations, the ‘repetition sans repetition’, practices are recognisable by other practitioners; there is an agreement as to what constitutes a shared practice amongst a community of practitioners, a shared understanding. Practice includes a shared ‘repertoire of resources’ where resources may be material or conceptual, including physical objects, rules and ways of doing things. Gherardi uses Duguid’s description of medical practice to demonstrate practices at different layers within a community: medical practice as a ‘network of practice’, narrowing down to ‘community of practice’ for a local context eg hospital X versus hospital Y, and then to ‘knowing in practice’:

“the situated activity of the community of medical and non-medical professionals which, through mediation with a material and discursive world, performs a particular practice like a medical examination, a ward round in a hospital...”

2.4.3 Care practices: shared work, multiple actors

Drawing on the work of practice-based studies provides useful and transferable concepts to healthcare practices, but it fails to address the position of patients within practice, the non-professional. As argued above, patients are more than just passive recipients of care.
Looking more specifically at care practices allows us to find a way to include and acknowledge their role and contribution. Pols refers to multiple actors:

“There were different actors involved: patients, their homes filled with devices, their families of PC users, doctors, social workers, technicians, and a long-gone researcher. They all had a go at taming the technology, and they did this in their own ways, fitting with their own circumstances and ambitions.”

Mort also argues for a resistance to viewing patients as passive users of technology in her study on ageing with telecare, that they have an active role in the shared work that is care. But arguably, care involves more than just human actors; the technology itself contributes to care. As Winance argues, care is “…shared work, involving not only professionals but also patients” as well as “bodies, technologies and all sorts of material elements”. She used ethnography to explore the shared work between physiotherapist, patients, their carers and their chairs to derive this concept of care.

### 2.4.4 Ethical practice and care multiple

**Care practices are negotiated and ethical.** This is developed to a limited extent within the organisation literature, such as Gherardi’s correct / incorrect ways of practising for a particular community where practising is ‘underpinned’ by ethical judgements and justifications. As would be expected, it is much more dominant within the medical and nursing literature, where the ethics of care is a whole discipline in its own right. But the ethical practice of care differs markedly from the classical body of medical ethics. It is about the day to day reality of small decisions and behaviours rather than the big dilemmas. Tensions arise due to the complexity of care; there are multiple objects of care, as well as multiple goods that may clash in reality. Pols explores the ethical principles of washing patients, showing the complexity and conflicts within care practices, with a number of values in balance as participants “try to shape good care from their daily activities”. Willems and Pols use terms such as ‘daily ethics’ and ‘empirical ethics’ to relate to the ‘goods’ that those involved in care practice actually find important and how they attempt to realise them, the “daily groping for good care”. Mol also describes the tensions that arise between different ‘goods’, and the act of ‘tinkering’ through adaptation to accommodate them. People involved in care practices are finding ways to integrate mobile phones and other technologies into their activities, weighing a balance of ‘goods’ as they do so.
2.5 Summary of chapter 2

Mobile phones are rapidly becoming an integral part of healthcare delivery and experience, supported through both consumer demand and strategic direction. The research backbone to this lags behind, and is hampered by the predominant technocentric perspective adopted. Taking lessons from other fields, the integration of mobile phones into healthcare is likely to be disruptive and unpredictable. As such, an alternative research approach is necessary to explore this process adequately. Fenwick views medicine as “a set of localised sociomaterial practices, improvisations and contingent negotiations”. Choosing care practices as the focus of study explores mobile phones in the midst of action, as part of their patterns of activity including the social, material and contextual factors. It allows interrogation of concepts that have already been described in the medical and non-medical literature to see if they apply ‘at the coal-face’ of healthcare.
CHAPTER III: METHODOLOGY

3.0 Introduction

The methodology and methods chosen are ones that are best suited to the issues of interest. As discussed in the previous chapter, mobile phones are a complex, disruptive phenomenon to study. Studying them in healthcare in particular raises even more challenges, with the organisational, ethical and even biological barriers to conducting research. Care itself is complex, and defies a simple definition. Introducing technology into care is unpredictable. Taking a theoretical attentiveness to practice allows these ‘messy’ phenomena to be studied. Where the last chapter discussed the conceptual framework through which mobile phones and care are understood, this chapter shows how these conceptualisations have provided a framework for the study design that is consistent and appropriate. Beginning with the theoretical framework underpinning this study, it draws on the literature described in the last chapter and maps it to the implications for the study design. It then lays out the methodology and methods chosen, with further detail on the rationale behind the choices made. It includes the considerable ethical procedures that had to be dealt with at both an institutional and local level, and ends by describing the research setting in which the study was conducted.

3.1 Theoretical framework

The theoretical framework for this study has two main strands underpinning it: how to conceptualise and study mobile phones; and how to conceptualise and study care. We begin with the phenomena of mobile phones.

3.1.1 Mobile phones

The mobile phone is an “elusive phenomenon to conceptualise”, presenting a challenge to researchers, requiring alternative approaches to overcome the inherent difficulties. There are a number of aspects that contribute to this challenge. The intrinsic design and benefits of a mobile device - its small size, its portability, designed for one user - makes data
collection on their use inherently difficult. Without invading personal space or interrupting the event, how can the user-device interaction be determined? But it is this lack of easy transparency that makes mobile phone use a necessary problem to explore. Activity that is opaque to the researcher is also opaque to others around therefore how such activity is interpreted and the assumptions that are made will vary. Another methodological problem is that the phone itself cannot contribute as easily to the research dialogue as a human participant: they may “influence practice but never talk about it”. Thus capturing this as data is made more problematic.

Making it even harder to clarify the situation is the multiplicity of functions that many mobile phones now have. These have rapidly expanded in the last few years alone, and are likely to continue to increase as ICT abilities advance. Currently, a single device can be used, for example, for making telephone conversations, texting, taking photographs or videos, playing games, accessing the internet amongst others. Mobile phones “constitute a bundle of technological functions and services that lead to a vast variety of applications”; they are “technology clusters”. However, beyond pragmatic functional uses, come other ends such as security, micro-coordination and hyper-coordination, the “social presentation of self”. Mobile phones can be both instrumental and expressive. This adds yet another layer of difficulty to capturing mobile phone ‘use’. As Pols explains in her work on telecare, the technology is a means to an end, and its role may not be overtly recognised by the ‘user’: “they are, for instance, ‘calling a friend’, not ‘using a mobile phone’.”

In addition to these challenges, the absolute pervasiveness of mobile phones also counterintuitively hinders some aspects of study. As phones span both personal and professional worlds, their use cannot be attributed solely to one domain or the other, and the literature shows how social boundaries are affected by mobile phone use. Exploring boundary issues requires a research approach that allows this to be visible; that is itself boundary crossing.

A theoretical framework for studying mobile phones either has to account for these issues or negate them. Classically, research has “either overestimated the power of technology to change society [(technological determinism)] or underestimated the role of medical technologies, viewing them as mere tools to be socially situated [(social essentialism)].” As discussed in the previous chapter, an alternative perspective of studying technology in practice addresses this dichotomy by describing technology as one part of a network of
social and technical elements whose agencies are interdependent. This approach makes it possible to look at what technologies do; what they help accomplish.¹⁰⁹

Even this framework requires an explicit acknowledgement that inter-relationships are unpredictable. As Pols and Willems showed in telecare research, what actually happens when technologies are put to work in care practices differs from that predicted.⁷⁵ They describe a process of both taming and unleashing, in which the technology is adapted, as well as itself “affecting care practices in unforeseen ways”. This means that a greater understanding can only be attained through acknowledging this and exploring:

“Accounts of technologies in practices, details about ways in which technologies are working, who is using them and what goals are brought into being. We need articulations of the experimental care practices and their strategies of the early taming and unleashing of innovative technologies.”⁷⁵

This also holds implications for data collection methods which must be able to capture such elements of the phenomenon. Phone use needs to be observed in situ, in real time if the interaction of the network, and its contextual nature is to be captured. To understand reasoning, affect, decision-making, strategies which are not visible through observation requires an additional approach, which can be achieved through interviews. There are implications at an analytic level as well, particularly concerning the agency of technology and the material world more broadly. The analytical process also enables an exploration of what other conceptualisations of mobiles are manifest, e.g. always availability, absent presence; conceptualisations that have been well described in other literatures but not yet within care practices.
3.1.2 Care practices

The conceptualisation of care described in the last chapter has significant implications for the methodological approach taken in this research. Revisiting this, care is treated as a set of meaningfully inter-related, sociomaterial activities, with explicit and tacit elements that are situated, negotiated and involve multiple actors. It includes shared work with patients and teaching as well as clinical practice. Some tools are more adept at capturing these elements than others and therefore make a more appropriate methodological choice. For example, this study needs to incorporate the situated nature of care, recognising that the context of care is all important and ever-changing; that the particular circumstances of each version of care affects how it is enacted on that occasion. This has implications for the limitations of approaches such as simulation or surveys as they cannot deal with the nuances and variation that occur ‘in practice’. Practice needs to be seen in situ rather than simulated.

Another argument for situated data collection is the concept of care as a choreography. In his work on ‘Care and Killing’ Law describes how care can be thought of as a choreography, critical to which is “the arrangement and distribution of events and actors in space and time”. His examples include such elements as the vet’s fingers and the calf coming together for the vet to show care through allowing the calf to suckle. Similarly, Moser described care as choreographed, requiring “relating, coordination and synchronisation, management of proximity and distance” with simple examples of teeth brushing and dressing. Looking at ward rounds specifically, Morrison explored the embodied and spatial aspects of interactions on a ward round as affected by the introduction of an EPR system. Capturing the “unfolding embodied and material process” requires this arrangement and coordination in space and time to be caught. This is similar to Sørensen’s work on the rhythms of police work and their interaction with mobile devices. Choosing ethnographic methods in this study addresses these dimensions of the empirical setting as it allows elements of time, space and physical movement to be captured.

Other conceptualisations of care as relational also have implications for the methods chosen. Winance’s work on care and disability proposes that care is shared work amongst humans and material objects; Pols, that there are multiple actors. A research strategy that fails to embrace this collective dimension would be inadequate. In this research, addressing
these questions has been achieved by recognising and including the multiple participants in
care practices within the inclusion criteria and sampling strategies, and giving them a
‘voice’. For example, including patients as well as the professionals, and giving equal
consideration to the mobile phone itself as an ‘actor’.

As also defined in chapter 2, care is negotiated. Winance depicts the wheelchair occupant
and wheelchair ‘pusher’ who would ideally have opposing qualities in their ideal
wheelchair. However, they emphasise that care is brought about through compromise,
negotiating what is ‘good’ within a given situation. Leading on from this is the concept of
ethical practice as described in 2.4. Choosing to include aspects such as these within this
study also holds implications for the choice of data collection methods. I have already
argued a place for observational work, which could offer some insight into explicit
negotiations and ethical decisions, but these may be explored more fully by using
interviews to enrich data collection, especially regarding the implicit, non-verbalised or
invisible aspects of care. Equally the ‘social/historical/structural constructs’98 that
contribute to context are best identified by simply asking.

The next sections describe in greater detail the rationale behind the choices made in the
research design and implementation of this study, given the theoretical framework that
underpins it.
3.2 Methodology

The research questions and methods of data collection selected reflect the conceptual orientation of this research. In this section I describe how each relates to the other.

3.2.1 The research questions

The main research question was designed to be deliberately broad.

- How are mobile phones being integrated into healthcare practices in the case of the hospital ward round?

The main research question was understood in terms of three different groups of mobile phone users: clinical staff; medical students and patients.

Sub questions:

- How are mobile phones being used by clinical staff in the delivery of professional care?
- How are mobile phones being used by medical students in their practices of learning to care for patients?
- How are mobile phones being used by patients in support of self-care?

Each of these questions focuses attention on mobile phone use but privileges certain dimensions of use appropriate to each group: the delivery of care; practices of learning to care; and patients in support of self-care.

3.2.2 Research design

The choice of research design to address the research questions was underpinned by a number of considerations. Firstly, the methods for data collection and analysis must all fit within the theoretical framework of the study; the sociomaterial lens and practice lens as discussed. Secondly, in qualitative research the specific method chosen has to be the one that best explores, collects and interrogates the data to answer the question that has been posed. As Strauss and Corbin say, the question dictates the method and their advice in
this regard is that the researcher “should be true to the problem at hand”. Given these considerations there were two main design choices open to me in doing this study – case study and ethnography. Both have precedents within the healthcare literature and within the sociomaterial practice literature and both were appropriate to the research questions that form the focus on this thesis.

**Ethnography versus ethnographic methods**

Ethnography stems from anthropological roots, where it was classically seen as a thick description of a community of culture, usually obtained through prolonged immersive fieldwork within a society markedly different to the researcher’s own. Anthropological studies moved over time to focus on societies closer to home shifting conceptually to the inclusion of social entities and settings such as organisations or hospitals.

The key features of ethnography offer many features that would be suitable to address the research questions of this study. Ethnographers study phenomena in everyday context rather than artificially derived ones such as simulation. Ethnographic studies tend to: be small scale; focus on generating in-depth data from a small sample; and use data from a range of sources about that small sample. By these means, ethnographers acknowledge that people construct multiple realities that are contextually embedded and continuously changing.

However, the predominant focus is on the social: social interactions; social meanings; social activities. It is the study “of the socio-cultural contexts, processes, and meanings within cultural systems.” This then would appear to fall at one of the first hurdles in exploring technology in practice, as it fails to address the agency held by the mobile phone itself. That said, there is an increasing trend within health informatics research to move towards realising the advantages offered by ethnography as a study design. Supporting this, Greenhalgh argues that “ethnography focuses on how technologies and the humans who are meant to use them actually perform under real, particular conditions of use.”

Another problem is that a classical ethnography requires extended stretches of fieldwork to allow the researcher to build up trusting relationships with participants, overcoming the reactivity of participants to being observed, and allowing meaningful data to be gathered. This is not always feasible however especially in healthcare research, and is another driver behind a shift to adapt and ‘import’ aspects of ethnography, rather than
performing a true ethnography. Studies of both technology and of healthcare are increasingly recognising the value that ethnography has to offer and are adapting and integrating ethnographic approaches to harness the benefits while working around the problems. In line with this, I chose not to use a classical ethnography as my study design, but instead to use ethnographic methods of data collection, such as observational fieldwork with the accompanying notions of insider/outsiderness, the need for reflexivity and keeping detailed field notes, and interviews, both in-depth and *ad hoc*.

**Case study**

A case study according to Yin is “a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence”. Looking at the key principles and various definitions of case study, it offered the best strategy to answer the research questions (Table 4). Case studies in healthcare research are uncommon, and may be confused with medical case studies which describe and discuss an individual patient’s condition to highlight unusual or uncommon clinical details, rather than being related to research. But it is a valuable and valid qualitative research approach that facilitates study of the conceptualisations of care and practice described in chapter 2. Case study can examine the practices of multiple actors, including the phone itself, and allows the multifaceted nature of practice to be studied rather than breaking it down artificially into component parts. It speaks to the need to recognise the embedded, situated nature of practice. It allows unanticipated effects of technology to be drawn out, and includes the nonverbal aspects of care and technology.

**Table 4 The key principles of case study**

<table>
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<th>Inseparable from context</th>
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<tr>
<td>Particular</td>
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<tr>
<td>Contemporary</td>
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<tr>
<td>Looks at a phenomenon from multiple viewpoints</td>
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<tr>
<td>Bounded</td>
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</table>
**Contextual importance**

Case study methods are often a method of choice when “how” and “why” questions are to be explored, offering a way to explore “complex social phenomena” which cannot be recreated in an experimental setting.\(^{120}\) The facility to study a phenomenon within its context forms a key distinction from other methodologies. The research question here focuses on practice, and moreover, practice embedded in context. Sørensen and Pica used a case study approach in their exploration of the relationships between work activities, work context and communication technology;\(^ {79}\) this can be paralleled by the components here of care practices, the context of such practices and mobile phones.

**Particular: choosing the case**

Healthcare encompasses such a diverse range of practices, patients, specialties and working environments that choosing a case to represent the whole is not possible but a well-chosen case may yield findings that contribute to greater understanding.\(^ {121}\) Green and Thorogood used health practices as an example of a case, and given the research questions this was an appropriate choice for this study.\(^ {122}\) Ward rounds are an example of a health care practice which provides a particular, bounded example likely to yield rich information. As Busby describes, they are “one of the most valuable times for sharing information, problem solving and planning treatment, both for the professional and the patient”.\(^ {123}\) They are accessible in terms of structure, activity, timing, commonality between disciplines, and are a practice in which patients and multiple others participate together in care.\(^ {124}\)

**The bounded nature of case studies**

The case is defined by Miles and Huberman as “a phenomenon of some sort occurring in a bounded context”.\(^ {125}\) Thomas uses the analogy of a torch beam in the dark, using the focus of the beam to direct the study.\(^ {126}\) What helps define the case is the application of boundaries, set in several dimensions, equivalent to the edges of the torchlight. These need to be determined to make the research question clear and answerable. As Baxter suggests, setting the boundaries of the case is an essential part of designing a reasonable study, establishing what the ‘breadth and depth’ of the study will be.\(^ {127}\) These can include parameters such as time, activity and place. One of the risks of case study is that unmanageable amounts of data may be generated therefore keeping question and
boundaries clear and in mind during all stages of the study may serve as a way to prevent this. In this study there were key aspects that contributed to the choices made for each boundary, which are described below.

The first boundary was that of the research setting. The place where care is received matters, as experiences of healthcare cannot be ‘detached’ from the place in which it occurs; and place is more than just a physical setting, a ‘container’ for healthcare activities; also it is a “set of situated social dynamics”. Ward rounds are unique to hospitals. They do not happen in general practice or in private homes, therefore this study is hospital-based. Hospitals are a complex context, with an instated imbalance between familiarity and unfamiliarity: staff are in a familiar work environment; patients are abstracted from their normal life, in an environment alien to them and with the normal characteristics that define them as a person suspended. Their freedom is restricted and control over basic activities relinquished.

Another key boundary was whom to include. The case is of the ward round, so participants in the study represent those who take part in that practice. In a teaching hospital, this includes clinicians (doctors, nurses, some allied health professionals), students and patients. Equally, mobile phones are used by all three and mobile phone use holds implications for all three. Therefore, exploring the ‘new opportunities and responsibilities’ mobile phones bring to the hospital should arguably include all three. Including patients is atypical, but important. The majority of the literature in the medical/nursing and medical/nursing educational fields omits patients altogether, or includes them as only passive participants. In healthcare currently that has become less acceptable. Listening to patients and acknowledging them as empowered participants, as this research strives to do, is an essential part of creating and enacting a culture that holds true to the Francis statement. Additionally, recognising care as shared work through the literature on care practices requires the active role of patients in this study.

The final key parameter was the technology. Different studies use varying definitions of the mobile technology they investigate. For example, whereas Mazmanian focuses on mobile email devices, Jarvenpaa refers to mobile technology in general. Mobile phones were chosen for this study as distinct from mobile technology, therefore excluding tablet and handheld computers. This was due to the specific problems that arise from the associations that are typically made with mobile phones, namely: their personal as opposed to work–driven nature; the foregrounding of voice calls and text messages amongst other
functional affordances; and the multiplicity of functional affordances available through newer smartphones but not through basic devices. Equally, mobile phone use in its entirety was considered, as opposed to focusing on one specific function such as email or text messaging as other studies have done. Within the data, participants themselves often made a distinction between phones and other mobile technologies, supporting the research choice.

**Combining case study and ethnographic research strategies**

Case study allows a variety of data gathering techniques to be employed all of which can contribute to the research strategy. Baxter and Jack describe these as pieces of a puzzle that are brought together, “strands of data braided together” to create understanding. Choosing which tools to use depends on the focus of the case and the gathering of data that will best answer the questions posed. Ethnographically inspired techniques afford insights into hidden social practices, giving accounts of relationships between staff and with patients, as well as of care delivery. Given the complexity of capturing practice in all its messiness, an approach using predominantly observation and interview data offered a way to look at the research phenomenon through the chosen theoretical lens. This is supported by the literature where this is an increasingly popular choice for approaching studies of mobile technology as well as practice. Mazmanian used interviews, and Sørensen and Pica, observation and interviews within their case study. Looking specifically at studies of technology in health, Willems and Pols argue that interviews and observational studies are most appropriate for exploring care practices and technology, as technical objects influence practice but “never talk about it”. Ethnographic approaches within healthcare are relatively limited, as there are a number of barriers in terms of access and participant / nonparticipant research but can offer rich data and findings.

**Observation**

Observational fieldwork was chosen as a way of understanding mobile phone use as it occurs within the flow of interactions contributing to the ward round. The spatial arrangements, physical behaviours and strategies developed by mobile phone users can be captured through observation, as well as the non-verbal communications that influence behaviour. Observation provides a counterpoint to participants’ own interpretation of practice and events. It may also allow exploration of the unrecognised effects of mobile phones that participants would not be able to relay through questioning or reporting. As
Sørensen argues, finding an understanding of the ‘intricate inter-relationships’ between the context of work and mobile technology cannot be reached through interview methods alone.\(^7\) The ways that phones are changing practice may be missed through a reliance on language-based data; especially as the technology itself does not have a voice. Taking a sociomaterial practice perspective requires a shift from a focus on the participants alone to taking into consideration the practice, its components (including the phone), and the context as a whole.

**Ethnographic considerations**

There are certain key concepts that should be considered and discussed when using ethnographic methods. The first of these is the researcher’s degree of involvement in the activities being observed. Gold’s typology of observation offers four roles of participant / nonparticipant observation,\(^{133}\) ranging from complete participant to complete observer. Placing oneself on the spectrum is dependent on the field the researcher is entering and the roles available to them personally within that field.\(^{133}\) Within healthcare, Mulemi contends that it is difficult for researchers without medical training to “realis[e] adequate participant observation in clinical settings.”\(^{134}\) Vermeulen extends this argument, contending that even medics should not be striving for participant observation.\(^{135}\) The work is too specialised and the information too critical (through complexity and sensitivity) for anyone other than care-deliverer or recipient to be truly involved. Additionally, the confidential and personal nature of much doctor-patient interaction, whether it involves discussion, examination or intervention makes an extra, non-clinical person an unwelcome extra.\(^{136}\) This is less significant in observing ward rounds which usually consist of a number of individuals who are more or less familiar to the patients. This contributed pragmatically to the choice of the ward round as the case of study. Given these arguments, I predominantly adopted a stance of observer as participant (section 3.4.1.1).

A second key consideration is that of positioning. Is the researcher an insider or an outsider? Which is ‘best’? What are the advantages and disadvantages to each?\(^{137}\) Merton describes a ‘balance sheet’ of insider/outside status similarly to Dwyer and Buckle who refer to the benefits and costs of both insider/outside, such as: access versus failure to explore discrepant factors; and assumptions of similarity.\(^{137}^{138}\) I certainly found that access was much easier as I understood the hospital systems more than a non-clinician would, and had contacts that I could use as gatekeepers. However, the counterpoint to this
was how difficult I found it to ‘make the familiar strange’ and to stop myself making
assumptions. Within healthcare, clinically experienced researchers may more rapidly
assimilate the “spatial, social and temporal dimensions of the observational site” for which
non-clinical researchers would require prolonged immersion in the field. Credibility and
legitimacy are other advantages: Sidebotham described how his position as paediatrician
and father lent him a ‘legitimate right to ask the questions’ rather than just prying, as he
was able to introduce his research in relation to his own practice. These were
advantages that contributed to this study both prior to and within the field as I was able to
contextualise the study for participants and justify more easily why it was important to me
and them.

However, discussion of insider / outsider positioning tends to assume that the two are
mutually exclusive. Some reject the dichotomy and argue instead for them being points on
a spectrum. Spradley contests, and I concur, that fieldwork is a mix of alternating
between the two as well as being both at the same time. But even this is insufficient
given the complexity of human nature and behaviour. My position is that in addition to this
fluctuating position, individuals have a ‘status repertoire’ rather than a single status, any of
which may be shared in common with the researcher or not: “we are all multiple insiders
and outsiders”. My own experience is that I was pushed, pulled and jumped between
insider / outsider, and that even with one individual on one occasion I moved repeatedly
between insider/outsider through the different roles of my own status set. Examples from
the data to illustrate these positions are given in Table 5:

Table 5 My experiences of positionality

<table>
<thead>
<tr>
<th>Pulled into insider</th>
<th>Pushed into outsider</th>
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<tbody>
<tr>
<td>In the next bay the consultant directs a question to me: “Can we ask the observer a question?” asking about [microbiology] cultures, how long until grow and ZN [Ziehl Nielson, a special stain] /auramine stains. The attention of the team shifts to me and then back to the consultant again. I volunteer further information just to the consultant a few seconds later when the team focus has broken up. (field notes, MWR2, 13th June 2013)</td>
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</tr>
<tr>
<td>One of the other doctors says “what are you using your phone for, __? You’re being studied”. (field notes, MWR3, 20th June 2013)</td>
<td></td>
</tr>
</tbody>
</table>
Jumped into insider work I have been trying to suppress the urge to interfere with antibiotics, but do say, ‘but is there really a need for the teicoplanin?’ (field notes, SWR3, 29th November 2013)

As the third example in table 5 suggests, positionality also provoked ethical issues that will be addressed below. I learned from these experiences that the process of recognising positionality, even with all its mobility and mutability, is important as it aids the critical analysis of the data and how meaning was constructed by the researcher. Including instances related to positionality in my field notes and reflecting on them afterwards was an invaluable part of the process.

**Interviews**

Interviews were included as part of the study design to address the limitations of observation alone where mobile phones are concerned. Mobiles are small and designed for individual, personal use, and as such it is difficult through observation alone to determine what they are being used for. Mobile use is often stochastic, and may be rare in a clinical environment, so may not be captured through observational fieldwork to a sufficient extent. Non-use of mobile phones is as interesting as use, and can also not be explored through observation. Capturing some more abstract concepts such as influences and reasoning may also be difficult through observation, but can be explored verbally.

Ethnographers distinguish between formal and informal interviews, where the latter take place during participant observation, “on the hoof” when an opportunity arises, as contrasted to formal interviews which have a greater degree of planning behind them and are usually conducted a step away from the field. This study included a combination of both formal and informal interviews. The formal, in-depth interviews were conducted either at the patient bedside or within the quiet room on the ward, depending on interviewee preference. Some researchers recommend that bedside interviews should not take place unless the patient is in a single room; but this is not always possible as there may be physical or clinical ties to the bed / bedside which make a bedside interview the only possibility. Adopting this as policy would have excluded the majority of patients. Informal, ad hoc interviews were also conducted during periods of field observation. These were usually unsolicited, arising as part of conversation. They formed a wealth of opinion...
from a wider range of people than could have been formally interviewed, or who may not have wanted or been able to give an in-depth interview.\textsuperscript{144} Including these as data is discussed in the ethics section below.

There are considerations of positionality raised by interviewing as well as observational work. As Green warns “those being interviewed will ‘place’ the interviewer in terms of their institutional allegiances, their presumptions about what they want to find out, and their social roles”;\textsuperscript{122} this in return then affects the position the interviewee adopts. That is to say, it will impact how the interviewee presents themselves and their actions, and what and how much they are willing to share. All of these will shape the account that is generated through the interview. Rather than battling to eliminate these effects, resolution is by acknowledging and accounting for it.\textsuperscript{122}

3.3 Ethics

Ethical approval was obtained from the National Research Ethics Service (the Yorkshire & The Humber - Humber Bridge Proportionate Review Sub-Committee) reference 13/YH/0079; and from the Medical School Research Governance and Ethics Committee reference 13/034/DAV. Approval was sought from both bodies to cover the inclusion of patients and medical students respectively within the study design. The ethical procedure agreed was that formal written consent would be sought from all participants for both observation and interviews; participant information sheets and consent forms were constructed for each participant group and for each research method, and approved by the ethics committees. Posters advertising the study were also designed, approved and displayed in the clinical areas where the research was conducted.

Following ethical approval, NHS research and development approval was obtained from the host teaching hospital, ref 12/238/DAV. They had also agreed to act as sponsors for the study for the purposes of the NRES application. The medical school ethics committee also recommended that we seek the involvement of a hospital consultant who was based on the wards to establish a clear link to the NHS Trust and to facilitate recruitment of clinicians and patients. The Trust Innovations Lead was approached in this capacity and agreed to act as such. Access to individual departments and ward rounds was formally negotiated once ethical permissions were in place, having previously obtained tentative agreement before this stage. The clinical and nursing leads for each ward were approached
for permission to access the ward, the staff and the patients for the study. The nursing leads provided information about the ward timetables and layout, as well as making introductions and raising awareness of the study amongst the staff. Individual clinicians were then approached for permission to join a specified ward round for observation, following which individual members of the ward round could be identified in advance and consent obtained.
3.3.1 Anticipating ethical issues in advance

Before submitting my application for ethical approval, it was important to consider in advance what ethical issues may arise, and how they would best be managed. I underwent training by the National Institute for Health Research (NIHR) on Good Clinical Practice and on Valid Informed Consent to ensure the quality of the conduct of the study. I considered the burden and risks of participating versus the benefits for participants and made these clear in the participant information sheets. I also considered my professional responsibility as a doctor and included a caveat that I would break confidentiality in the event of seeing or hearing anything that may indicate a risk of harm to an individual. The medical school ethics committee also prompted me to consider other possible conflicts of interest that could arise during my periods of observation, and as I had experienced during my pilot studies (3.4.1.1), appendix A. I was present as an observer, but was still a member of the medical school faculty, and still an infection specialist. I was specifically asked to consider what I would do if I were to witness bad practice among medical students while engaged in observation on the wards. Being aware of the possibilities beforehand allowed me to consider what my position would be if necessary, and it was useful in the field to have made those decisions already. This also contributed to my internal debate about insider / outsider positioning. My experiences during the pilot studies affected the sites chosen for the study itself in order to reduce the potential for this to occur. This entailed
choosing departments far removed from my own specialty in terms of expertise and knowledge, as well as ones where I would be less familiar to the staff: making myself more of an outsider.

3.3.2 Issues arising out of the ethical procedures:

The difficulties resulting from informed consent

A challenging issue was the process of gaining consent for observation. Confidential patient information is discussed on the ward round and although medically qualified, I was there as a researcher and not involved in patient care. Ethically therefore, it was necessary to seek informed consent from each patient as well as each member of staff or student involved in the ward round. This in itself poses difficulties as it foregrounds the role and the purpose of the researcher rather than allowing them to fade into the background, as well as potentially leading to changes in behaviour directly related to awareness of the purpose of the study, so-called Hawthorne effect. It was also difficult explaining to patients the nature of what observation exactly entailed for them as the participant information leaflet, with its origins in randomised controlled trials, seemed disproportionate to the level of their involvement for many patients. The reality of my presence often went unnoticed whereas the consent process beforehand was much more involved and time-consuming for them.

Taking consent from clinical staff and student lay along the same lines, in that the majority were unkeen on reading the participant information sheet (PIS) in full, wanting to sign the consent form on the basis of my initial verbal approach alone. Many thought that even just signing a consent form was excessive for what I was asking of them, but would comply with the process on being asked. Two senior surgeons stood out from this, paying great attention to the details in the PIS, but still concluded that it was “a consent form for nothing”.

It was also time-consuming. Due to the number of patients, consent forms had to be signed the day before the ward round, and the information had to be given at least 24 hours before then. This meant that each observed ward round was preceded by two days of handing out PISs and consent forms. This was not readily compatible with the constant flux of patient admissions, discharges and other considerations that precluded inclusion (appendix B). The result was that the number of overall ward rounds observed was limited due to the
time constraints involved with consent; but also that the proportion of patients that could be observed in each ward round was less than optimal.

This challenge also led to changes in the study design. Originally there were plans to include the gynaecology department, but on further discussion with the specialist team it became apparent that obtaining informed consent in the manner required would not be possible, due to the flow of patient activities from admission to surgery, post-operative state and then ward round. It also led to a decision to exclude outpatient clinics as it was felt that as a single researcher, the data collected proportionate to the work required to gain consent appropriately beforehand would not be sufficient.

Other difficulties in taking written consent from patients arose unexpectedly from physical disabilities. A number of patients had significant visual impairment which precluded them from reading any consent material; others were physically unable to hold a pen to be able to sign and initial the consent form. However, it seemed unethical to exclude them from the study as they were otherwise mentally competent and wanted to participate. On reflection and discussion with my supervisors, we decided that reading out the information in full and accepting their best attempt at a signature was acceptable in these circumstances.

**Ad hoc conversations**

The question arose as to whether these informal conversations were a valid part of the data, both from a research point of view and an ethical one. Mays and Pope discuss how participants may see conversations as “lubrication between research events” rather than part of the research, and that “how to handle information garnered informally in this way is a frequent concern in ethnographic research.”

All participants had signed a consent form which included specific permission to use direct quotes at the request of the NHS ethics committee, which allowed inclusion of these as data. There is also much in the ethnography literature around the use of informal conversations as data, such as by Hammersley and Atkinson. They refer to ’unsolicited accounts’, and suggest that ethnographers value these more than ‘solicited’ accounts, i.e. in response to questioning, or interviewing, as these may be more heavily influenced by the researcher and their questions. deWalt and deWalt advised recording “interaction and conversations”, and Wolcott that: “Fieldwork involves more than data gathering. It may also involve informal interviews, conversations or more structured interviews”. My
decision in the light of this was to include informal conversations with participants who consented to observation, even if these conversations took place during the process of obtaining the consent, but to exclude any conversations from those approached who declined to take part in the study.

Managing conflicting interests

Field notes, SWR2, 21st November 2013

*They are discussing whether teicoplanin is related to penicillin or not, and none of them are sure, and they come out of the bay and start talking about going off to check the BNF [drug formulary] but I can’t bear it anymore, so I stick my head round and say, “they’re not related, it’s definitely ok with penicillin allergy.” The Registrar says “Thank you.”*

There were a number of occasions during my fieldwork that caused me to stop and consider what the ethically correct thing to do was. For example, being asked to look at an ECG by a surgical trainee, or to give advice on managing a patient’s blood sugars. As a novice field researcher but comfortable in my clinical experience and knowledge, it was a difficult line to balance between the different obligations I felt I was under. It made me realise that my professional responsibilities as a doctor will always outweigh those of researcher, but that that did not necessarily mean that getting involved was the correct decision. For example, I could give some general advice on approaches to diabetes management but it was much more appropriate that I recommend a specialist review. Equally, I found that even if it was an area that I would normally feel comfortable giving advice on, my focus was on my research and it was likely that I had been concentrating on other aspects of the ward round that were important and therefore would not have been paying necessary attention to the aspects relevant to decision making. For example, in the pilot study I did not notice that the consultant had muddled the interpretation of a blood result while teaching because I was paying attention to something else. However, in the fieldwork excerpt above, I chose to involve myself as I felt it was in both the patient’s best interest and the team’s best interest. I was fortunate in that I did not witness any examples of poor care or behaviour that I felt necessary to address directly for safety reasons; but I knew that I would have done so if I had.
Another issue that became apparent during analysis and writing up was that participants had contravened hospital policy in their use of mobile phones to take clinical photographs. Given that the ethics committee had specifically required that the consent process include a clause* on breaking confidentiality for such circumstances, I felt that I had to act on this.

*(“If anything you said indicated that any professional practice was not in keeping with practice requirements and Trust standards, the researchers would be obliged to disclose this following the Trust’s Clinical Governance procedures.”)

On discussion with my supervisors, we felt it appropriate to inform the Trust’s research and development head. It was then discussed with the research and development director who felt that it was more a problem with awareness of the policy rather than deliberate wrong doing. A message was sent out to all staff to remind them that this is not acceptable behaviour. I was not required to provide any particular participant details, for which I was greatly relieved.
3.4 Methods

3.4.1 Data collection methods

As discussed in section 3.2 above, data collection methods were derived from ethnography to best capture the phenomenon of interest; mobile phones employed in care practices. Informed by due ethical procedure, this study used observational fieldwork of ward rounds in two different departments along with in-depth and ad hoc interviews of participants.

3.4.1.1 Observational fieldwork

During the design stage of the study, three teaching ward rounds were observed as a pilot study to see if data collection in this way would be feasible and to flag up any immediate difficulties that would have bearing on the study design. These were not included in the data analysis as consent was not taken for this from participants. Issues that arose out of these were related to potential conflict between my roles as researcher, infection specialist and teacher. I learned from these that I needed more distance between the medical substance of the ward round and my area of specialist expertise, as well as less familiarity with the clinicians. The research design was amended accordingly and successfully by choosing departments that fitted these requirements.

Observation was focused around the chosen case which is the ward round as an example of a care practice. Data was collected on the ward in the periods before, during and immediately after the ward round took place. Access to the ward was negotiated through a variety of gatekeepers, with permissions at a number of hierarchical levels as discussed above. Ward rounds were purposively sampled to include a number of different lead clinicians and a second shorter period of observation was undertaken in another ward for comparative purposes. Having identified a potential ward round, I then sought permission from the individual clinician who would be leading it. On both wards, ward rounds were conducted daily but consultant ward rounds were held twice per week. Given the focus on ward rounds, it was not felt necessary to extend observation into evenings or weekends as the main ward teams would not be working, nor would formal ward rounds take place.

Three consultant ward rounds were observed on the first ward where 56 hours of ward work were observed in total, with each respective ward round lasting between 3.5 and 4 hours. On the second ward, one registrar-led ward round was observed as a pilot study to assess feasibility and following this, one consultant-led and a further registrar-led ward
round were observed. Twenty-one hours of ward work were observed on the second ward, of which 6.5 hours comprised the ward rounds themselves. All participants within a ward round were approached for their consent to be observed, and appendix C describes the way in which I conducted this. All staff and students gave their consent, but a much lower proportion of patients agreed to participate (appendix B).

Data was collected through field notes, written during periods of observation in pen and paper. This mirrored the behaviours of staff and students involved in the ward round, and did not raise issues of confidentiality that more invasive methods of data capturing may have posed, such as audio-visual recording equipment. Deciding what to record reflected my influence as well as the focus of the research question, as some details were included and others not. I included the general movement of the ward round team, any episodes of mobile phone use, instances of teaching and information seeking, and anything else that stood out. I tried not to capture medical information that was not relevant to the study. In line with Spradley’s recommendations, I used concrete language rather than abstract terms as specific detail is more descriptive and granular for later analysis. I also tried to capture quotations verbatim and to note down spatial orientations, movements and gestures where possible. Another recommendation implemented was to use both ‘explicit awareness’ and a ‘wide-angle lens’; deliberately combatting selective inattention and taking in more information than an ordinary observer would. Handwritten field notes were then written up into digital format at the end of a fieldwork session, using the notes as memory prompts to include as much extra detail as could be recalled.

A predominant stance of observer as participant was adopted during the ward rounds, reflecting my main role as researcher collecting data. The team were fully aware of the observation activities, and I included references made regarding this by the team within the field notes. However, my experience was not that clear-cut. One single role is an oversimplification as the position shifts within the study and within a moment. This reflected my own experiences on the ward round as I was intermittently pulled, or jumped, into my old role as infection specialist and then returned back to researcher. Capturing these examples, reflecting upon them and recognising them in analysis meant that this shifting positionality was not disruptive, as discussed earlier.
3.4.1.2 Interviews

As described earlier, a combination of in-depth interviews and informal conversations were included as part of data collection. The in-depth interviews consisted of open-ended questions with appropriate follow-up enquiry covering topics such as users’ opinions and experiences with mobile phones in the hospital and within healthcare. Example questions were “can you tell me about you and your phone?”, “what about staff using phones?”, “would you have any advice for them (the students)?” As themes emerged from the data, these were incorporated into conversations in later interviews. This approach allowed for original ideas to come from the participants themselves, reducing the limits placed through applying the researcher’s lens, and for deeper exploration of themes that arose through an iterative process.

Sampling

The sampling strategy chosen for the in-depth interviews was stratified purposive sampling. This was used to fulfil the requirement to include a cross section of clinical staff, patients and students who were involved in the case (i.e. the ward round); and because as Baxter and Eyles argue, this ensures that “all sub-groups within a research setting are given a voice so that comparisons can be used to construct commonalities and differences in interpretations across groups”.

Participants needed to be medically fit enough to take part, have capacity to give consent and have the time available to participate. Consent was obtained in person by the interviewer.

Baxter and Eyles also argue that greater detail of those interviewed should be shared, that it is critical in identifying “who is allowed to speak and, of equal importance, who is not.”

Table 6 provides this detail for the study participants. Staff interviewed included: both junior and senior medical staff; junior and senior nursing staff; as well as a pharmacist. The majority owned a Smartphone. Nursing and medical students were interviewed. All were under 25 years old. The two medical students both owned a Smartphone, the nursing student, a Blackberry. Patients had been admitted for a mixture of elective and emergency reasons, and ranged in age from 53 – 80 years of age; all but one were male. This reflected the gender status of the second ward, but was less representative of the more equal gender balance of the first ward. All of them owned a mobile phone of some description, but these were mostly basic mobile phones rather than Smartphones.
Table 6 Interview participants

<table>
<thead>
<tr>
<th>Staff (n=9)</th>
<th>Patients (n=11)</th>
<th>Students (n=3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 consultants</td>
<td>10 male</td>
<td>1 final year medical student</td>
</tr>
<tr>
<td>1 junior doctor</td>
<td>1 female</td>
<td>1 4th year medical student</td>
</tr>
<tr>
<td>1 pharmacist</td>
<td></td>
<td>1 final year nursing student</td>
</tr>
<tr>
<td>2 staff nurses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 matron</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 ward sister</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 health care assistant</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Interviews: Date and duration*

Interviews were conducted with 23 individuals between May and November 2013, with a total duration of approximately eight and a half hours (appendix D). These interviews focused on understanding the participants’ use, attitude and experiences of mobile phones related to healthcare both personally and by others. All the interviews were audio-recorded and transcribed.

### 3.4.2 Achieving rigour

Conducting high quality research requires a rigorous approach which for qualitative work can be comprised of a number of elements. These include an acknowledgement of the subjectivity of the researcher and that the researcher affects the whole of the research process, from data collection through to theory building. This has been addressed in this study through: use of reflexivity; recognising and sharing the biases brought to the process by myself; and considering how these have shaped the construction of meaning. As part of this, I have described my professional and research background in appendix A, to make more apparent the perspectives I bring. Another requirement for rigour is to provide a clear description of the methods used, allowing readers to evaluate for themselves how the conclusions were drawn.

An example of these first points relates to my position as a novice researcher conducting interviews, but a practised clinician at history taking. As interviewing for qualitative
research has many similarities with clinical questioning, some skills may be transferrable: the skills of social interaction and negotiation that allow the interviewer to elicit information from the interviewee; and active listening which enables the researcher to listen to and follow up from the responses, rather than force their own questions. But medical interviewing skills alone are insufficient in their entirety for research purposes. Abreu, a researcher and occupational therapist, found herself “being clumsy, asking not probing, and maybe biasing the answer by the way I phrased the question”.144 As Britten warns, clinical and qualitative research interviews differ in their purpose and their constraints145. To combat this, I chose to evaluate my interview performance both through critical reflexion on the process, but also by applying two methods of analysing interview performance.151,152 My intention was to describe my behaviour in order to highlight areas for improvement, aiming to achieve a balanced interview which generated data relevant to the research question in hand. The implementation of these tools in this study can be seen in appendix E.

Another element of rigour that is often employed is that of triangulation, but this is more contentious. According to many, triangulation is an intrinsic, essential part of ensuring validity of case study research. This may include triangulation of methods, data triangulation, such as across subject populations and place;112 as well as investigator and theoretical triangulation.153 Using multiple methods is an intrinsic part of case study design, and data triangulation is achieved in this study through the inclusion of multiple participant groups and two separate clinical departments. However, the aim of triangulation needs to be clarified. If it is to validate findings, this delivers a message of a single reality that can be corroborated and cross-checked,154 which Ely et al argue detracts from the complexity of multiple perspectives and meanings, preferring the concept of ‘crystallisation’.154 This lends itself to a less contentious goal of triangulation (and the one of this study): to gain a more comprehensive understanding of the phenomenon.155
3.4.3 Approach to data analysis

Transcription

Following data collection in the form of interviews, the audio-recordings had to be transcribed in order for analysis to be performed. This can be done in a number of ways, through using voice recognition software, using professional transcription services or doing it oneself manually. These options all have their limitations. For example, voice recognition software will not work on interviews with multiple participants as the software has to “learn” one voice. Outsourcing the transcription requires funding and doing it oneself is remarkably labour intensive. When planning transcription, Pope and Mays suggest that “each hour’s worth of one-to-one interview can take 6 or 7 hours to transcribe, depending on the quality of the recording”\textsuperscript{148} as well as your own typing skills and the complexity of the interview. I initially chose to transcribe my audio files myself as I wanted to be self-reliant, and found that the transcriptions in this study took on average 8 x the actual duration, reflecting in part the difficulties of recording in a noisy environment such as the open ward. But this does not have to be viewed as time wasted. Bailey argues that it is part of the interpretative process, as judgements are made about what detail to include and how it is represented, and as such forms the first step of the analytic process.\textsuperscript{156} Lapadat supports this: “Each researcher makes choices about whether to transcribe, what to transcribe, and how to represent the record in text.”\textsuperscript{157} The transcription process itself although time-consuming also offered in return an intense familiarity with the data, facilitating the next stages of analysis. Braun and Clarke contend that a greater understanding of the data is achieved as a result of the close attention and time required for transcription.\textsuperscript{158}

Transcription for thematic analysis does not require the same level of detail as that for conversation or discourse analysis, for example in terms of timings, rise and fall of pitch, change in pace.\textsuperscript{148} It does however need a good \textit{verbatim} account which remains true to the original meaning through the use of punctuation and inclusion of occasional non-verbal sounds - an orthographic transcript as opposed to a phonetic one -\textsuperscript{158} as the pronunciation of words is not important to the data. Due to time pressures, the interviews for the second field site were transcribed by an external service, and checked for accuracy.
Thematic analysis

One of the weaknesses of case study design is apparently the poorly defined data analysis process;\textsuperscript{159} but this can be viewed alternatively as a strength as it allows a variety of analytic methods to be employed, depending on the skills of the researcher and the paradigmatic framework of the study. There are many different types of qualitative analysis, but the unifying aims of most are to present the phenomenon in all its complexity, and to draw out the underlying structure/meaning; a combination of “telling the story” and “unpacking” the data, the balance of which is determined by the analytical style.\textsuperscript{122}

Thematic analysis was chosen as it aligned with the theoretical framework and methods of the study, and was an approach that the researcher was familiar with. In general terms, it is a “method for identifying, analysis and reporting patterns (themes) within data”\textsuperscript{158}. The common alternatives often discussed in the health sciences literature on qualitative analysis are grounded theory and framework analysis.\textsuperscript{160} As Pope and Mays argue, framework analysis is a more deductive approach, and is more suited to research that is driven by policy needs or institutional information requirements. Grounded theory is an inductive, cyclical, iterative approach that systematically generates theory from the data;\textsuperscript{112} but it would not be compatible with the research design of this study. However, elements of the analytic approach of grounded theory may be drawn upon within thematic analysis.

What is clear is that whatever method is chosen, it needs to be a clear, transparent process for the purposes of rigour. This is especially true of qualitative research which is aimed at a non-social scientist audience. As Green and Thorogood recommend regarding quality assurance in healthcare research,\textsuperscript{122} this predominantly positivist audience demands greater description of how the analysis is performed; the links between the data and the claims must be clear. This can be difficult with thematic analysis, as it is widely used yet poorly demarcated according to Braun and Clarke.\textsuperscript{158} They undertake to lay out a “recipe” for thematic analysis, a “6-phase guide” discussing its advantages and disadvantages. As with Green and Thorogood,\textsuperscript{122} they argue that if insufficient detail is given to reporting the analytic process, one’s ability to evaluate research properly is hindered.

The analytic process in this study draws upon the guidance from Braun and Clarke, as well as Ely et al,\textsuperscript{144} Strauss and Corbin,\textsuperscript{112} and Eisenhardt;\textsuperscript{159} (further examples in appendix F)
1. “Study and restudy the raw data to develop detailed, intimate knowledge”. The first step was to familiarise myself with each case individually. I personally transcribed the first round of interviews, but had the second department’s interviews professionally done for time purposes. I checked each against the audio-recording and then re-read them, or typed up and elaborated a set of field notes.

2. **Note initial impressions.** This was just a scribble in the margin, or the electronic equivalent.

3. **Within case analysis: list tentative categories.** Each data item (eg interview or observed event) was viewed, in the first instance, as a stand-alone entity, allowing the “unique patterns of each case to emerge before investigators push to generalise patterns across cases”. The production of initial codes from the data followed this. Each data item was reviewed systematically, segment-by-segment; whether phrase, sentence or longer, and the question asked “what is this about? What is going on here?”

For example the following is an extract from an interview which shows the respondent’s words in italics and the codes attributed to what they have said in bold.

“Or I would ask them a pointed question (strategy to address misuse) and it would be clear they weren’t paying attention. (distraction) If you put your phone away you’ll know what’s happening. (engaging with the moment)

Codes identify aspects within the data that might be repeated across the data set, forming patterns or themes. Each data extract can have as many codes as are relevant, including text that remains uncoded, but as Braun reminds us, it is important to ensure that all data extracts are coded, even those that appear contradictory or inconsistent. Strauss and Corbin also stress how important it is that the label chosen fits the context of the event.

**Close text analysis** (appendix F): A necessary part of the process is writing memos that capture the thought process behind the choice of label, or that explores further the properties and bounds of the concept. Memos provide “a storehouse of analytic ideas”, as long as they are systematic and can be cross-referenced. Writing memos for each item was useful for the first part of the analysis; after close text analysis of a third of the data, the analytic framework was consolidated and subsequent analysis was more focused.

4. “**Group data under the still-tentative categories and revise categories if needed**”. I created a table in which all the initial categories were listed with the line reference and
some verbatim narrative for each instance. As each new category was added, I tentatively inserted it near other categories that felt as if they may be related. If there was no immediate, obvious choice, then new categories were just added to the bottom of the list in the spreadsheet. If an exact category had been used before, I added the example to that category, keeping the line reference and quotation with it. As I accumulated categories through each extra data piece, it became necessary to give the groups a heading to make it easier to find the right place (at that point) for each code. For example, ‘practical consequences’, ‘embarrassment’, ‘abuse / upset’, ‘infection control’ all came under a group heading of consequences.

5. Cross case analysis. This extended the search for codes beyond individual data pieces, looking for patterns across the data set. Looking at the data in a number of different ways is a way of counteracting a tendency to reach premature conclusions due to poor information processing; for example looking for a particular code in each piece to find data extracts that fit, as well as ones that conflict (appendix F). For example, examples of the intrusive nature of mobile phones or a lack of privacy were found in nine of the transcripts, but one opposing view was also found, where a participant specifically said that it was not a problem (table 7):

<table>
<thead>
<tr>
<th>Intrusive</th>
<th>Or not</th>
</tr>
</thead>
<tbody>
<tr>
<td>“The mobile phone as I say is very intrusive”</td>
<td>“You hear them going off in here, various people have them, it’s not intrusive, it doesn’t really matter, you know, there’s always noise in hospital, people coming around, nurses what have you, B: Paddington station, P: It’s just part of the noise, it doesn’t mean . No, I find it fine”</td>
</tr>
</tbody>
</table>

6. Develop themes Once all the data had been coded, and a list compiled of all the codes generated by the dataset, the next step was to look for themes. These are generated by sorting the codes into coherent combinations which are possible “themes”. This was
essentially a revision of step 4, but involved a rationalisation of the large number of
categories, and describing relationships between the remaining themes.

7. Cross referencing. Another technique used was to divide the data by its source: for
every example, comparing observational data separately from interview data. This “exploits the
unique insights possible from different types of data collection”. An example of this was
witnessing physical separation as a strategy for managing phone use as well as it being
reported. An alternative method was to group cases for analysis, such as by participant type
(e.g. ‘student’ or ‘staff’), and search for patterns across these separately. A further step was
to use deductive themes from the literature to open up the data in new ways: for example
looking for examples of always-availability.

8. Search for disconfirming evidence. Searching for negative cases, whether they are an
exception or a variation of the rule, was an important process to check or amend the
conclusions that have been made. For example, concerns over appearing professional were
limited to staff and students, and were only voiced by patients as an expectation of others,
not themselves.
3.5 Research setting

Sharing the details of the research setting is a balance between providing enough information for the study to be situated while omitting enough detail that participants are not identifiable. The ethics approval did not require that the departments themselves be anonymised, but in the process of presenting the data, it became clear that due to the rich level of detail examples were potentially personally attributable to those who know the setting. I have therefore removed the identifiable data from the description of the research setting.

The hospital

The study hospital is a regional teaching hospital and provides general acute services for the local population as well as specialised and tertiary services for a wider population across the region. Public Wi-Fi services are available via a pay-as-you-go service across the hospital site. Staff have access to hospital-provided internet services through fixed terminals but not handheld devices, except by their own data contracts. Students can access Wi-Fi through Eduroam in the medical school building but not the ward blocks.

The medical department

The ward is in a separate block within the hospital, on a shared floor, with the specialty day care wards immediately below. There are 26 beds, two of which are single side rooms, the others in 6-bed, single-sex bays. Each bay has its own shared bathroom. The patients are supposed to be predominantly specialty patients, but there are a variable number of medical outlier patients, under the care of other teams. There are separate doctors’ and nursing offices immediately behind the nurses’ station and also a patient TV room, a quiet room and a seminar room. Figure 2 is a diagrammatic representation of the ward layout to better depict the setting of the research. The ward sisters, the matron and the consultants have their offices on the same floor at the far end from the patient bays. The junior doctors cover their own specialty patients on call and do not take part in the general on-call rota. The registrars rotate between covering the ward patients, the outliers and day patients. Each consultant covers (has responsibility for) the ward for a week at a time.
The surgical department

A surgical specialty was chosen as it provided a good counterfoil to the specialty medicine department, redressing somewhat the medical / surgical balance. The ward is in a tower block and has 37 beds arranged mostly in 5-bed bays, with four single side rooms, as shown in figure 3. These beds are shared with another surgical specialty, with occasional general surgical outliers. There is a daily ward round led by the registrar of the week, with a consultant-led ward round each Friday. The registrar on the ward round has no other responsibilities during that period to either clinic or for acute admissions / referrals. The junior doctors (house officers and senior house officers) also work on the general surgical on-call rota and cover the pre-operative assessment clinic. The nurses are assigned to bays for each shift, caring for all patients regardless of specialty. There is one shared team office at the back of the ward, and a small staff tea-room outside the ward. There is no quiet room or seminar room. The ward matron has an office next to the tea-room, and the consultant offices are elsewhere in the hospital.
Figure 3 Layout of the surgical ward
CHAPTER IV: RESULTS

4.0 Introduction

This chapter presents the data collected through observational fieldwork, in-depth and *ad hoc* interviews, and analysed as discussed in the previous chapter. Firstly, I describe the ward setting, within which the ward round is conducted, including the people, the place and the background activities. I then describe the ward round in detail, including its routines: and the roles and goals of participants. The next section focuses on mobile phones as a part of this practice. Excerpts of data are presented from these data sources, with excerpts from field notes in italics; quotations have speaker and context established where appropriate. Methodologically, ‘research vignettes’, or descriptions of activities *in situ* as they occur, become important devices for representing holistically the performance of routines and flows of interaction within a setting. Vignettes are used in this chapter to offer a richer, more evocative illustration of mobile phones in practice as part of an existing assemblage of care and care artefacts.

Hospital wards are distinctive as care settings not simply as environments but as spaces within which there are very distinct flows and rhythms of interaction. These interactions are not just between people on the ward coordinating their own and others’ care but between the busy and varied practices taking place that involve a range of agendas and artefacts. In this study, the ward round is the case and so the research design instates a boundary around the ward as a physical and organisational space. Taking a conceptual approach that focuses on practice supports the depiction of interaction as it occurs. In this sense the ward is not simply a passive physical frame within which activity occurs, but it is co-constituted by the artefacts, people, routines and activities of which it is formed. Understanding the ward context from this theoretical standpoint becomes fundamental to understanding the use of mobile phones and the ways in which they are included and excluded from ward-based interactions and practices.
4.1 Morning on the ward

Place matters according to health geographers, “experiences of health and medicine cannot be detached from the places in which care is received”. The settings in which health care is performed are diverse, leading to wide variability in practices and experiences of care. As discussed above, understanding these experiences and creating a holistic picture of phone use requires fine description of the people, artefacts, environment, activities and agendas into which phone use is embedded. Equally, time matters as the social rhythms of the hospital mean that, even in one place, the patterns of work and activities will change according to time. The morning on the ward has a particular character when compared to the rest of the day. It is against and within this backdrop that the ward round takes place, with the rhythms of the morning activities intersecting and colliding with practices specific to the round. The following account of morning on the ward is taken from observations taken throughout the fieldwork period.

The medical ward

The ward rounds are usually held in the morning. Nursing handover occurs earlier, at shift change which is usually about 7.30. This is then followed by the rhythms of the morning routine, with a combination of breakfast being delivered to the patients at their bedside, nurses doing the morning drug round with a drug trolley and handwritten drug charts, independent patients slowly getting themselves up and going out to the bathrooms to get washed and dressed, and dependent patients waiting their turn for the health care assistants and nurses to help them. Those that can are encouraged to sit out in their chair rather than spending the day in bed, and the beds are remade. There is an associated paraphernalia of clean sheets, laundry bins, wash bowls, hoists, walking frames, disposable wipes, hospital issued gowns and nightwear. Curtains are drawn around patient bed spaces to afford them some privacy, occasionally bulging around chairs, bedside tables and equipment such as hoists. There is also a four hourly observation round, where the HCAs will take the patients’ blood pressures, heart rates and temperatures, usually using the mobile automated blood pressure machine and a digital tympanic thermometer and record the readings on paper charts. Intermingled with these routine patterns come others such as visits by other health professionals such as
physiotherapists and occupational therapists, and the phlebotomy round where the phlebotomists take the bloods for those who have had them requested that day. They now use a mobile scanner to check the patient’s barcode against the request forms and the labels for the blood tubes. Patients are taken off the ward by porters for interventions and investigations, which necessitates a working around their presence / absence. Porters carry walkie-talkies and mobile phones to liaise with their headquarters. Most of the activity happens within the patient areas, in their individual bed spaces with or without curtains drawn, or within the patient bay. Apart from the ward clerk, the central ward area is more of a transition zone, with people crossing it in multiple directions, or lingering for a few minutes to get information from notes or other staff before moving on to their intended point of action. The housekeepers work their way around cleaning away dirty breakfast things, doing another tea round, taking meal orders on tablet computers, as well as cleaning the ward. The most noteworthy absence from these activities is that of visitors, as visiting hours are restricted to afternoons and early evenings to allow the ‘business’ of the ward to be done.

This description of the ward in the morning gives granular sociomaterial detail about the ‘goings on’ of the ward. There are a number of people involved, with a variety of agendas, abilities and needs. The goals and outcomes also vary from the mundane (another cup of tea?) to the pivotal (drawing up the correct prescription), but all contribute to a shared work of care. Matter matters. Both technological and non-technological artefacts are integrated into the morning routines, such as an electric hoist or a barcode scanner contrasting with a plastic wash bowl or a metal trolley laden with clean sheets. Space and time also matter within these routines, such as the nurse manoeuvring their way around a bulging curtain with a bowl full of water, or the porters arriving to collect a patient who is half undressed.

What is also apparent is that there is no input by doctors into this assortment of intertwining and co-localised activities that comprise the daily morning work. The morning routines for doctors differ depending on the day of the week, whether it is the day for a senior round, a normal weekday, or a weekend day. These are explored in greater depth in section 4.3, where the ward round is described.
4.2 The participants

This section draws on both the literature and the study data to provide descriptions of the study participants relative to their role in the context of the ward. Where chapter 3 reported the main descriptors of the participants who were interviewed, this next section describes the central characteristics that define the different participant groups in order to illustrate the diverse experiences and expectations of being in the ward setting that each group experiences. These descriptions contribute to the account of the context in which care is being performed.

4.2.1 Patients

Arguably, although one can be a patient ‘anywhere’, being an inpatient where one is confined to a ward setting involves a certain loss of identity where one becomes subject to activities and schedules over which there is little or no control.161 Hughes argues that there are “few experiences more stressful or depressing than being hospitalised.”129 Loss of freedom, lack of control, uncertainty and discomfort are commonly experienced by those admitted to hospital,162 along with “feelings of anxiety, loneliness, and boredom, difficulty sleeping, and the restrictiveness of having intravenous lines in place.”163

Part of what the ward achieves is the imposition of boundaries that encourage patients to remain in one place. Being admitted as an inpatient means being assigned ‘a ward’ in a hospital made up of a number of wards, within which an individual takes up residence within a designated hospital bed and bed space. Beds are usually positioned within shared ‘bays’, within a ward made up of a number of bays. Despite the fact that the bed space is now that patient’s “home away from home”, it is limited in its resources, containing a bed, a chair, a cupboard, a table (patients have to share a bathroom). There are other patients within a few metres of them. Aside from basic meals, drinks, hospital issue clothing and towels, anything else that they want or need has to be brought in from outside the hospital. They are expected to remain physically available for interventions or procedures hospital staff need to carry out, so leaving the ward is discouraged. They may be constrained physically through being attached to drip stands and intravenous fluids. Their state of health or the interventions that take place in the ward may leave them dependent on wheelchairs or walking aids, or else they may be bedbound. Patients may also be constrained by the need for them to be attached to machines that require an electricity
source and therefore have to stay plugged in, such as cardiac monitoring or dialysis machines. Within the ward itself there are areas that they do not have access to, such as the offices, the treatment room, the sluice or any other ‘side room’.

Patients are also confined temporally by the various rhythms and routines of ward life that are imposed on them. Visiting hours are restricted, meal times are set and inflexible, drug rounds, observation rounds and doctor rounds all occur at varyingly predictable intervals. In addition they are confined ‘virtually’ in the sense that access to the internet and to television is limited through the cost of the services available. Privacy is also restricted through the proximity of others, with no auditory barriers and only curtains to provide an illusion of seclusion. Patients can therefore do little to control the ambient noise level to which they are subject. In many respects, they are on the ‘wrong’ side of a power differential; dependent on people and procedures with whom and about which they are unfamiliar, and have no control.

How much these restrictions are noticed and reacted to will vary from individual to individual, in accordance with their circumstances and needs at any particular time. Boundaries or constraints may be experienced as restrictions or they may simply be ignored. They may be recognised but then incorporated in such a way as to cause minimal disruption to the patient’s own needs and intentions. People in pyjamas are not an uncommon sight in the hospital shop or smoking at the hospital periphery. The boundary of the hospital ward is both clear and interpretable; a resource and a constraint. For most patients the inpatient experience is temporary and therefore an interruption (either planned or unplanned) to their own routines and daily activities. Work, care responsibilities, relationships are all disrupted by being on the ward and new boundaries between, for example, being a patient and being an employee or being a patient and a carer have to be negotiated. A simple depiction of this is shown in Figure 4. For some patients with conditions that mean that they are frequent inpatients, these boundaries will be familiar and they will have established means of negotiating them. For others, their inpatient stay will have come as a shock and they will be unprepared. Either way, patients have to negotiate boundaries between their life inside and outside the hospital.
The next section demonstrates how the boundaries within the same ward setting differ for the other study participants.

4.2.2 Health professionals

The ward setting for other participants is very different because it is primarily a work domain, with the associated demands and pulls on an individual’s time, activity and focus determined essentially by their role and job remit. As a whole, staff and students enjoy greater physical and spatial freedom than patients, but still experience the temporal constraints of hospital rhythms, such as working hours, visiting times, patient meal times. This next section describes the roles and responsibilities of the healthcare professionals and trainees who participate in care practices that constitute the ward round. Exploring the details of these ‘job descriptions’ allows us to identify the boundaries experienced within them. Their primary role determines how distributed or setting-specific their work is, altering the number of boundaries between different responsibilities. Each is taken in turn and examples given of the outcomes and accomplishments that are expected of their position as demonstrated within the data and the literature. The diagrams in this following section show the duties of the professionals working in the ward setting and participating in ward rounds as part of this work. They show how the spatial distribution of responsibilities varies considerably between roles. Ward rounds are just one example of direct patient care, competing for time and attention with many others.
**Senior doctors**

Being on the ward for a senior doctor is only one part of their professional working life, as demonstrated in figure 5. They are expected to be practitioner, scholar, teacher and professional, as demonstrated in the examples from the study data with a duty of care to their patients, their juniors, their colleagues, their employers as well as to the broader public and NHS. They are accountable for their professional practice to the General Medical Council, who lay out the standards expected of professional practice in the “duties of a doctor”91. Within the ward setting, the doctor is firstly practitioner, although this is closely entwined with teaching and managerial duties, all of which are inextricably linked to the need to be a scholar. Equally, these domains of responsibility are distributed across a number of settings, both within and without the hospital. Figure 5 describes the spaces and areas of activities across which senior doctors have to coordinate their responsibilities:

**Figure 5 Responsibilities of senior doctors**

![Diagram of responsibilities of senior doctors]

- **Out of hospital**
  - Patients on other wards
  - Other clinicians
  - Clinic / theatre / emergency care
  - Administration and management responsibilities
- **In hospital**
  - On the ward
    - Direct patient care (Eg ward round)
    - Teaching and supervision of juniors
  - Continuing professional development
- **Home / personal life**
  - GPs
  - Outpatients
  - Deanery and/or College
The following are some examples, taken from observational and interview data of the activities in which senior doctors engaged:

The consultant examines [the patient’s] abdominal wound […]. He then says to the patient that he can go home to his “nearest and dearest.” (Field notes, SWR3, 29th November 2013).

This brief ward round encounter demonstrates the consultant as practitioner, making and communicating decisions, which are then left to the team to fulfil:

They start by discussing sick patients and discharges first at the notes trolley […]. An alarm then goes off, and the ward round team runs into one room whilst the nurses run to another. But it turns out to be a false alarm. Once they’ve finished discussing they move to see the actual patient […]. The consultant is teaching as he goes. (Field notes, MWR2, 13th June 2013).

In this example the consultant combines clinical care for the patients with teaching for the juniors, using the clinical cases as a springboard for the teaching content. Teaching and practising care are enmeshed, as in the following example also:

The registrar examines the patient behind the curtain whilst the consultant teaches. The consultant goes to examine the patient’s abdomen himself specifically. (Field notes, MWR2, 13th June 2013).

In the above, the consultant shows his duty of care to the patient, the registrar and the rest of the team here. The repeat of the examination shows his juniors how he performs an examination, it double-checks the findings of the registrar which is important for training, and it ensures decisions made are clinically sound. This last example is a good demonstration of how senior doctors are expected to put the care of the patient first, by “working with them as partners in their own care and making their safety paramount. It involves dedication to continuing improvement, both in the doctor’s individual practice and in the organisation and environment in which they work.” 164

These examples are limited to those observed within the ward, but as illustrated within figure 5, the consultants’ domains of responsibility are distributed across multiple areas of the hospital and beyond. This contrasts with those whose roles and responsibilities are more setting specific, such as the nursing staff.
Junior doctors

In the two departments in this study, the junior medical staff are ward-based: patients under their consultant’s care elsewhere in the hospital are somebody else’s responsibility. Except for formal learning sessions, such as Foundation programme teaching sessions, they are not expected to juggle distributed responsibilities. This is demonstrated within figure 6 which shows the localised nature of their work:

Figure 6 Responsibilities of junior doctors

Medical students

Medical students are on the ward to learn how to become doctors. They are expected by their medical schools and by the General Medical Council to work towards achieving the standards and outcomes set within Tomorrow’s Doctors with respect to knowledge, skills and behaviours, while maintaining the professional values of good medical practice. Although still students, they are already accountable for their behaviour, as “medical students have certain privileges and responsibilities different from those of other students.
Because of this, different standards of professional behaviour are expected of them.165 They bear responsibility for “maintaining the standards of competence, care and behaviour” 165 that qualified doctors are expected to achieve. In terms of what that meant for their role within the ward and the ward round, they are present in order to learn how to be a medical practitioner: delivering clinical care; working with patients and colleagues in a “competent and ethical manner”; and committing to improving their own practice.164

Students learn on the ward in a number of ways, including legitimate peripheral participation, reflective practice and experiential learning,68, 166, 167 they also learn through observation and role modelling.168 Below are some examples of these activities as they occur ‘in practice’ taken from fieldwork notes and interviews:

The registrar did a lot of teaching and explaining to the medical students, using diagrams to help. (Field notes, ward observation, 22nd October 2013).

10.35 bay 2; the registrar is using the students for various jobs, fetching things (gloves, notes, folders etc). (Field notes, SWR3, 29th November 2013).

He [the consultant] looks round for students, asking if anyone has clerked any patients. (Field notes, SWR3, 29th November 2013).

“There’s also a lot of learning by looking to see how an experienced doctor interacts with patients and staff. And you can learn from both good and bad interactions, I’m not saying that every experienced doctor will give you a good example, but you can see bad examples and learn from those.” (Staff interview, MS7).

“Asking, wondering why they’ve given that drug and not another drug. I might look something up really quickly…. I’d rather see it right there and then and then it sticks more.” (Student interview, ST1).

As these examples demonstrate, involving students in the work of the ward and encouraging them to reflect on what is taking place are key parts of the learning experience.
Nursing staff

Senior nursing staff are responsible for the management of patient care as achieved within the ward setting, through their remit to “lead, manage and supervise clinical practice and the ward environment”. This includes: overseeing the practices of hands-on care by the junior and auxiliary nursing staff; being able to act as the clinical expert in their field as well as an educator; ensuring standards of ward cleanliness and nutrition are delivered by housekeeping and support staff; and being the communication ‘hub’ between ward staff, patients, visitors and non-ward based professionals; managing the shift and the staff. This is shown in both the observational and the interview data, where, for example, the sister describes how she managed to fill the nursing shift roster by text messaging on her phone while the ward round progresses and when she criticised the consultant for failing to maintain a patient’s dignity adequately:

Next patient: in opposite side room. The nursing student goes to take a call from the site manager …. The consultant, junior doctor and medical student go in. The pharmacist stays in the lobby. The medical student is making medical notes, the consultant has the observation chart. A second junior doctor then joins them. No nurse present. As they finish, sister and nursing student both reappear. Sister is unhappy with the consultant: “Was it really necessary to have a room full of people in there when she’s halfway through a wash?” (Field notes, MWR3, 20th June 2013).

Into the side room: the sister holds a phone: she has been discussing off duty and shifts with the matron, rather than listening to the case discussion. She has it on text screen, then gets bleeped and uses the landline to reply. She rejoins the ward round while putting the phone away, then she pulls it out again, using it at the back of the ward round behind her clipboard. She stops before entering the patient’s room. She then asks the consultant to follow barrier nursing precautions: he realises about the gown, but as he approaches the patient, she says “and gloves!” he gets them, and holds them up to her, the nursing student laughs. (Field notes MWR2, 13th June 2013).

Their level of seniority influenced how much of their role was based within the ward itself, or whether they had management and administration responsibilities that pulled them outside of the ward, as shown in Figure 7:
This demonstrates the contrast to the spatially distributed nature of senior doctors’ responsibilities. Junior nurses have an even narrower domain of responsibility. They are mostly confined spatially to the ward and temporally to their working shift. Duties are handed over to another at the end of each working shift. Even within the ward they only have responsibility for a limited number of the patients, usually organised by patient bay. Within that remit, their role is “to be accountable for providing and overseeing total patient care”. They are a “central point of communication between the patient and the medical staff”, as well as being an advocate for the patient. They check and administer prescribed medications, they observed, and record their patients’ condition; they carry out care activities such as wound care, basic hygiene, maintaining care records. They educate patients as well as students and the following extracts and quotations provide examples of these activities:

In the same bay, the staff nurse is doing the drug round with a student nurse, and is teaching her about the indication and mechanism for the drugs that they are giving out. (Field notes, MWR2, 13th June 2013).
The sister in charge is in the nurses’ office with a staff nurse, discussing shifts. The nurse goes back to the bay, the sister stays in the office... A staff nurse wheels a dressing trolley out of bay 1, another staff nurse wheels the weighing chair out and then into the next bay… Nurses and healthcare assistants occasionally walk through, but don’t tend to stop; they usually seem to be getting or moving equipment as they go, e.g. the linen trolley, linen bag etc. (Field notes, ward observation 3rd July 2013).

Nurses on the ward are in the bays, getting patients up and washed. (Field notes, MWR3, 20th June 2013).

Summarising this section we have a clearer idea of the roles and responsibilities held by participants and how the varied nature of these contribute to the work of care. It also highlights the boundaries and constraints within which care practices are performed and experienced. In the next section, the ward round, our case of a care practice, is explored and described.
4.3 The ward round

Ward rounds are a coming together of the team and the patient to accomplish patient care, integrating multidisciplinary collaboration and knowledge into patient progress. Busby describes it as “one of the most valuable times for sharing information, problem solving and planning treatment”, supported by the views of the Royal Colleges of Physicians and of Nursing who add that they are ‘complex clinical activities’. The colleges’ principles of “best practice” for ward rounds include consideration of communication, team roles, time, structure, resources and processes. Despite the ward round’s longevity and its centrality to activity, it has been surprisingly relatively under-researched. The dominant considerations in the literature currently are around simulated ward rounds and quality issues. This replaces a previous focus on communication adequacy, both inter-professional and staff-patient. The importance of non-verbal interaction and the ‘embodied’ nature of the ward round has also been explored.

The following is a fine-grain description of the ward round as an entity in its entirety, deliberately avoiding a focus on single aspects of practice. This will then allow a greater appreciation of the whole process into which phone use is being integrated. A ‘mobile phone lens’ will then be applied, specifically pulling out instances and patterns of phone use (and non-use) to gain a greater understanding of the effects, consequences and implications of the introduction of a relatively new technology into healthcare practice.

There are two main types of ward round. On days when the juniors see the patients by themselves, their ward rounds are much more informal, and they slowly work their way around the patients under their care, prioritising order depending on patient need (e.g. if they are unwell), discharge plans, and other demands on the patient’s time such as surgery or other interventions/investigations. They are more flexible in the order in which they see patients than the formal ward rounds, and are more likely to work around others than take priority. Formal, senior-led ward rounds are very different from these daily, junior rounds. Before a senior ward round the juniors spend time preparing for it. They update their patient list to ensure that all patients under their care would be seen, they check on whether there have been changes since they last saw the patients, they familiarise themselves with new patients and their history to be able to present them to the consultant, they update
results of investigations such as blood tests and imaging, making sure that they have as much information at hand when the consultant sees the patient as possible, to make the ward round run more smoothly.

The senior ward round varies between wards and between clinicians to a certain degree. The surgical ward hold a ‘board round’ beforehand, a separate discussion away from the patients within an office space. They run through all the patients in turn from printed copies of a typed ward list, running through the main points regarding underlying problem, progress, current status and plan. This also allows them to prioritise their work load, such as identifying unwell patients or patients who need to be seen before theatre. They then start the bedside ward round where patients are clinically reviewed, face to face, in turn.

The medical ward round members have a brief discussion before the round starts as to the order of patient review, how many patients need to be seen and their location, but do not hold a board round first. One of the medical consultants asked the members of the ward round to introduce themselves and their role / position at the start but this was unusual.

4.3.1 Multiple and fluctuant membership of the ward round

The participants in the ward round fluctuate as the ward round progresses, with people ‘entering’ and ‘exiting’ depending on their role, their immediate task, and other demands on their attention such as bleeps going off. A senior nurse is part of the ward round on both wards, and individual staff nurses join in or contribute on an ad hoc basis. The medical ward round usually has a pharmacist participate while the ward round stays on the ward, but they do not tend to follow the ward round to any outlying patients. There are medical students on placement with both medical and surgical teams, so they join the ward rounds. Their level of participation varies depending on their seniority. The medical ward has 5th year medical students who are involved in the work of the round much more than the third year students on the surgical ward. The third years’ role is mostly passive except when engaged in teaching by the clinicians, and on rare occasions they will present a patient that they have clerked. The patients themselves participate to a greater or lesser extent in the ward round, depending on their status as well as the clinician’s style. Their part in it is usually a discrete episode, heralded by the team arriving at their bedside, and ended by the team ‘moving on’. They are not usually then involved again unless there is a specific need. As ward rounds take place outside of visiting hours, there are usually no visitors present with the patient unless they have been specifically asked to come in.
4.3.2 The routine of the ward round

The exact style of patient review varies between clinicians, but consists of the same substance for the most part. The clinicians introduce themselves or greet the patient if they are known to them, and variably introduce the team. Sometimes the curtains are drawn, especially if the patient is to be examined, but this constrains the space available to the team, who huddle up inside, or stay outside the curtain but outside the core activity, or move back and forward between them. Depending on the number of juniors, one might present the patient and their progress to the consultant, another would get the observation and drug charts out, another might start recording the review within the paper patient records. Reviewing the patient entails review of response to treatments, current medications, results of investigations and discussion of current problems, culminating in plans for care and planning for discharge. Clinical examination of the patient is performed as necessary and is usually targeted, whether listening to a chest or examining a wound. The nursing staff typically provide an update on aspects such as pain control, mobility, nutrition status and the state of wounds and skin integrity. They also contribute information about social issues and the level of support needed on discharge. The senior nurse is often multi-tasking as they have an ongoing responsibility for managing the ward; this means that they are also juggling issues such as finding cover for nursing shifts and problems arising elsewhere on the ward simultaneously with the ward round itself. The pharmacist reviews the patient’s medication chart, making suggestions, amending the chart and querying prescriptions that they are not happy with.

Jobs to be done such as changing a prescription, or requesting an investigation are either done as part of the immediate bedside activity, or the junior doctors add it to their job list to be done after the round. This is usually handwritten, and either a collective list is compiled or jobs are added individually to their own patient list. Teaching is *ad hoc*, and depends on the lead clinician as to whether they take opportunities arising from a patient’s case to develop into a teaching encounter. This mostly happens aside from the interaction with the patient, and usually in the time and space between finishing with one patient and moving to the next.

Each individual review tends to take priority over other activities for that patient; for example the consultant review takes precedence over a set of observations, as long as the patient is physically present. This is not quite the same at lunch time, as the hospital has a
policy of protected meal times, where the patient meal is supposed to take priority over any other routine activity, including clinical review. When the ward round runs late, it makes it difficult to continue unimpeded, and so the team has to find a way to work around that problem, such as moving to a bay that has not yet been served, seeing patients who are not eating, or the team themselves take a break.

The core ward round usually ends when all the patients under the team’s care on the main ward have been seen. At that point the consultant and the registrar go and see outlying patients who are usually under joint care with another team, or under another team’s care entirely. The rest of the ward round team stay behind on the ward and start to implement the work generated by the ward round process. The junior doctors base themselves within the office, running through the list of jobs to make sure that none had been missed and divide up the work according to priority and skill mix.

### 4.4 Mobile phones on the ward

Having looked at the ward round holistically, describing its characteristics based on the fieldwork data, we have an illustration of the settings and the routines within which this study considers mobile phone use. Looking now specifically at mobile phones allows us to explore how they have been integrated and embedded into these pre-existing practices. This section offers an alternative depiction of mobile phone use that does not rest solely on the criteria of ownership, functionality and distribution, as is often found in the conventional medical mHealth literature. In this study, the type of device is significant but so too are phones as part of complex patterns of interaction that are situation specific. More detail on the intentions and achievements of phone use are described in the next chapter.

As a whole, mobile phones are not that visible. They are not a dominant feature within the ward or the ward round, rather they are one amongst many artefacts employed by participants. Ward round use of mobile phones is very limited. For the most part they are used fleetingly, intermittently. Their use and their presence is not constant. Their visibility fluctuates: phones come into view briefly as they are pulled out of a pocket or bag and then disappear again. This is especially true of staff and student phones within a patient area; they are more visible in staff-only areas such as the office. Patient phones are more visible,
in that they tend to be lying on the patient’s bedside table or cabinet, but are not often actively in use. Neither are phones particularly audible: mobile phone ring tones are a rare occurrence, especially when compared to the auditory canvas of the ward, with the landlines ringing, and a plethora of beeps and noise from the array of machinery on the ward. For the most part, telephone dialogue is not distinguishable from the multitude of co-local interactions that are being conducted.

Even within the confines of the defined terms of a mobile phone, the range of devices varies from incredibly simple to highly complex. This reflects the consumer market picture better than the research literature. The research literature focuses on smartphones and apps, but the market for mobile phones includes a range of devices. A recent consumer report describes this market as comprised of basic phones, smartphones and specialist phones (e.g. with large buttons, emergency buttons, talking keys). Neither a participant’s age nor their role predicted which phone they choose to own, with each group demonstrating a spectrum. Table 8 describes types of phone that were observed in use during fieldwork along with an illustrative quotation from the participant / mobile phone owner (see table 8):
### Table 8 The range of devices owned by participants

<table>
<thead>
<tr>
<th>Type of phone</th>
<th>Excerpt from interview</th>
<th>Participant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phone without ‘smart’ functionality</td>
<td>“It’s only a very basic one, it’s nothing, it doesn’t do anything that I’d like.”</td>
<td>patient MP2</td>
</tr>
<tr>
<td></td>
<td>“It’s a Tesco’s phone and I’ve got a button on the back on the back of mine, a big orange button about that big, and if I press it, if I’m in danger, it gets through to my daughter.”</td>
<td>patient MP5</td>
</tr>
<tr>
<td>Bottom-end smartphone</td>
<td>“It’s a little Blackberry, not a proper one, just a, I don’t even know what it is, it’s purple. I can get on line but it’s very slow.”</td>
<td>student ST3</td>
</tr>
<tr>
<td></td>
<td>“I still have an iPhone, it’s just a very old iPhone and the data’s a bit, it’s just a bit, it can’t quite handle all the new software so it will crash with apps and stuff.”</td>
<td>staff MS8</td>
</tr>
<tr>
<td>Top-end smartphone</td>
<td>“I’ve only just got a new Smartphone. I’ve had rubbish since, for years. And secondhand ones. And all of a sudden I’ve got a shiny brand new one and it’s like, ooh, it’s the best thing that’s ever happened to me.”</td>
<td>staff MS2</td>
</tr>
<tr>
<td></td>
<td>“Well I’ve got a Smartphone. Shall we start off by saying I’m 80 years of age?”</td>
<td>patient SP2</td>
</tr>
</tbody>
</table>

All categories of participants own and use phones but within each group there is also a wide range of use and attitude as the following quotations and extracts illustrate:

“I’m not really a regular user, bit of a dinosaur … I’ve had that about a year I suppose, but it’s been lurking in my drawer.” (Patient interview, MP4).
“It is moving so quickly, you know, it really does lose me. [...] I always worked with my hands as a builder but these little things, and computers, frighten me, you know. They really do.” (Patient interview, SP5).

“It’s a phone, I make calls, I take calls, that’s it.” (Field notes, patient, informal conversation, 19th November 2013).

“But now phones have changed so much, they’re not just phones, they are your personal assistant; they do so many things, that really you can’t; it’s very hard for most doctors to manage without them I think.” (Staff interview, MS4).

“I’m really attached to it, it’s got to stay on me, and I feel very uneasy when it’s not on me. Even if I know it’s in a safe place, if I don’t have it in my pocket or something, I’ll be constantly distracted thinking about it.” (Student interview, ST1).

“I wouldn’t want to be without it, no not now, not having got used to it.” (Patient interview, MP2).

In these examples we see participants demonstrate different levels of attachment to their mobile phones. What is also noticeable are the physical restrictions that limit a number of patients, such as dexterity or vision:

“I don’t use a mobile, [it’s] too fiddly, the screen is too small.” (Field notes, patient, informal conversation, 23rd May 2013).

“I have one, but I haven’t brought it with me as I can’t use it, my fingers are too swollen up.” (Field notes, patient, informal conversation, 20th June 2013).

Also marked by their absence are any visible policy or guidelines on mobile phone use. As many participants pointed out, as compared to a few years before, there are no posters or signs on display that restrict or limit phone use by individuals. Many are unclear on what the local or institutional policy is, but the change in the status quo was remarked on, with spreading mobile phone uptake and an evolution of attitudes and behaviours:

“I leave it at home.” (Patient interview, MP5).

“I couldn’t survive in here without it. Previously you couldn’t use it. If you were in for a long time, you got lonely.” (Field notes, patient, informal conversation, 28th November 2013).
“It’s a boon. In the old days, they used to have to wheel the phone round, the old dial up one, you know, and you were only allowed 2 minutes as everyone wanted a go and it was really expensive.” (Field notes, patient, informal conversation, 13th June 2013).

The contextual influence on need and use is also notable for patients. It reflects the physical and virtual constraints that they experience through being admitted and their individual response to these.

4.4.1 Relative absence of participation

Similarly mobile phone use is not highly visible during the ward round itself, and is much more limited than had been expected from the literature. There were one or two people who stood out from the rest through their frequent phone interactions, whether it was for communication or for accessing resources. As a whole, most participants use their phones on only one or two occasions during the ward round, and only very briefly and discreetly when they do so. Mobile phones are not the dominant method of contact or communication for members of the team; many of the team are entirely ward based and so have no calls on them from elsewhere; others use bleeps instead of phones as it is their role that is relevant and not them personally, and the hospital provides bleeps for that purpose. The consultants all carry mobiles, but most of the contact made with them by others during their ward round is done in person.

The interview data reflects this with the majority of patients not having noticed staff use their phones, and with staff and students describing how they restricted their use in front of patients or during ‘work’ time. For example, coming to find the consultant in person on the ward round to talk rather than phoning; using a landline or bleep rather than a mobile; counting on fingers or using the paper BNF rather than a phone; using people as a source of information:

Students left outside [the cubicle] are using the pharmacist to answer questions provoked by the previous patient. (Field notes, MWR1, 23rd May 2013).

The 2nd registrar is back waiting for the consultant to finish with the patient. Then goes away, comes back again 5 minutes later. Dr also joins the ward round, starts talking to sister while the lead consultant is in with patient. Both wait for her to
completely finish with the patient before starting to talk. (Field notes, MWR1, 23rd May 2013).

Both the observational data and the interview data revealed many examples where mobile phones could have been used but people chose not to, especially during ‘patient facing’ activities.

4.4.2 Phone use in the margins

After the ward round finishes, the team become more relaxed, and start chatting as they work and often bring out their phones to check them, send message and make voice calls. These phone interactions are mostly suspended during the course of the ward round. The work of the ward round takes priority over the majority of phone use, relegating phone use to the peripheries of work activity.

4.5 Summary of chapter 4

In summary, the ward round accomplishes care through the integrated actions and contributions of a number of members, including mobile phones. The ward round as an example of a care practice, fits the conceptualisations of practice as laid out in earlier chapters: recognisable but unique; situated; contingent; and involving multiple actors. Phone use in the ward rounds is very limited, but this provokes the question of where mobile phones are being used. The next chapter describes phone use within the wider care practices that surround and contribute to the ward round. It explores more abstract concepts raised by the integration of mobile phones into these care practices as well as the goals and outcomes achieved through phone use.
CHAPTER V: ANALYSIS

5.0 Introduction

Having located mobile phones within practices constituting and taking place within the ward, this chapter offers an in-depth analysis into mobile phone use. The question asked in this thesis is “how and to what extent mobile phones are being integrated into healthcare practices in the ward setting?” The conceptual, and arguably normative, position taken is that ward practices are focused on the enactment of care within the ward setting. The enactment of care or care practice is understood as relational, that is to say, care cannot be guaranteed nor is it pre-determinedly the domain of a specific individual, group, artefact or scenario. In this sense, care is highly reflexive and produced through interactions that are complex and contingent, distributed across space and time. If we take care practice as a starting point then the question of what new dimensions and characteristics of such practice mobile phones produce becomes the one around which analysis is centred.

Chapter 4 provided a rich description of the diverse needs and priorities of the ward, as well as showing the limited use of mobile phones within the ward round itself. In this chapter we begin to see how mobile phones have become part of care practices surrounding and supporting the ward round. Focus is directed toward the part mobile phones play in care as it is practised on the ward. At this point it is important to recall that the ward is an environment where both caring and learning to care occur ‘in practice’, whether for oneself or another. Health professionals at any stage in their career are constantly learning, both informally as part of their day-to-day work and formally as part of their continuing professional development. Patients and carers too are learning about the hospital environment and taking in clinical developments, thinking through what these developments mean for their lives both in and out of hospital. For medical students, the ward is a significant site of learning within their formal education programme. Understanding the part that mobile phones play in these different forms of practice is therefore a significant aspect of their use to consider.
In the second part of this chapter I begin to focus on the significance of boundaries and what is referred to as boundary work which becomes significant when mobile phones become part of care practices in the ward setting.

The case study chosen for this research was the ward with particular attention paid to the ward round. Data collection therefore typically took place in the periods before, during and after the ward round. These were the periods of time in which observation was carried out, the product of which was fieldwork notes. Observation data included *ad hoc* conversations where ethically appropriate and, in addition, observation was supported by semi-structured interviews with staff, patients and students. In interview data, study participants made reference to examples of mobile phone use beyond the ward and ward round. These examples extended beyond the boundaries of the case but offered important data on mobile phone use by surfacing further examples. I chose to include this data as it offered a richer picture of the care practices enabled and accomplished by mobile phones. It was also more representative of the ‘patient journey’ (typically the sequence of care events from the point of entry into the healthcare system until the point of discharge or death) than an account of care practice restricted to the ward round alone. Both observation and interview data are drawn on to produce the analyses of mobile phone use below.
5.1 Mobile phones in ward practices

5.1.1 Mobile phones and the distributed work of hospital care

Historically, it has been recognised that care requires coordination across settings and between care teams. In hospital-based care this has been achieved by the emergence and wide-scale use of the ‘bleep’ system. At the field site, mobile phones are used alongside, rather than replacing, the bleep system. For example, a significant use of phones by healthcare staff is for communication that supports the coordination of care activities. One example is that text messages were sent between participants in the ward round to arrange when the round should begin (field notes, SWR3). Phones are used to inform members of a patient’s care team about their clinical progress (staff interview MS8). A phone call may expedite a request for help, as one healthcare professional explained:

“While you have a bleep, it’s quite hard to judge what’s going on, especially when it’s your team and it’s your patients and you know, it’s quite easy to go, ‘By the way the patient we were talking about yesterday, I need you to come down and it’s really important’, because it’s quite personal, and it’s easier than picking up the phone and answering a bleep.” (Staff interview, junior doctor MS8, on contacting seniors).

For some individuals, phones have become so integrated with the management of care activities they are understood as significant and active entities in themselves:

“My phone tells me what to do, [it] tells me what I’m supposed to be doing.” (Staff interview MS4).

For some staff with management responsibilities, such as senior nursing and medical staff, the mobile phone supports them in fulfilling their dual clinical / management roles. For example, on the medical ward, the ward sister described how she was able to organise the nursing shift rota by sending and receiving texts and a consultant described how he was able to monitor his email, both while simultaneously continuing with the ward round activity (field notes SWR3). Used in this way, the mobile phone allows clinical staff to multi-task, or to ensure that at bedside clinical time i.e. time spent with patients is optimised. In one example of this, the registrar on the surgical ward was able to speak to the surgical consultant, find out he was on his way and consequently request to have the
dressings covering surgical wounds taken down as the ward round started so that the consultant could see how well they were healing (field notes SWR3).

Mobiles also support patients in being able to coordinate care activities across the contexts they need or that are relevant to them. For example, one patient was able to phone another patient with whom he shared a hospital transport car and inform them that he was going to be later finishing his treatment than normal, enabling them to warn and delay the driver so that he did not miss his transport home (patient interview MP6). Another used their mobile phone to request and implement a change in their medication:

SP: “[The] Doctor’s surgery will issue medication on the say so of that phone, basically. If I phone up and say the hospital has suggested I be on baclofen [an antispasmodic drug] or something then my GP will issue a prescription on baclofen. So it is useful for that whereas you used to have to go and see them and go through that process and all the rest of it.” R: “And once they have issued that script on your phone, what happens to that prescription then?” SP: “It goes down to the local chemist and the local chemist delivers it.” R: “So it goes automatically to the chemist and then the chemist automatically delivers it to you so you don’t have to go anywhere or do anything apart from making that original phone call?” SP: “Exactly, yeah.” (Patient interview, SP3).

Patients also use mobile phones to address practical issues with their families. Common examples cited by patients in interviews are of using their mobile phones to make arrangements for discharge or visits, or bringing in supplies:

“Just sending a simple text like I say, ‘can you bring in the lemonade?’ rather than them [the patient’s visitors] getting here and then of course you can’t get it until the next visit.” (Patient interview SP1).

“When people are about to be discharged, [they can] phone [their] relatives to pick them up, that sort of thing, [it] is very useful for that and if there have been change from ward to ward [if the patient has been moved], where they can be found within the hospital, which often occurs, it’s useful.” (Patient interview SP3).

These examples in this section reflect the distributed and shared nature of care, and how mobile phones contribute to these dimensions of care. Despite participants being constrained by the physical and temporal limits and rhythms of the ward and hospital life
as described in chapter 4, mobile phones are able to enhance and support care by loosening the constraints of physical space and time, a re-spatialisation of care.

5.1.2 Mobile phones and emotional support

Mobile phones play a significant part in caring through facilitating emotional support for participants, as seen in numerous examples within the data. These examples however are limited to patients alone, with little evidence of staff or students gaining in a similar way.

Many patients found that they use their phones while in hospital much more than they usually do at home. The key benefit they cited was of communication with family and friends. In interviews patients reported that this ease of communication had transformed their experiences of being in hospital, especially for those who had experienced hospital stays when mobile phones had been banned, or before mobile phones existed (field notes MWR2, SWR2, SWR3, interviews MP6, SP1, SP5). One example of how significant this ease of communication is recognised as being to patient well-being came from an example, cited in interviews with staff, of how some members of staff lent their own phones to patients in order for them to make a personal call:

“...I think that’s a personal choice. I don’t think every nurse would say ‘oh use my phone if you want to ring your wife to bring something this afternoon’, you know, so he didn’t have to get out of bed to get on the wheelchair or the commode to wheel him to the phone and have a conversation in front of people like listening to it. Like that in his own bed, you know, I’ll walk away and let him speak to his wife privately.” (Staff interview SS1).

The phone is repeatedly described as a form of “lifeline”, a connection that sustains and brings wellbeing:

“A lot of people do use their mobile phones as their lifeline. [...] more than that, it keeps them alive, it keeps them alert, they’ve got their friends at the other end. They know there’s always someone there.” (Patient interview MP5).

“In hospital where it’s like your umbilical cord because you’re lonely, you miss people but they’re always on the end of there. So yeah, invaluable.” (Patient interview SP5).
Mobile phone use often achieves this through reducing a sense of physical distance from friends and loved ones, reducing anxiety and allowing patients to participate in family events that they would otherwise miss, supporting patients through communication. An excerpt from fieldnotes written around a patient interview illustrates this clearly:

He [the patient] has missed his granddaughter’s graduation through being an inpatient [...] He shows me a picture of his granddaughter in her graduation gown that his family have sent through by text, and both shows me and reads out some of the texts he has been sent. He is moved to [happy] tears by this. (Field notes, 21st November 2013).

Patients felt as if they were sharing the outcomes of procedures and interventions with their families in real time rather than dealing with it alone. They are able to pass on information while it is fresh in their minds rather than waiting until they physically see friends and family. The benefit of this is not just of the patient’s peace of mind, but the peace of mind of the families and relatives too:

“I mean the other day I think, it was after my operation, I mean Mr ____ [surgeon who performed operation] actually got on my mobile to ring my wife up and tell her all about it.” (Patient interview SP1).

“Especially if you’ve gone in for an op[eration] or something like that; when you come to in the recovery room you can just pick up your phone and say, ‘I’m out, I’m ok, I’m still here’. You know? Particularly when you get to, like my age, 80, you need to contact them to let them know how you are, because they’re totally concerned all the time, obviously.” (Patient interview MP6).

The communication afforded through mobile phones also supports patients through developing support networks, both virtual and real:

“Equally on the positive side it [social media accessed via a mobile phone] brings them in contact with other people with the same condition all over.” (Staff interview MS5).

“Because you’ve got a mobile phone, … then [myself and another patient] we’ll go and have lunch and all because of a mobile phone…. ____ and I have been out for lunch now about ten or 20 times, I’ve met his wife, know his kids, you just get, like
a little community, he’ll ring me and say ‘where are you?’” (Patient interview MP6).

In contrast, a few patients deliberately left their phones at home, specifically not wanting or feeling a need to have it in hospital:

He [the patient] only used his phone while in to call his wife on her mobile (he uses the TV phone to make landline calls). He has not used it to contact anyone else – he is deliberately cutting himself off, has had 33 missed calls (and is disappointed that there haven’t been more) as he didn’t want anyone visiting or knowing what is going on. … He wanted privacy as there is a possibility that he will have his leg amputated. (Field notes, patient, informal conversation, 19th November 2013).

In direct contrast to patients using their phones to elicit emotional support, data from neither the field notes nor the interviews suggest that staff use their phones for emotional support in confronting the situations they deal with on a daily basis. There are a number of reasons for this absence that could be speculated on, such as a reluctance to discuss emotional needs for reasons of professionalism, or that this dimension of mobile phone use was simply not important to staff.

The majority of patients found that their experiences of being an inpatient are greatly improved by the connectivity to family and friends afforded by mobile phones. As this section showed, this connectivity allows them to feel emotionally supported despite their confinement within the ward and its constraints such as of visiting hours, number of visitors, and geographical location. It further contributes to their self-care as they are able to involve their family in their care in ‘real’ time as well as generating extra support through the creation of care networks. As the next section also shows, mobile phones are an important participant in care.

**5.1.3 Mobile phones as specialist participants in care**

Some of the functionalities offered by more technologically advanced mobile phones mean that they are mobilised as part of care practices in novel and unexpected ways. There is evidence to suggest that phones have become part of the equipment of the ward round, substituting or adding to the normal care toolkit and therefore an active, material participant in care. Study participants were observed during fieldwork and reported during
interviews using them as calculators, pen torches, timers. These uses are the result of an individual using their phone but there is evidence of shared or collective use too:

One of the F2s (Junior Doctors) is doing a vancomycin [drug] dose calculation and asks another she is working with to check it on his phone. He does it in his head, but she wants him to double-check it. “Take your phone out and check it ___!” she says. She is adamant, and when he realises it is for vancomycin, he is happy to do so although as it turns out he is actually correct. (Field notes, MWR2 13th June 2013).

In this example the drug involved (vancomycin) is dangerous if given in the wrong dose and so the junior doctor mobilises both her colleague and her colleague’s phone as a means of checking and double-checking her decision. In this sense, the mobile phone is forming part of the doctor’s approach to reducing clinical risk. One doctor was observed using his mobile phone to store information about patients so that he could better inform his handover of care by writing short notes on the phone itself:

The night registrar comes in to handover the new patient admissions under their care. He gets his phone out to do this, reading details out from his phone (checking which leg it was) then puts it away. (Field notes, SWR3, 29th November 2013).

These uses of the phone have been so integrated into routine practice that participants often failed to recognise or remember that these too count as examples of phone ‘use’. In these ways, the role of the phone as specialist participant in care is overlooked. By contrast, smartphones and additional phone functionalities conspicuously offered novel ways of extending the range of possibilities open to participants. One patient described how he had had a medical emergency while abroad, so had returned to the UK with a discharge summary in Spanish:

SP: “He Googled the translation and it’s there, instant, you know what I mean. As quick as you can do that, it’s there in front of you.” R: “But he did that on the computer rather than on his phone?” SP: “No, sorry, on his iPhone or that sort of thing it was, yeah. He just touched the thing and de, de, de, and thing, you know.” (Patient interview SP5).
Instead of the discharge summary being in a different language presenting a barrier to understanding, the physician’s use of mobile phone functionality enabled the summary to be understood and still contribute to the patient’s care.

**Photographs and audio-visual recordings**

A common functionality that was brought into use was that of using the camera and photographic functionalities of the phone. Patients and staff alike use photos taken on their mobiles to contribute to care (interviews MS8, SP4, SS1). They found that a picture conveyed more information than either a clinician or lay person could verbally impart:

“Sometimes they’ll [the patient will] bring a photo of their rash or their ulcer which can be helpful, cos they keep a little record, this is what it was like last week, and the week before that.” (Staff interview MS7).

SS: “And patients use it as well. They take photographs of their own limbs and wounds.” R: “Really?” SS: “Yeah, to see the progress because sometimes it’s in an awkward place, they can’t see themselves so they say ‘oh, take a picture’ and then they can see it.” (Staff interview SS1).

Photographs can also support a patient’s process of coming to terms with the surgery they have had, particularly where the surgical site is in a place on their body they cannot physically see. There were off-the-record examples of taking photographs on both patient and clinician phones for these reasons. To try and help understanding of the clinical situation, pictures were taken of the wound over time to show the patient what the team were trying to describe. For clinicians, photos offer a record of progress, a basis for comparison and an opportunity for a senior opinion that can inform care decisions.

“Sometimes they use them to take pictures […] of certain wounds and particularly if consultants have got an outpatients clinic to run and he can’t be on a ward round and there is some changes to certain wounds, patients, they do take a picture which […], they ask for consent obviously and inform the patient […]: ‘I’m only going to show it to the doctor and then I’m going to delete it, it’s not going to end up on Facebook or whatever like that.’ So in that way the consultant can see it that day without being actually physically on the ward.” (Staff interview SS1).

Despite a centralised hospital service for medical photography, it seems that taking a mobile phone picture is a more straightforward and facilitative option as it is always
immediately to hand. Seemingly contradictory to this, were the concerns voiced about confidentiality with regard to photos. The ethics of privacy, confidentiality and data security were acknowledged issues (interviews MS7, MS8):

“It’s great if patients take their own pictures I think, cos it’s safer cos it’s their phone and they can show it to whoever they want.” (Staff interview MS8).

However, although there were hospital guidelines on taking clinical photographs, these were not widely known or adhered to:

“What is very important to remember and which is lost on quite a lot of the staff, senior and junior, is the idea that you can use your phone or camera to take a picture that records the state of the wound or whatever it might be, today so you can refer back to it, which can be very helpful but breaches just about every data protection law we can think of.” (Staff interview MS7).

Phones also offer the ability to capture video or voice recordings. Staff found such recordings, taken by patients or their carers, harder to accept as part of normal daily practice. They felt that it was an act of gathering evidence against them of poor care (interviews MS4, MS5, MS7). One member of staff, in weighing up the advantages and disadvantages of patients using phones in the ward, described an occasion where he had had to check that a patient was not recording another’s care, as it would be a breach of privacy and confidentiality:

“The bad is that they’ve got a capability of recording things with the phones now. They can video what you’re doing, or what you’re saying, to other patients and stuff. Which isn’t always good news.” (Staff interview MS2).

However, as senior staff recognised when describing another similar occurrence, staff behaviour and practice should be such that being recorded whether overtly or covertly should not matter:

“Just because they know it’s being done, it doesn’t make it any worse or any better. It could happen at any point […]. They just need to be professional and mindful and compassionate in all their interactions, phone or no phone.” (Staff interview MS5).
This section shows how mobile phones are participating in care, offering new ways of supporting patients and staff in their care practices. They add to participants’ repertoires of patient safety activities, working to reduce clinical risk through calculations or note making. They enhance and contribute to the information base for an individual patient that the clinicians had available to work from, such as making a foreign discharge summary accessible, or a photographic trail of progress, allowing for clinical care decisions to be better informed, but clearly they are also responsible for transgressions. The next section explores how participants engage in learning to care, and how mobile phones are involved.
5.1.4 Learning to care

As highlighted in the introduction to this chapter, the ward is an environment where, either notionally or substantively, the focus of activities is not just on care but on practices associated with learning to care. Both in observation and interview data, practices associated with learning are in evidence and it is clear that mobile phone use is being integrated into those practices. Learning is enacted in a number of ways, such as through just-in-time access to information, through shared activities and participating in care, through role modelling and observation.

The learning practices that take place on teaching ward rounds differ according to the context and the pedagogic practice of the consultant leading the round. The typical pattern is that the ward round team makes its way around the patients and the consultant takes opportunities between seeing patients to question the team’s knowledge and impart new information (fieldwork MWR3, SWR3). The team are simultaneously engaging in a number of learning practices. As a role model of how to engage with patients, they are observing the way the consultant speaks to, and examines, the patient. They are learning about ward rounds themselves and the particular interactions of which they are comprised. They are learning what is appropriate within the context of these interactions such as when to speak up and when not to speak, how to enact compassion and attend to patients’ dignity and how to bodily enact an air of respect and understanding. In addition, they are engaging in learning practices that extend and test their understanding of medical concerns and appropriate treatment plans. Mobile phone use is relevant to learning practices in each of these areas and appropriate mobile phone use is a theme that will be addressed in the following section. However, one of the most clearly observable uses of mobile phones on the teaching ward round occurs in relation to the latter learning practice that involves extending understanding of a subject under discussion, as the vignette below demonstrates.
Leaving the second bay of patients, the Consultant pauses in the area in front of the nurses station, away from any patient beds and asks: “why do we give people Septrin?” One of the Junior Doctors replies. The Consultant then elaborates on the answer the Junior Doctor gives, by adding details such as the different conditions it can be used for, how long it should be given for. The Consultant asks another question: “why should we worry about giving people Septrin? What’s in it?” The team answer Trimethoprim, but can’t get the other constituent drug so the Consultant answers again. The Pharmacist, who is also part of the ward round that day, has a paper copy of the drug formulary (BNF) in her hand. This holds all the information that the Consultant is asking the juniors. The Junior Doctor standing next to the Consultant gets his phone out, shows it to the Senior House Officer (another Junior Doctor) and puts it back into his pocket. After the ward round is over I ask him what he had looked up. He said that he had looked up Septrin components in the electronic BNF to find what the 2nd agent component is. The Consultant directs a harder question specifically to the Registrar on the benefit of Septrin in cases where the patient has a condition called vasculitis. The Registrar answers and once again the Consultant fills in the gaps. The group then move on to the next bed in the bay.

In this example, the main source of information is the consultant who engages in a pedagogic practice that is concerned with preserving the flow of interaction that is the ward round as much as it is about appropriately testing and informing ward round participants. However, the sources of information that ward round members would typically use in their learning practices such as turning to peers or other health professionals, looking up information in paper or electronic form, using mobile phones to access internet resources are nonetheless present. In this example, mobile phone use is integrated into both peer support and sourcing information as learning practices. However, its use is subtle and non-invasive indicating that although it is accepted that mobile phones now form part of ward round-based learning practices there are many other important dimensions to learning taking place in relation to which the phone is not important or relevant. Nonetheless, students and junior staff clearly benefit from being able to consolidate their understanding
'in the moment’, within the flow of interaction as it occurs and mobile phone use supports this.

There were a number of examples from the data of mobile phones supporting learning in a traditional sense by providing access to repositories of information. The most common example of these is that of drug and prescribing information:

The F2 sticks her head round the curtain and says to me while the consultant is talking to the patient, “I used my phone to look up taz[ocin] and teic[oplanin] dosing in renal failure” in case I missed it. I ask her what the answer was, and she tells me what the dosing intervals are for the relevant eGFRs. (Field notes, SWR3, 29th November 2013).

This is information that is available also in book format and online, but participants often choose to use their phones to access this digitally. This particular practice is common among the junior doctors, many of whom have incorporated the mobile phone into their routine practices associated with drug prescribing (interviews MS1, MS5, MS8, ST3, field notes SWR3). There are contextual differences in use, however, as it happens more frequently on the surgical ward where there is no pharmacist present. In contrast, there is a pharmacist present on the medical ward round, and the team refer questions to them instead of using their phones (field notes MWR1).

**Just-in-time learning**

As well as supporting prescribing practice, mobile phones also provide a source of instant answers to help participants make sense of a clinical situation or discussion (interviews ST2, MS8). As evidence from the literature on mobile phones suggests, ‘just-in-time’ information, ‘at the point of need’ is a significant aspect of how mobile phones have been incorporated into ward-based learning practices. A number of nursing staff describe using their phones to look up things that they or their patients do not know, “Googling illnesses” (interviews MS2, MS3, field notes MWR1, MWR3), as do junior medical staff:

“I know other house officers [have], we’ve all whipped out our phones to look up stuff. I’ve done it.” (Staff interview MS8).

This is true for the medical students as well, for whom the volume of new information is even greater:
“I just find it very difficult to note it down and then go home and look it up later, I’d rather see it right there and then and then it sticks more.” (Student interview ST1).

“Today there were a few things that I’d forgotten or I didn’t know, I just looked it up straight away and learned it.” (Student interview ST2).

As these examples suggest, the instant nature of the information they access through their smartphones is important for learning, as it allows application to the case in hand:

“It was great cos he had information at his fingertips and I think consolidation is so much better that way, like for your own learning.” (Staff interview MS8).

However, this is a matter of concern for some individuals, who worry that this may be detrimental to professional development:

“I remember when you had to remember everything.” (Staff interview MS4).

Mobile phones support dialogue with seniors as access to information gives understanding or confidence to juniors that facilitates discussions around patient care. It gives them greater insight into the ongoing decisions and practices that are being carried out. One junior doctor spoke of how she was able to engage in real time discussions with her seniors about her patients because of the information and understanding that she had gained by a colleague looking something up on his phone, which he had shared with her (interview MS8). This example also demonstrates how learning with a mobile can be a shared activity, rather than a solitary one. However, not all seniors are supportive of mobile phone use for this purpose, and this is recognised by their juniors. It leads to alterations in behaviour depending on who is present:

“I think, in front of one consultant I’m probably much more liable to whip out my phone and to look something up and say shall we look at this or interrupt etc. I think there are other consultants where I might still use my phone but I might wait until they’d left and it wouldn’t maybe add to the conversation we’d been having but it would add to my knowledge.” (Staff interview MS8).

The [senior] leaves, and it feels like such a change in atmosphere. There is more noise, more chat, more conversation. More phone use. The registrar gets his phone out to show the [junior doctor] something, and to send a message. [Another junior
doctor] takes her phone off the book shelves, has a look, holds it for a while whilst chatting then puts it back. (Field notes, SWR2, 21st November 2013).

Phones are also seen to disrupt the typical knowledge hierarchy. Phones allow juniors to access and share knowledge with their seniors, and patients with their clinicians rather than the usual unidirectional flow of information:

As the team come away from the patient, the medical student says “normal QT for an adult should be 330-440 milliseconds” reading out from his phone to the consultant. (Field notes, MWR2, 13th June 2013). The team had reviewed an unwell patient with a heart arrhythmia, and were interpreting his electrocardiogram; there are a set of normal parameters, such as the duration of the QT interval which the student had looked up.

“I’ve seen a patient do that when we’ve been discussing, ‘oh, what was his ciclosporin [an immunosuppressant drug] level?’ and the patient’s like, ‘oh it’s this’ [looking up the result through the internet on his mobile phone].” (Staff interview MS1, referring to an occasion where a patient had informed the team of his own blood result during the medical ward round, rather than the clinical team providing it).

The F2 gets her phone out, looks something up and then shows it to the consultant. (Field notes, SWR3, 29th November 2013).

“I still feel, um, a little uncomfortable about pulling out a device if a patient has asked a question from me at the bedside, and going: ‘I’m just going to ask the internet’. I think it slightly devalues my position as a consultant <laughs> or as a doctor, so I prefer to have the answer ready when I see them.” (Staff interview MS4, on choosing not to use a phone in front of patients).

This last example shows how the clinician actively avoids using a smartphone in front of patients due to concerns about being seen to be knowledgeable without needing the support of external sources, acting to maintain the knowledge hierarchy.
Individual versus collective use.

Another facet of mobile phones and learning that needs to be recognised is the often collective nature of the learning episode. Mobile phones are characteristically single user, personal devices, but the learning achieved is often shared, whether with peers, patients or seniors. Participants voiced this in interviews, as well as it being observed in practice (field notes MWR3, SWR3):

“Definitely, if I’m looking something up, and then I will show the whole group because only really one person needs to look it up.” (Student interview ST1).

The vignette later in 5.2.2.3 as well as demonstrating the temporal boundaries of learning also depicts an example of shared learning via a mobile phone.

Patient learning

In contrast to staff and students, examples of patients learning through their mobile phones in the ward setting are limited:

“Very occasionally I’ve seen [patients] looking up things on iPhones or on smartphones [during ward rounds].” (Staff interview MS4).

“I’ve not, not often, I’m not sure I’ve ever come across a patient who will get out their smartphone and look up something on the web during a consultation.” (Staff interview MS7).

Among possible explanations is a lack of role-modelling, as most patients did not recall having seen staff using their phones as a source of information. Medical staff and students in particular either avoided using their phones to look things up in front of patients, or did so covertly (field notes MWR1, interviews ST1, ST2, MS4):

“So I try when I’m around a patient, even if I’m not directly speaking to them, even if it’s the doctor on a ward round, I try not to get my phone out.” (Student interview ST1).

“I do tend to try and hide that I’m looking things up, where perhaps if I had a book I’d just have it out.” (Student interview ST2).
In contrast, nursing staff instigated learning occasions for their patients, by offering to look up information for them:

“The nurse will say something to you about your health, a term that you don’t understand […] so she’ll use her phone to show me.” (Patient interview MP6).

“Or do you want to know something? I’ve got my Google, so I can Google all the answers.” (Staff interview MS2, on offering to look up information for patients using the internet on his own personal mobile phone).

Examples of patients engaging in learning about their condition or their care through using a mobile phone were not a feature of the study data.

This section shows how a number of learning opportunities and practices are both facilitated and altered by mobile phones. The timing of mobile phone use is an important contributing element with learning happening in the flow of care practice, inseparable from it in many of these instances. Participants are learning in practice how to involve the mobile phone as an active participant in care and learning.

The examples from the research data discussed so far are intended to show the range and extent of mobile phone use in the ward setting. In the second part of this chapter, the implications of mobile phone use for care and associated ‘learning to care’ practices in the ward setting will be discussed. It is argued that mobile phone use introduces new opportunities and sources of concern to care practice but that these do not necessarily correspond to mobile phone use functionality in a straightforward sense. Nonetheless, whilst the finding that mobile phone use is context-specific and relative to the situation in hand is significant there is further understanding to derive from this. In relation to the particular case of the hospital ward, the boundaries produced through practices that shape the spatial and temporal organisation of the ward are an important characteristic to acknowledge and through which to understand mobile phone use.
5.2 Boundaries, appropriacy and negotiation in mobile phone use

It has been previously stated that mobile phone use in the ward setting was not pervasive or all inclusive. Nonetheless, the presence and use of mobile phones was significant among all study participant groups (i.e. patients, healthcare professionals and medical students). As already described in chapter 4, these groups have diverse, role-related needs, actions and boundaries. However, there was commonality across the groups in their expectations of social niceties and behaviours. This next section begins to describe the ‘social how-to’ of phone use by participants.

5.2.1 Striving for appropriate use

An important analytical theme within the data is that of appropriate use of mobile phones. People are concerned about how they appear to others and whether their actions may be seen as inappropriate or unacceptable. Staff in particular express a need to be seen as acting professionally and to play the role expected of them:

“I think their issue is, you look like you’re messing about on the phone with a patient looking at you.” (Student interview ST2, referring to their experience of nursing staff attitudes to a medical student using their phone).

“Cos I wouldn’t want to look like you are... The same way you wouldn’t twiddle with a pen whilst the patient’s talking to you, you want to seem like you’re paying attention; well, you are paying attention, that’s the thing.” (Student interview ST1, discussing the rationale behind their choice not to use a mobile phone in front of patients).

“I don’t think I’ve ever seen it as being very professional having your phone at work.” (Staff interview MS1, describing their own attitude to staff using mobile phones in the ward setting).

These fears are related to the feeling that mobile phones are seen as inherently personal and illicit, despite the numerous care activities they perform. This appears to be a default stance for the majority of participants, and leads to their concerns regarding interpretation and assumptions of phone related actions:

“With mobile phones there’s always that doubt as to why they’re using it, and the need to explain.” (Staff interview MS5).
“No matter what you’re doing, it’s always going to look like you’re texting or you’re using the phone.” (Staff interview MS2).

As the above quotation describes, perception and interpretation by others is as important as the actual use. The ‘blackbox’ nature of mobiles means that many uses of a phone are opaque to observers, with no way of telling to what purpose it is being used:

“I think when it comes to mobile phones and other devices, it’s about perception. Perception is really important there I think.” (Staff interview MS5).

“Obviously to some people they can think ‘oh, she’s texting someone in the middle of the ward round’, you know. So they can’t always see or realise what they’re actually using it for.” (Staff interview SS1).

Compared to the concerns voiced by participants over unprofessional appearances, few instances of actual episodes of inappropriate use were reported or seen, such as sending personal texts during the ward round, or updating Facebook instead of attending to a patient.

**5.2.2 Negotiating appropriate behaviour**

Appropriacy as an area of shared concern cannot be confined to a simple set of all-encompassing rules but is something that participants described and were observed negotiating. Much of this negotiation is intrinsically linked to the numerous boundaries that ward practices produce. These practices enact boundaries with regard to time, space and access to resources. Some practices are deliberate and spatial, such as the boundary of a bay or bed space or a security door marking the entrance to the ward. Others are time-based such as fixed visiting hours or the healthcare routines associated with mornings and evenings. Ward rounds themselves are enacted within this context of fixity and contingency. The work of maintaining fixity and attending to contingencies was the work with which mobile phone use was most clearly associated. However, in this research, the boundaries that produce a fixed sense of time and place are understood as multiply enacted and therefore ‘different’, in different situations, to different participants.

In this section, the analysis shows how mobile phone use has become part of the way boundaries are enacted in the ward setting. It begins by considering some examples of how boundaries are enacted and negotiated in mobile phone use, taking into account practices in which space and time are significant.
5.2.2.1 Spatial boundaries. Acceptable spaces: how ‘body-space-phone’ positioning is implemented.

On the ward, bodily positioning in relation to space, equipment, patient, peers, senior staff, beds and screens is important and bears potentially important implications for confidentiality and dignity. In terms of mobile phone use, location is important with regard to whereabouts within the ward and in relation to senior figures and patients. People using the mobile phones on the ward either re-locate themselves or at least distance themselves from ongoing activity and this is particularly true of the ward round. Bodily positioning and positioning of the phone itself, in terms of its visibility, are significant:

[The senior nurse] has her phone and uses it behind her clipboard. (Field notes, MWR1, 23rd May 2013).

He [one of the students] then takes his phone out of this right front pocket, holds it just by his pocket to look at the screen, couple of swipes then puts it back in his pocket. (Field notes, MWR2, 13th June 2013).

There is a medical student at the end of the bed, outside the curtain. She is resting her phone on her logbook and tapping / reading. (Field notes, SWR3, 29th November 2013).

The patient’s view of the phone is blocked by the other F2. (Field notes, SWR2, 21st November 2013).

In these examples, the position of the phone, their own body and of others, whether consciously or not, are key factors in the moment of phone use. From both observation and interview data it is clear that, in terms of mobile phone use by healthcare professionals, there is also a shared practice of deliberately relocating oneself to a peripheral area in order to use their phones (field notes MRW1, MWR2, MRW3, interviews MS5, MS7, MP1, SP3). The vignette below demonstrates how the purpose of the staff member’s phone call is not apparent to anyone observing, and how the participant distances himself both from the ward round and from the patient bay in order to use his phone; the overlap between the activity of the phone call and the activity of the ward round are minimised.
Vignette (fieldwork notes, MWR2, 13th June 2013)

The doctors, nurses and students make their way to the last of the 4 bays to be visited on the ward round that day. There are 2 patients in this bay who are due to be seen, and I do not have consent for either, so I stand back from the group, out of hearing distance. From where I’m standing I can see that no mobile phones are visible. The Staff Nurse who was already in the bay leaves the group, pulling a phone out of his pocket as he walks away from the patient bedspace. He puts it to his ear and starts to speak as he goes into the corridor. I did not hear the phone ring audibly but it seems to be an incoming call. He goes into the linen room to have a conversation, leaving the door open. His conversation is not in English. He finishes the call after a couple of minutes, walks back into the bay putting his phone into his pocket as he does, so that by the time he walks past the first patient it is no longer visible. He re-joins the ward round standing beside his colleagues in the bay.

The spatial importance of mobile phone use and the heterogeneity of areas within the ward itself are described below in Figure 8. This describes the ward as inclusive of the peripheral spaces that enable it to function and with which ward practices are intrinsically linked for healthcare professionals. The patient bay and bedspace are the areas that are typically referred to when describing ‘appropriate behaviour on the ward’. The implication is that healthcare professionals and students are in front of patients when they are ‘on the ward’ and that this bears expectations of professional behaviour and actions. Actions and interactions within a patient area should be related to that specific patient, including any form of phone use. One of the ways ward practices can be characterised is through the enactment of a focal space which is patient-facing and the enactment of a periphery. These peripheral areas, which include the office and the nurses station as well as the corridors and linen cupboard, are also part of the ward in its broader organisational sense but in practice they hold a very different status.
As figure 8 shows, different areas within the ward hold varying legitimacies for different participant groups both as to their presence and their behaviour there. Typically, peripheral areas are non-patient facing. In these peripheral areas there is a shared practice of more open, visible phone use by staff and students (field notes MWR1, MWR2, MWR3). In contrast, phone use on the patient-facing areas of the ward itself, is much more restricted for all staff and students, and tends to be limited to patients and their visitors. There is a shared expectation that this should be the case and a concern over appropriate use:

“I wouldn’t expect them to be out in an area that’s a, you know, patient area and using their phone for personal things.” (Staff interview MS6, on their expectations of how staff should behave).
Ambiguity over ‘what’ use people are making of their phone e.g. professional or personal is referred to repeatedly (interviews ST1, ST2, ST3, SP1, SS1, MS5, MS8) but in general distancing or physical separation is one way in which phone use is enabled (interviews MS1, MS2, ST1, ST2, ST3):

“Maybe you can go somewhere like the staff room or toilet to answer calls or make a phone call… Not in the ward, not inside the bay, the area, so I’ll go somewhere, I’ll go in the staff, the handover room.” (Staff interview MS3).

The enacted difference between patient-facing and peripheral areas results in relocation as a way of achieving appropriate use. Work-related use may take place in front of a patient if related to that specific patient. If not, then participants tended to withdraw into the bay, or the corridor. Personal use prompted even greater distancing, into ‘peripheral’ staff areas such as the nurses station, the office or the sluice, i.e. entirely non-patient facing. This behaviour is not restricted to staff and students, as patients and visitors will also relocate from their bay if they want privacy or quiet to hold a conversation, even if this is to another public area such as outside in the corridor (field notes MWR3, SWR2, interview SP3).

Creating and negotiating boundaries in mobile phone use is observable in the way patients and healthcare professionals mobilise different spaces. Enacting a boundary between ‘on the ward’ and ‘off the ward’ makes non-patient facing ward practices possible and supports a negotiation of what is and is not appropriate. This enactment and negotiation of boundaries applies to mobile phone use as it does to all other ward practices.

5.2.2.2 Acceptable times: temporal boundaries around phone use

Time is another important boundary in people’s phone use. Temporal boundaries are enacted around the rhythms of the ward round and ward activities, as laid out in chapter 4. Timings such as the beginning and end of the ward round, tea breaks, lunch breaks, the end of the working day are all examples cited by participants as determining acceptable behaviour and activity. Episodes of patient care are also bounded, with the time between finishing with one patient and starting with the next being seen as an opportunity for disengaging from the ward round and engaging with another activity, such as using a phone. These temporal boundaries are not limited to phone use alone, as clinicians from outside the ward round activity also use these moments as appropriate times to approach
the consultant (field notes MWR1), or the consultant takes a few moments to teach (field notes MRW2). As well as being used in the spatial margins of the ward phones are being used in the temporal margins of the ward and the ward round. Where possible participants choose a more acceptable time, postponing and delaying phone use until the end of an activity such as a break or pause within the ward round, the temporal margins (interviews MS2, MS3, MP1, ST1, SS1):

“It’s been quite brief, or it’s been like, ‘Right, I’ll call you back about that’.” (Staff interview MS1, discussing phone use by senior doctors).

SP: [speaking on phone] “Hello you. I’m doing fine, I’m actually busy with someone at the moment, can I call you back in 5? I’ll give you a ring in about 5 or 10 minutes. Bye for now.” (Patient SP4, answering an incoming telephone call during his interview).

The patient’s phone rings just after the consultant and team walk away. He answers it and chats: ‘You rang just at the right time’. (Field notes MWR1, 23rd May 2013).

One example of this was the senior nurse using the time afforded while the consultant stopped to teach the junior doctors, to send work-related text messages, putting her phone away as he restarted the care delivery part of the ward round (field notes MWR2). The flexibility of these temporal boundaries are contingent on both role and context. For example senior clinicians who have multiple roles and responsibilities distributed across the hospital are expected to accommodate more boundary transitions:

“I accept that that is part and parcel of what happens. I can’t turn my phone off. I can’t screen […]. If you’re expecting people to answer their phones when you call them then you should probably be prepared to [do the same].” (Staff interview MS4).

This contrasts with the time boundaries enacted by others, for whom acceptable time is more inflexible:

“I don’t need to be doing this, I could just do this at 5 o’clock cos no one needs to be getting hold of me.” (Staff interview MS1, on their own temporal boundaries with regards to sending personal messages).
Brevity is also used as a way of marginalising phone use in time, limiting the amount of time spent engaged with the phone, (interview MP5, SP3, field notes MWR2, SWR2, SWR3):

2 medical students have joined the ward round. One takes her phone out whilst the team are divided getting consent done; she looks at the screen then almost immediately puts it away. (Field notes, SWR2, 21st November 2013).

There are also times of greater need, such as being on call where members of staff are expected to attend emergency care situations ‘out of hours’ generally at night when there are less staff and in particular medical staff at the hospital which alters phone behaviours (interviews MS8, SS1). The normal daytime boundaries of time and space on behaviour are altered by the ‘out of hours’ context. In this example the junior doctor used a programme on her smartphone to help her interpret patient results while on call, when reviewing sick patients with no senior immediately present:

“I used to have an ECG app and I used to look at it all the time, because I knew that I wasn’t very confident. Especially when you’re on your own and it’s the middle of the night, it’s something to look up.” (Staff interview MS8).

In the example that follows, phone use when ‘on call’ is highlighted:

“I have seen doctors using it, obviously a lot when they’re on call.” (Staff interview SS1).

In both of these examples, mobile phone use to enact additional support or support from elsewhere is significant and contributes to care practice.

In these two sections, time and space can be seen to be used as strategies for integrating mobile phone use into the ward round. The fine detail of the manipulation of body-space, place and the moment reflect a choreography of phone use that participants employ to negotiate acceptable practice.

5.2.2.3 Acceptable times for learning with a mobile phone

For medical students on the ward, mobile phone use associated with their learning practice has to be both timely and appropriately timed so as not to lose the thread of the activities taking place around them. Making use of time that might otherwise have been redundant is
facilitated by mobile phone use and which is combined with existing learning practices such as peer support, as the following vignette illustrates:

Vignette taken from fieldwork notes (November 2013)

The team taking part in the ward round are in the side rooms speaking to patients. I don’t have consent to take part in my research from these patients so I wave the students past me into the side rooms. They come out looking for gloves and aprons, but the F2 (Junior Doctor) and the Ward Sister who are following discuss that the team are confused. Although the patients are in side rooms, they do not need any extra precautions to prevent transmission of infection such as ‘barrier nursing’ by wearing gloves and aprons. The F2 and Sister go in but the students stay outside. I say, ‘You not going in?’ They say no, they need a break. Three of them stand in a row with their backs to the wall of the corridor, facing the door of the side room. The fourth stands at right angles to them, facing them (figure 9). The middle student has her phone out, looking at the screen and scrolling. She and the student to her right talk about some medications that a patient was on. She speaks out loud, ‘Clozapine’. Another student in the group asks ‘Isn’t that a neuroleptic?’ Another student interjects saying ‘No, not that, it was clonazepam’, and then the student holding the phone reads out loud a description of clonazepam from her phone. She reads a lot more to herself and the student to her right occasionally looks over at the mobile phone screen. The student to her immediate left is reading over her shoulder the whole time. The student off to one side is at an angle and puts his head on one side, trying to see, turning to get a better view.
Figure 9 illustrates the spatial positioning of the students in the vignette (A-D) and the mobile phone (in red) as they stood in the corridor outside the closed door to the side room where the consultant was conducting the patient review:

**Figure 9 Collective learning with a mobile phone**

Observational work allowed the capture of the importance of the timing, spatial positioning and participant interaction that contributed towards a collective learning episode.

The timing of mobile phone use to support or facilitate learning is contentious, with a wide spectrum of opinions as to when and when it is not acceptable to incorporate a phone into a learning activity (interviews MS7, MP2, ST1, MP3, MP5, ST2, MS4, MS8). The benefits of ‘just-in-time’ learning as described above are balanced against concerns of ‘absent-presence’ where students can fail to engage in the moment (interviews MS4, MS7, SP1, field notes MWR1). Learning is often pushed into the margins, with participants using the time before and after clinical encounters to make the most use of their phone as a learning resource (interviews ST1, ST2). This however comes at the risk of not following up on a learning need raised during clinical encounters:

“The problem with that if I’m being honest, I almost never bother looking them up after.” (Student interview ST2).

‘When’ to include mobile phone use within learning and practice is an important factor that participants have to recognise and act upon in order to achieve their desired outcomes of professional care and learning to care.
5.2.2.4 Appropriate use: negotiating phone use through acknowledgement

Appropriate acknowledgement describes use in which the user actively includes or involves the present other to some extent as they use their phone. This ranges along a spectrum, with the simplest being a simple hand gesture of acknowledgement or other nonverbal action (field notes MWR2). Others give an apology but do not give more details of what they are doing (interview MP1, MS5, field notes SWR3). Some give an explanation of exactly what they are doing (interview MS6); others share the whole activity of phone use, for example, sharing the information produced through the phone (interviews MS5, SP2, field notes MWR2):

“They say, ‘Excuse me, I have to take this’, and wander off, which is thoroughly acceptable.” (Patient interview SP4, on their experience of staff taking phone calls).

“Frequently I’ll say, ‘This is work related, you know, I’m trying to sort out staffing’.” (Staff interview MS6, on how they mediate their phone use on the ward round)

Both non-verbal and verbal communications were used to ameliorate the impact of phone use on the immediate interaction.

Following on from the description of the rhythms and activities of the ward and ward round in chapter 4, section 5.2 so far has described how temporal and spatial boundaries are enacted within the ward and its activities, and how the margins associated with such boundaries enable acceptable phone use. It has also shown the contingent nature of these boundaries, as their flexibility and permeability is altered by an individual’s role and their purpose of use. Additionally, physical and verbal actions have been shown as ways in which participants acknowledge and negotiate boundaries of appropriate use. They supplement the boundary work done with regards both to space and time as discussed. The next sub-section explores the boundaries between social domains and how these were affected by mobile phones.
5.2.3 Appropriate priorities: boundary crossing and negotiating conflict

As well as the temporal and spatial boundaries of the ward which were constructed around the rhythms of care activities and the heterogeneity of ward spaces, participants enacted boundaries between their different social and professional domains. By virtue of the case, all participants had both a hospital domain as well as a personal domain of whatever nature. However, the hospital domain cannot be considered to be equivalent for healthcare practitioners and patients, as it was a place of work for one group and a complex combination of home-away-from-home and illness for patients. Nevertheless, domain boundaries were an issue for all.

The staff home/work boundary was the predominant theme of voiced concern in the data:

“To me, if you’re being paid to do a job that’s the job you do, you don’t weave your social life into it at the same time, no.” (Patient interview MP2).

“Everybody’s got two lives, you know you’ve got your private life and your business life and they can’t mix. When you come into work, at the hospital door, you are a professional person.” (Patient interview SP5).

“You do want that divide.” (Staff interview MS8).

Returning back to the diagrams in chapter 4, where we saw the variability of care and learning duties, we can use them to demonstrate and explore these boundaries between the different roles and responsibilities and how they were affected by mobile phones. The potential for conflict between boundaries that mobile phones created meant that participants had to negotiate what took priority for each instance of phone use (or non-use), a contextually-driven decision including time, role, place and purpose.

5.2.3.1 Staff boundaries: Work into work

Although the boundaries between domains could be affected through a number of activities independently of mobile phones, such as staff bleeps going off or a student using a paper notebook, mobile phones greatly increased the potential for boundary conflict, through wider ownership and a wider range of facilities. Examples included supporting care
through access to colleagues such as making specialist care referrals, asking for senior opinions and allowing multi-tasking (interviews MS4, MS5, MS6, MS8, field notes MWR1, MWR2). However, there were downsides to boundaries being permeable, such as issues of maintaining confidentiality through holding a conversation with a distant other in front of a co-local other:

“I’ve seen lots of times when conversations go on completely inappropriately in front of patients.” (Staff interview MS7).

Two otherwise separate work domains were brought into conflict through the agency of a mobile phone. This meant that participants, in addition to negotiating appropriate times and places for mobile phone use, also had to negotiate priorities appropriately. The importance of this was highlighted most clearly by examples where this had not been achieved. Choosing to prioritise a call over an actual person could be detrimental to care as well as to relationships:

“I’ve seen staff that have wandered off the ward [while using a phone] and forgotten the minor things that patients have asked them to do, and they’ll come back and they have no memory of what they were doing.” (Patient interview SP3).

This same participant described the anger he felt when a member of staff took a call midway through a discussion:

“The radiographer just walked off […]. It may have been an urgent call but mine was an urgent call as well. I don’t think mobile phones should take preference over personal conversation.” (Patient interview SP3).

Others were more sanguine and trusted that the staff would prioritise according to clinical need:

“They may be talking about somebody who’s worse than me.” (Patient interview SP5).

Work/work boundary conflicts were an issue experienced by both staff and patients, and as such, require appropriate management.
5.2.3.2 Staff boundaries: Home into work

Just as taking work-related phone calls could be disruptive, so too could taking personal calls or messages, although these were much less acceptable:

“It does seem quite strange that as an organisation, particularly when we have, a lot of the time, critical aspects to our job, that you can be disturbed to decide whether you’re going to have pizza, or fish and chips tonight.” (Staff interview MS7).

They could also be detrimental to care, through distraction or consuming attention:

The [junior doctor] leaves the ward round to look at her phone. She returns and puts it away as she walks up. She misses a few sentences. (Field notes, MWR1, 23rd May 2013).

In the following example, a patient and his visitor began imagining extreme scenarios of phone use, based on the questions posed in the interview:

Visitor: “So there’s you in the middle of a very serious cardiac operation.” MP: “And the phone rings.” Visitor: “All of a sudden the old bleeper goes off, the surgeon stops, ‘ooh it’s a message from the wife’.” [Both laugh]. (Patient interview MP3 and their visitor).

Care relationships could also be compromised by offensive disengagement, prioritising interaction with a mobile phone over the co-local other. The following example had been witnessed by one staff member on a number of occasions, and he was unhappy on the patients’ behalf:

MS: “Especially if the patient says something and you say, ‘Hang on a minute’. Because I’ve seen that, I’ve seen that, some nurses on another ward where they’ve said that: ‘Hang on, I’m just going to send this text’. Oh, shouldn’t be doing that, there’s plenty of time, even myself, there’s plenty of time in breaks and stuff to make phone calls.” R: “How did the patients react?” MS: “Just resigned, [sighs]. ‘Ok’. You can see the shoulders [slump] ‘I’ll wait’.” (Staff interview MS2).

They were an infrequent occurrence, however, with the majority of participants either not having witnessed any such behaviour, or themselves trying to restrict such interactions to emergencies only, or time which they viewed as their own.
The work/home boundary was also affected by the connectivity of mobile phones, both for communicating with family or friends, and for personal entertainment, such as social media. There were benefits to staff having access to their mobile phones at work, such as peace of mind through knowing that they could be accessed in an emergency. Participants also used their phones to build social relationships such as: sharing sports results between the consultant and the junior doctor; the patient showing a family photograph to a nurse; and the senior nurse sharing a personal photo with a nursing student. Nominally ‘personal’ phone uses were developing working relationships.

5.2.3.3 Staff boundaries: Work into home boundaries

The majority of staff were using their own personal devices at work rather than having a work-issued device. This caused concerns for some about the financial costs that may be incurred by the individual as a result. It also meant that the line between home and work was more easily overstepped, and not always with the consent of the staff member. For example, staff being contacted despite being off duty:

“Someone has asked […] for their [personal] number because their registrar at home wants to get in contact with them and […] it’s so inappropriate. It’s eight o’clock at night, you’re not at work, and […] they have to deal with what’s there, you’re not on call. It’s different if you’re on call.” (Staff interview MS8).

However, some were choosing to take that step themselves, with examples of staff using their own ‘minutes’ or data for the benefit of others:

“[I] said so if you want me to give her a quick call, I’ll give her a quick call and you don’t have to go anywhere. That kind of thing, I’ll phone people.” (Staff interview MS2).

These acts of boundary crossing were deliberately made to improve patient care and experience. They were instigated by individuals themselves without any institutional expectation or recognition, in order to support patients.
5.2.3.4 Patient boundaries

The following vignette illustrates how appropriate priorities were not just an issue for staff and students, but for patients too. The patient chooses to answer a call midway through his consultant review, disengaging from active involvement with the ward round to engage instead on a personal call. He misses the discussion between the doctors and nurse, and relies on the nurse repeating it for him rather than hearing it first-hand from the consultant. He is present but absent during an important part of his care:

Absent presence

The registrar and the sister take the patient’s dressings down as he lies in the bed. It is painful, and he yells out a couple of times but doesn’t seem distressed. It is busy around his bed: the bay staff nurse and nursing student, the sister, consultant, registrar, 4 medical students and the F2. The other F1 is in and out. The consultant has been talking to the patient and is now inspecting his foot. As they do so, the patient’s phone rings. He answers it, saying to the consultant, “’scuse me, do you mind”, and then has a conversation with his caller, “oh hello love; oh I’m alright; the consultant and doctors are round at the moment; I’m up on Level _. She said she was coming up”. The consultant continues inspecting the wound while the patient is on the phone, talks to the registrar and nurses about the plan, “OK, so let’s ...” while the patient is still talking on the phone. The consultant and team walk away and stand around the trolley; the F2 gets her phone out, looks something up and then shows it to the consultant – she tells me later that she was using the BNF on her phone; the patient comes off the phone after a couple of minutes total, and the sister then recaps the plan for him.

The main disruption that patients complained about from mobile phones was the intrusiveness of other patients making calls in their vicinity; if proper ‘etiquette’ was not seen to be followed, such as keeping the ring tones quiet or talking at low volume then it posed more of an issue to participants.

“I was on a ward where one man was like that, and he’d get on the phone. They [could] have held the phone away like that, and still hear[d] him. I mean, he was
just shouting and shouting. I don’t know why he was shouting. Whether he’s partially deaf, or what, I don’t know. So he caused havoc because we knew everything that was going on with his family.” (Patient interview MP6).

Mobile phones also created potential for patients to have to negotiate boundaries between their work and their patient roles, requiring them to consider and balance their own priorities between care, home and work. Many were retired, but those who were still working found that they had to manage a health / work boundary. This was something that had not been an issue before technology had facilitated the opportunity for ongoing engagement with work which previously would not have been possible once admitted to hospital. There were mixed feelings about this from both staff and patients. Staff and some patients were concerned that patients may prioritise work at the cost of their health or healing; while others thought that it may remove stress and promote recovery, especially for those who were self-employed. Another voiced concern was whether their state of health would be detrimental to any work done:

“Workaholics, really, if they can’t leave work while they’re in hospital. Because it’s added stress to their recovery progress obviously. But also if they can’t work, or if they are self-employed and they depend on it, that can also be added stress to them, if they feel like [they are] in a prison here. I think it gives them a sense of freedom that they can carry on with the life outside while they’re inside in a way.” (Staff interview SS1).

Summarising this section, we can see how boundaries and peripheries were important constructs in mobile phone use within the ward and care practices. Time, space and social domains were all dimensions in which boundaries were constructed, maintained and negotiated to find acceptable and appropriate niches for phone use, whether contributing to care or not. The next section explores how participants learned to actually do all of this in a socially and contextually-appropriate manner.

5.2.4 Learning ‘how-to’: social negotiation

The preceding section developed the concepts of boundaries and peripheries in mobile phone use on the ward. Following on from this, we revisit the concept of learning to care, but this time to explore how participants are learning to use their mobile phones in practice
in these ways, negotiating and maintaining boundaries. Participants described observing others’ behaviours to determine their own:

“I guess, here, just seeing what other people do […]. Seeing how maybe other people, what’s acceptable and what’s not.” (Staff interview MS1, on what influenced their own phone use).

“There’s a lot of mimicking what other people do and then what you do” (Student interview ST1, describing what determined how they used their phone).

Patients saw similar patterns of behaviour between senior and junior members of staff:

“The student nurses that I’ve seen in here just use it exactly the same as their mentors do.” (Patient interview MP1)

Equally the seniors thought they held responsibility for modelling acceptable practice:

“Part of that supervision is looking at conduct; and your own conduct.” (Staff interview MS4)

“We are example setters.” (Staff interview MS5).

Imitation and modelling are important ways of respectively acquiring and demonstrating socially appropriate behaviours with mobile phone use.

**The influence of power**

One of the key contextual influences that had to be taken into account were the opinions of those in positions of power. Participants learned which consultants and senior nurses would support phone use and which would look disfavourably on it, and learned to amend their behaviour accordingly:

“If they knew the consultant really hated phones being out then they probably wouldn’t.” (Student interview ST1, reporting patterns of use influenced by consultant preference).

“I think our behaviour and the way we work in a team changes from consultant to consultant, so I think that can only be true with how you use a mobile phone.”
(Staff interview MS8, a junior doctor on the influence of senior clinicians on behaviour).

“I can’t recall anything on one of my ward rounds but that may be because they realise that it might not go down so well.” (Staff interview MS7, a senior doctor, on phone non-use in the ward round).

Junior doctor: “[It’s] very influenced by the consultant. If they use theirs, the whole team will. If they look [a bit askance] (head tilt) then we won’t. It was the same in my endocrinology job, Dr _ used it the whole time (hand up, moving around as if holding phone) whereas Dr _ didn’t use it at all, and it really affected the team’s use.” (Field notes, MWR1, 23rd May 2013, junior doctor in casual conversation).

On both wards the consultant in charge would change on a weekly basis, along with the prevailing culture of what constituted acceptable mobile phone use. The result of this power influence meant that phone behaviours were dynamic, varying with the contextual changes.

**The ‘rules’:**

Participants for the most part were not aware of institutional policy. Some participants reported being given clear guidance by their seniors, such as the following example:

“We’ve been told many times, ‘Please don’t use your phones […] in a public area or in front of a patient unless it’s […] for work. Do your private calls or messaging during your breaks’.” (Staff interview SS1).

Even those with greater seniority were not fully aware of institutional policies but had greater awareness of the risks, as in the case discussed earlier in 5.1.3. The usefulness of institutional guidance was debated, as it was felt that it would be difficult to give enough detail to be useful and also to enforce:

“It’s one of those things where you can’t really give them solid right wrong things. It’s just like, make sure you’re using it for medical purposes, and just be sensible about how and when you use it and in front of who.” (Student interview ST2).
“Beyond actually spotting someone doing something wrong, it would be difficult to police.” (Staff interview MS8, junior doctor).

More commonly, participants reported that they were unsure on whether and what they could do (interviews MS3, MS6, MS7). One student described an interaction she had held with her peers where they discussed whether or not they felt they could use a phone in a particular example:

“We […] did have this conversation […] saying, ‘But, could we really get that out when we’re doing a drug round?’” (Student interview ST3).

As these examples demonstrate, in the absence of clear or widely known top-down guidance, participants were self-regulating, working alone or together to determine ethical use. Another described how the ‘rules’ were sometimes “unspoken” but widely adhered to, implicit within the “culture of that meeting” (interview MS5). There was an expectation that participants would manage their own behaviour. Key values were articulated such as tolerance, trust and respect, constituting ethical practice:

“But um, I wouldn’t stop somebody, I wouldn’t say, excuse me you’re here to work; that’s not my job. That’s theirs. They know what they’ve got to do.” (Patient interview MP5, describing their response to staff using mobiles).

“As long as you know your limitations.” (Staff interview MS3, describing personal phone use at work).

“At least I shall be able to say: I don’t do that.” (Patient interview MP4, referring to their own behaviour in contrast to overhearing loud mobile phone conversations).

“So it's just a matter of being a little bit considerate to the person that you’re with and being with that person and respecting them.” (Patient interview SP2, describing their expectations of polite phone behaviour).

“I believe that most medical students, doctors, nurses, they’ve got that little bit, extra bit of common sense as well and courteousness […] to be not in your face, telling her mate or his mate they had 10 pints of beer last night, you know. They
wouldn’t do that.” (Patient interview SP5, also describing their expectations of polite phone behaviour).

“But I would never get it out in a ward situation or anything like that.” (Student interview ST3, describing the limits to their own behaviour).

“Patients especially, you don’t want them to feel uncomfortable in any way if you’re using a phone.” (Student interview ST1, describing their own phone use and the concerns they hold).

Participants were able to articulate their values and explain their reasoning to themselves and each other. There were both collective and individual expectations of these values.

5.3 Summary of chapter 5

In summary, this chapter has described how mobile phones contributed to the shared and distributed work of care, how they performed a key role in supporting participants emotionally, and how they were active participants in care in a number of ways. Mobile phones facilitated communication with both distant and present others, as well as care delivery through access to knowledge. There was a choreography to caring activities with mobile phones manifest through manipulating time, space and both physical and verbal gestures. It also showed how ‘learning to care’ is often inseparable from caring, and how mobile phones had become part of participants’ learning and caring repertoire. Participants were also learning how to integrate mobile phones into their learning and caring practices in an acceptable, appropriate way, through active use of peripheries and boundaries of time, space and priorities. The complexity of phone use as described here contrasts with the seemingly simple observation in chapter 4 that mobile phone use is limited within the ward round itself.

This chapter demonstrates how phone use contributes to the work of care in a number of ways, enabling the processes described in chapter 4 to take place, but in subtle and intricate ways. It also introduced the idea of boundaries enacted within care work, and how mobile phones contributed to these boundaries. Moving on to chapter 6, we will discuss the implications of integrating mobile phones into care practices.
CHAPTER VI: DISCUSSION

6.0 Introduction

The first section of this chapter centres on the mHealth literature and the findings of my research with respect to the original questions posed: how users are integrating mobile phones into health care practices. These questions are considered in relation to the literature and in particular the contemporary issues highlighted in current research. I deal firstly with the sub-question posed on how clinical staff are using mobile phones in the delivery of professional care, and explore the specific example of clinical photographs. Secondly, I address the idea of learning with mobile phones in response to the sub-question posed regarding medical students and their learning. Thirdly, I answer the question related to patient use of mobile phones in support of self-care, and explore the example of audio-recordings. At the end of this section, I re-discuss the limitations of the typical mHealth approach and the rationale for taking a practice perspective. The second section moves on to demonstrate how conceptualising care as a practice is supported by the research data and the elements of care practice that mobile phones specifically unleash and create, namely: spillover; boundary work; a repertoire of strategies; which all lead to an articulation of empirical ethics.

6.1 How are mobile phones being integrated into (health) care practice?

Smartphone ownership is increasing year-on-year and worldwide, penetrating lower, middle and higher income countries, and both rural and urban communities. Mobile phones are shaping the experience and delivery of health care for patients, care-providers and learners. Although most mobile phone use in healthcare has disseminated from the ‘ground-up’, there is an increasing drive from top down pushing for an increasing role for mobile technology, despite the gap in evidence about the implications of this. In policy rhetoric, technology is placed centre stage as the solution to the challenges facing the
delivery of modern health services: for example, the Secretary of Health in 2014 describes “radical new plans to improve health outcomes and the quality of patient care through digital technology and innovation”. Similarly, mHealth and technology in health research as well as contemporary institutional and governmental policy has a pro-technology bias. A number of assumptions are made, such as the ‘radical’ contributions that technology such as mobile phones will make and that ‘everyone’ will own a smartphone:

“Aside from the clear benefits for patient care and disease prevention, better use of technology will help create a more efficient NHS.”

The potential gains of new technology are foregrounded, such as the “unprecedented opportunities” referred to by the Department of Health, or the transformation of health care delivery according to the US Department of Health and Human Services. Opposition voices are discouraged: “It is vital that the leaders of all health and care organisations are seen to champion information and digital capability as core enablers of effective decision-making, service quality, safety, effectiveness and efficiency”. Continuing the pro-technology bias, the mHealth literature which informs policy focuses on interventions, whether for services to patients, service providers or care systems. However, as explained in the introduction, mobile phones with their diverse functionalities are disruptive, and drive changes in behaviour and professional practice. This study therefore set out to explore mobile phone use within healthcare practice in response to the gap in evidence identified. In order to do so, the research question posed above was divided into three sub-questions to capture the range of participants in care. The following sections address each of these in turn, exploring in greater detail the new insights that this research offers with respect to each.

6.1.1 How are mobile phones being used by clinical staff in the delivery of professional care?

Analysing the data at the level of typical mHealth research, some useful practical ideas emerge such as using the phone as a pentorch (interview ST1), or to manage ward staffing (interviews MS5 and MS6), or as a calculator (field work notes MWR2). It would be easy to stop at this and portray the uses of mobile phones in health care as the functions described in the first parts of chapter 5, following conventional mHealth rubric. For
example, the simple answer to the first research question is that mobile phones are being used to facilitate communication between workers, they are tools in the clinician’s workbox, and they are used to source information used to deliver care safely, such as prescribing drugs correctly. Some clinicians report using them for their own scheduling, others for managing scheduling at a higher order, such as ward rostering. We can look to the categories of mHealth as described by Labrique and see these being implemented in daily clinical practice,29 such as provider:provider communication, or clinical decision support, as Table 2 in chapter 2 shows. However, even at this level of analysis, difficulties arising from the introduction of technology into care practice are evident. Despite the all-positive rhetoric at policy level, at grass-roots level the integration of mobile phones into care practices is contingent and can be problematic. The example that demonstrates this most clearly for staff use of phones is the facility of most modern phones to take photographs.

**Clinical photographs on a mobile phone**

Photography within the ward can serve a number of purposes, both therapeutic and non-therapeutic (interview MS5). Photographs of patients may contribute to the treatment process through documentation and illustration, conveying information to inform decisions (MS6, MS7, MS8, SS1, SP5).177 They are also an educational tool, as consented patient photographs may be used for teaching and for examinations, as well as being used for publication in journals or books. Clinical photography is covered by legal requirements usually administered through institutional policy on data protection. NHS hospitals expect that the majority of clinical photographs will be taken by the medical illustration service, and that the rest are taken by hospital-owned and registered devices, in accordance with policy. Where there are existing concerns these will focus on consent, patient confidentiality and privacy, storage, disposal and dispersal of images.177, 178 NHS trust policy at the field site precludes the use of ad hoc clinical photography both now and at the time of data collection. Reflecting the rapidly changing culture of mobile phone use, a new photographic policy was issued in the month after fieldwork was completed. In this, smartphones are specifically mentioned for the first time, and the policy is clearer, stating that under no circumstances should staff use their own mobile phones or cameras to photograph patients. Nor should patients take photographs in clinical areas that may compromise other patients’ confidentiality and privacy. The reality in practice has been
different as demonstrated both within the literature and within the data for this study (interviews MS5, MS6, MS8, SS1).\textsuperscript{179, 180} It remains to be seen how staff will respond to the new policy.

Unsurprisingly, we saw, in practice, how both staff and patients are using photographs taken on personal devices to deliver care, despite the Trust’s official stance and the possibility of disciplinary action. Taking photographs of a patient’s wound can clearly contribute to patient care. The photograph allows the state of the wound to be seen virtually by a senior, and hence appropriate care decisions made (interview MS8). The asynchronicity that the photo allows enables nurse time savings and improves patient comfort by reducing the undressing and redressing of wounds (interview SS1). But photography using personal devices is not formally permitted (interview MS7). The risks of using a personal device are that the image is not stored within the patient’s medical records, nor is it likely to be stored under sufficient conditions to meet statutory requirements for safeguarding sensitive personal data. However, in the ward, in practice, this is balanced against the immediate benefits for the patient, through the opportunity for both themselves and their caregivers to be more fully informed. Nor was it just one individual who contravened hospital policy, rather several separately described and demonstrated similar instances in a positive manner. The local culture seemed to be supportive of such use, even if merely by failing to address it.

These findings are in accord with recent studies on the use of smartphone clinical photography.\textsuperscript{181} In one study of healthcare professionals, 65\% of respondents had taken clinical images on their own personal device, with a widespread deficit in understanding and implementing best practice in terms of consent, storage and dissemination. Another reported similar behaviours amongst both medical and nursing staff.\textsuperscript{179} Although the majority reported using hospital cameras, a proportion had used a personal smartphone to take and store medical images. As they discuss, the true number may be even higher as they were reliant on self-reporting of behaviour that was non-compliant with hospital policy. These results uphold the argument that clinicians do not pay sufficient heed to matters of consent or confidentiality when taking clinical photographs,\textsuperscript{177} and, as a result, are failing to deliver best practice to their patients. There is potential for harm through dissemination of images that are identifiable to the patient or those that know them.\textsuperscript{182}
I argue that ‘top down’ policy has failed to address what happens on the ground as demonstrated in this data set, and that there is a “dissonance between practice and policy in the collection and management of medical photography”. It could be argued that the new policy was brought in to address the problem, but, at the point of the study, patients were not being safeguarded adequately. Several participants were unaware that policies existed (interviews MS3, MS6, MS7) which speaks to the inadequacy of the current provision and dissemination of policy. Additionally, there was a culture on the ward that accepted and propagated these behaviours, despite being in direct contravention of hospital policy. Given the experiences of other hospitals in the literature, and the local culture during the study, I argue that re-issuing policy alone, albeit more clearly, is insufficient, and that process changes be introduced. A number of options could be considered, whether through developing production pathways that accept and then manage clinician-taken photographs (a proposal already in circulation within the study site), or by raising awareness of the risk of harm so that clinicians amend and moderate their own behaviour. Failure to act is equivalent to accepting by default that malpractice could occur, and that patients may not be adequately safeguarded.
6.1.2 How are mobile phones being used by medical students in their practices of learning to care for patients?

As discussed earlier, an important part of professional work and development is a commitment to ongoing learning and staying up to date. The widespread ownership and information retrieval facility of modern smartphones means that the role and contribution of mobile phones in learning to care need to be considered. It is important also to note that limiting the question of learning to medical students was not representative of the spectrum of learning activities taking place, as clinical staff expect and are expected to engage in continuing professional development and learning throughout their careers. As such, the answer to this question includes all learners, whether pre- or post-qualification. Patient learning will be considered separately. In this section, I will discuss the examples from both the interview and fieldwork data which demonstrate the number of different ways in which mobile phones contribute to learning.

Learning to source reliable information to use in practice is an important skill for all participants. Participants in the study had a number of sources available to them, such as their peers, healthcare professionals, the internet, electronic journals, ebooks, paper books and smartphone apps (field notes MWR1, MWR2, SWR3, interviews ST2, MS1, MS8). These vary in their reliability and ease of access, and participants balance a number of factors in making their choice, such as how up to date a resource is, against its place in the knowledge hierarchy against speed and ease of access (interviews MS8, ST1, field notes MWR2). These results further support Fenwick et al, who argue that professional practice may be supported by a wide range of knowledge resources, and Eraut’s recognition that workplace learning includes the use of human and electronic knowledge sources. It also resonates with our previous work on handheld computers for mobile learning in the clinical environment, where we showed them to be a supplement to people’s learning strategies rather than a replacement. What is concerning is that ease often wins out over reliability. Google and Wikipedia were included as part of participants ‘go-to’ knowledge sources (field notes MWR1, MWR2), which is not what medical educators, clinicians or librarians want to hear. This is an interesting if ironic observation especially as clinicians commented on being worried about patients accessing unreliable information sources via the internet (interview MS2). Information literacy skills training needs to encompass the growing use of smartphones as a resource, with the specific constraints of screen size and
data allowances that accompany this (interview MS8), so that participants can make the most of online resources.

When mobile phones were used for learning by participants, one key learning theme was that mobile phones allowed “just-in-time” learning. Previous research carried out by the author has shown how accessing reliable medical information is relatively straightforward within a library setting, but much more challenging while actively engaged in clinical practice. Within the clinical environment, access to information resources is more restricted than within the traditional learning environment of a library or university campus. Mobile technologies such as mobile phones or handheld computers offer an attractive alternative, affording “real-time information whenever and wherever learners need it” (interviews ST1, ST2). These findings concur with other studies exploring information use in the clinical environment and in daily clinical practice. This study shows, as others, that timely access to key facts allows learners to consolidate their knowledge through repetition and by allowing them to learn in context, making sense of a situation that had otherwise been opaque to them (interviews MS8, ST2). Consolidating participants’ understanding ‘in the moment’ is supported by mobile phone use, both as a solo activity and within an interaction.

However, despite the opportunities for learning that mobile phones offer, the primary source of knowledge during the ward round was the more senior clinicians (field notes MWR1, MWR2), regardless of the clinician’s perceived stance on mobile phones. When phones were used in conjunction with an interaction with a senior clinician, it was as a knowledge source which enabled individuals to engage in opportunistic learning by discussion with their seniors. It gives them the confidence to ask questions that lead to a deeper understanding of a decision or action rather than accepting it de facto. This accords with Eraut’s views on workplace learning, where early and mid-career learners engage in informal learning in the workplace, learning both from other people and from personal experience. It also corroborates Hardyman’s findings that a Smartphone library “complemented rather than displaced trainees’ discussion with their senior colleagues”, supporting the conversion of explicit knowledge to tacit. To echo Dexter and Dorman’s argument, technology enhances learning through social processes as well as delivering subject matter.

Although the literature raises concerns that such instant availability of information may be detrimental, this is not supported by the study data. The data shows how participants
use their mobiles as part of a continuum in which the knowledge gained is then applied in practice and in context, as the example concerning antimicrobial dosing in renal failure (field notes SWR3) showed. Using the smartphone as a knowledge source is not an endpoint, but a step which then allows further manipulation and application of that knowledge gained, echoing Eraut.69 I disagree with Kassirer who declares that the “immediate availability of compiled and condensed information (especially in electronic form) is making young physicians unintentionally lazy”.186 In answer to Kassirer’s concerns, participants felt as if they had gained a greater understanding of the clinical problem in question, and were more likely to remember the knowledge acquired and used.

Collaborative learning with a mobile phone also needs consideration. The literature is undecided as to whether collaboration is fostered or constrained by the use of mobile technology. Although much of the discussion around collaboration in mobile learning is based around the premise that learners are physically distant, interaction between learners and working together towards a shared goal facilitates learning, 187 even when co-present. This study demonstrates that although the smartphone is inherently a personal one-user device, it was communally used, accessing knowledge as a collective enterprise. There are both homogenous and heterogeneous participant partnerships working together to find an answer, such as nurse and patient, student and qualified doctor. There are also examples both within and outside the ward round, and both reported and observed. The vignette in 5.2.3 shows how a group of students shared one mobile device and their collective memory of the patient episode to make sense of the prescribing decision made by the ward round team. The student who owned the smartphone needed the correct drug name from another student to be able to access information that is then applicable and interpretable. This together with their physical and spatial positioning facilitates a group learning episode rather than an individual one.71 186 This is problematic for traditional learning theories such as reflective practice, the cornerstone of current medical professional development as it fails to account adequately for such collective learning. Rather, situated learning is much more useful as an underpinning learning theory here. It allows for collective problem-solving such as this, as newcomers master the knowledge and skills to participate fully in the practices of the community.68 188
6.1.3 How are mobile phones being used by patients in support of self-care?

Having elaborated mobile phone use by clinical staff and students in their care practices, in this section in contrast I will now move on to discuss mobile phone use by patients. As described in the previous chapters, we see again here how communication dominates as a purpose for mobile phone use. However, in contrast to staff and students, patients gained both emotional and practical support through the facility of their mobile phones. Mobile phones were a “lifeline” (interviews MP5, MP6, SP4, SP5). In addition to this, functions such as the camera and the audio-recorder were being used by patients and their families as part of their self-care, by capturing a permanent record of otherwise transient features or events, whether a rash or a conversation (interview MS7). This is worth exploring in more detail as it was a contentious issue for participants.

**Audio- and video-recordings**

The facility for making audio-recordings offered by smartphones raises an ethical conundrum, as patients can, and had, covertly recorded interactions with staff. Until very recently, the research literature has not addressed this. The General Medical Council (GMC) has guidance for clinicians instigating a recording, but specifies that covert recordings should only be undertaken in limited circumstances (such as child protection) and when lawfully authorised to do so. In contrast, the Data Protection Act allows patients to record a consultation as it is their own personal information and as such they can process it as they wish. The medical defence unions who represent clinicians should they be sued by their patient do give advice on recordings made by patients, and there is an emerging discussion in the current medical literature as to whether clinicians should actively encourage their patients to make recordings. The argument for patient held recordings is that it enables better sharing of information and active participation by patients in their care. Another argument for patients is that it can support them when they are dissatisfied with their care (interviews MS4, MS5, MS7). The GMC now accept patient recordings as evidence in disciplinary hearings. The arguments against it are that it alters the doctor-patient relationship and that behaviours by both are affected within a consultation. The widespread dissemination of smartphones has made this an important and relevant issue for clinicians and patients to grapple with. Empirical ethics requires participants to weigh up the goods and manage the tensions. I argue, as the participants in
the study and the defence unions also conclude, that clinicians have a duty of care to their patients, and have to learn to practice in a way that can incorporate the possibility of patient-instigated recordings without harming the doctor-patient relationship (interviews MS4, MS5, MS7). If clinicians strive for the best for their patients regardless of whether or not they are being recorded, concerns of having their actions captured should not be necessary. Arguably, if there is the possibility that patient experience and care can be improved by evidence collected through patient-instigated recordings, then both individuals and institutions should consider how to support this. Learning to accept that this is a possibility, and how to best behave in a professional manner so that it does not matter is the principal answer, but hospitals and training institutions could support staff by raising awareness and preparing clinicians for such an eventuality. It is clear, however, that this is another example of issues arising at the grass-roots level that had not been predicted or anticipated by policy makers within the strategic drive for mobile technology being incorporated into all aspects of healthcare. It supports the concept of a “sociology of expectations” in which public promises overrate the practical possibilities, and technological ‘solutions’ generate unanticipated problems.75, 195

**Patient learning**

Another key point to consider is that of patient learning. A dominant discourse in healthcare currently is health literacy for patients, including a focus on acquiring and managing information about health.196 It is assumed that patients who are better informed about their condition participate more actively in their care and have better outcomes.197 Yet “a fifth of patients say they were not given enough information about their condition or treatment while in hospital”198. Given the “unprecedented opportunities”22 proposed by health policy, it would seem reasonable to suppose that these same possibilities for learning should apply to patients as well. However, despite the facility for learning through using phones as an information resource, there was little evidence in the data of patients using mobile devices to source their own information about their treatment or condition. This conflicts with a vision of the world as “digital by default”, 199 but the underlying reasons for this are manifest within the data. At odds with the pro-technology rhetoric, most patients owned only simple mobile phones that did not have internet capacity, or they were restricted by physical limitations such as poor hearing, visual impairment or finger dexterity (field notes MWR2, MWR3, SWR2). Additionally within the interview data,
patients did not describe using their phones for learning, and on direct questioning, either did not own a smartphone, or did not use it for such purpose.

Returning to the question of how patients use mobile phones in support of self-care, we see that the numerous ways in which patients use their phones to improve their inpatient experience do not fit the concept of self-care within the mHealth literature. The body of mHealth literature would expect the patients to be using their phones to look up information about treatment options; or to monitor their physical parameters or daily diet through a specialist app; or to employ an app to support behavioural change. As described above, none of these were a feature of the data, with good reason. Instead, patients were using their phones to coordinate their care activities; to liaise with family about practical matters; as a lifeline to support their emotional needs; to develop support networks. These are all examples of self-care by patients, but not normally recognised as such. Equally, they did engage in learning with a mobile phone, but just not their own mobile. They engaged in collaborative learning with the nursing staff, with both patients and nursing staff reporting nurses using their smartphones to acquire information to pass on to their patients (field notes MWR3, interview MP6). The theoretical and methodological approach taken in this study has allowed a wider consideration of self-care to be explored.

6.1.4 The limitations of the technocentric mHealth literature

In summary, this section has answered the questions posed initially at an analytical level consistent with the mHealth literature and government policy, but we can see that there are inadequacies with such an approach and the pragmatic findings produced. In contrast to depictions of technology in mHealth this research found that mobile phone use within the inpatient setting is firstly, limited and secondly a range of devices are in use with a range of functionality. This finding challenges depictions of a ‘digital by default’ world. Additionally, being ‘digital by default’ theorises that ownership and ability to use technology is widespread, and that technology will be smoothly assimilated. It assumes that technology is “exogenous, homogeneous, predictable and stable”. However, this research shows that this is not the case and that technologies will exist in multiple forms and will always be embedded in the relationships through which care is (and is not) enacted. As Pols argues with respect to telecare, “the same technologies may perform in different ways in different practices. Their identity is never ‘given’ by their design alone, but is the result of practices in which users try to make the technology work, and
technologies open up unexpected possibilities for acting”. We have seen the dissonance between practice at grass-roots level and policy and how this is leaving participants unsupported and at risk. An appreciation of the opportunities arising from mobile technology is important to harness the possible benefits to care, but so is an appreciation of the risks.

The research conducted within the mHealth literature does have value, and is important in determining the efficacy of mHealth and upscaling the potential of mobile technologies to improve health outcomes. There is a drive to raise the standards of the research conducted within the field, such as the work done by the US National Institute for Health (NIH) who derived an approach that if implemented, would “ensure research is conducted on a rigorous empirical and theoretic foundation”\textsuperscript{200}. They raised concerns about reliability, validity and how best to evaluate technology which is continuously evolving, debating the randomised controlled trial versus continuous evaluation. The emphasis on reliability and validity dovetails nicely with the world of evidence-based medicine, and makes comfortable reading for clinicians. The randomised controlled trial and evidence-based medicine are the gold standard for assessing clinical interventions for safety and efficacy, and to inform management protocols. However, they are not enough when the social and the technological are involved as with mobile technology in health. The inflexible nature of such research, with pre-determined outcomes and narrow focus of any particular study, does not allow the situated, complex, messy nature of real life use to be explored in all its nuances. Technocentric studies need to be complemented by studies that open up phenomena and look for the unexpected and unpredictable. Non-use needs to be explored as well as use. Understanding the \textit{whys} and \textit{why nots} as well as the \textit{hows} - rather than just the what and for whom – changes the goal. Before we can evaluate a phenomenon, we need to know more about it:

“To understand innovative practices we need to ask what is being done before we can start quantifying ‘outcomes’. […] Rather than promises that technologies will, by their sheer installation, ‘fix’ something, there is a need for more modest accounts of technologies in practices, details about ways in which technologies are working, who is using them and what goals are brought into being.”\textsuperscript{75}

As set out in chapters 2 and 3, this goal is best served by looking to the literature on social studies of science and technology which offers other ways of looking at phenomena such
as the integration of mobile phones into healthcare. It allows us to ask the fourth research question that should have been posed: what are mobile phones doing to healthcare practices? By doing so, this research contributes new findings to the mHealth literature, focusing in on the inter-relationships that mobile phone use produces rather than instances of their use and in so doing documents the emergence of new care practices, the alteration of established ones and their ethical implications. For example, rather than describing use of a prescribing app\textsuperscript{39} or an app to support patients with self-management of diabetes,\textsuperscript{34} the data describes the community of care arising from the social networking of a cohort of day case patients as well as their driver, facilitated through their mobile phones. Care in a wider sense is achieved through mutual support, through telephoning ahead to wake someone up so they do not miss their appointment, or in phoning to say that treatment is running late so could the driver wait for them (interview, MP6). Understanding the contributions to healthcare that mobile phones offer such as these are not captured by the standard mHealth research study.\textsuperscript{201} I argue that continuing with the same technocentric approach is inadequate to understanding the how, why and consequences of mobile phone integration into healthcare. At a macro level, it is important that government policy embraces opportunities for improving the delivery and experience of care, so a technopositive bias in rhetoric is unsurprising. But the counter-arguments need to be explored and aired as well in terms of the new responsibilities that accompany the new opportunities. If policy directives continue to drive technology forward, we need to be better informed of the potential ramifications. In the following section of this chapter, I discuss the literature and the rationale behind the conceptual lenses and methods taken in this study.
6.2 Care as sociomaterial practice

The literature on social studies of science and technology (STS) offers paradigmatically different approaches to the issue in hand. The methodological decisions taken at the start were to conceptualise care as, and also to take, a sociomaterial approach. With this, neither technology nor human factors dominate, but instead a holistic view of the flow of interaction is taken, paying heed to both the human and non-human participants. In this section, I justify adopting these lenses by evidencing the supporting data and by demonstrating the unexpected knowledge produced as a result.

As we discussed in the last section, the pro-innovation bias and the prevailing technocentric approaches within mHealth research are unable to account for the range of ways that mobile phone use has become part of the enactment of care in the hospital setting. In response to this, an understanding of care practice as situated, embedded within particular circumstances, and adaptive to them was mobilised. This approach involves an empirical attentiveness to doing, knowing and innovating. It includes a “shared repertoire of resources” which may include ways of doing things as well as physical objects, such as the strategies for boundary work engaged by participants. It involves multiple actors undertaking ”shared work.” It is a compromise, a “situated negotiation of what is good”.

This research offers a contribution to the literature as an understanding of mobile phone mediated care as practice enacted through sociomaterial relations. The research design choice to include patients, clinical staff and students as human actors encourages an inclusive view of ‘care practice’ that places conventional analytical categories aside. This draws the focus to how, when and if mobile phones are involved in realising care in situ, in the everyday. The sociomaterial approach adopted enabled the mutual shaping of mobile phones and social practices to be elucidated. The multiple ways that participants use their phones, and the multiple, discrete contextual influences that influence their behaviour in doing so are elaborated by using a practice lens. As such, care can be seen as being simultaneously about learning, boundaries, appropriacy and negotiation.
6.2.1 Care is situated

Care is situated, embedded in a particular set of circumstances. Distinctive flows of interaction take place between human participants, artefactual ones and care practices. For example, the medication ward round as the staff nurse moves back and forth between drug chart, drug trolley, formulary and patient (field notes MWR2). This pattern in itself interweaves with the breakfast round, and the patients getting themselves up and out to the bathroom, and chatting to each other. It is within these “local temporalities” that the ward round and mobile phone use are embedded. I have described the rhythm of the ward round as a temporal and spatial ‘dance’ which flows around the ward with protagonists coming and going, but the whole moving ever on. The rhythms of the ward and ward round produce temporal boundaries for participants to manage. As the intensity of the ward round ebbs and flows, we see how the periodic ‘downtime’ offers opportunities in the margins of the main activity.

The places and the spaces of the ward also matter. This is unsurprising for a hospital-based, inpatient study. Patients are unwell enough to need to be in hospital, and staff are physically present to deliver that care. Students are learning to become doctors through participation and observation, again necessitating their physical presence. Co-located care means that physical boundaries are still an important consideration, and creates spaces which are more or less patient facing. The physical boundaries of the ward can be seen both as fixed and unnegotiable as with the walls and doors that make up the structural limits or the swipe card entry to the drug treatment room, or configurable and negotiable such as the curtains around each bedspace. Through their positioning as either opened or closed, these alter the permeability of the boundary around each bedspace, and who, for what purpose, with whose permission, can go behind them. Other physical boundaries are less obvious, such as the drip line connecting a patient to an intravenous infusion, or attached to monitoring devices that require electricity. A participant’s positionality shapes which temporal and spatial boundaries they recognise and enact.

We can see from this that care practices are embedded in the rhythms and spaces of hospital life. This explains why an ethnographic case study approach has so much to offer. It affords a way to capture the situated nature of care in the instance, as it happens, within the immediate temporalities and spaces. As argued previously, ethnography allows
exploration of technology and humans performing together in “real, particular conditions of use”. Case study offers a strategy to explore phenomena that are not only contemporary, with many actors, but that are “inseparable from context”. Despite the logistical difficulties in conducting an ethnography in hospital from an ethical perspective, the study shows that it is worth the effort, to capture a holistic picture of practice as it happens.

I have also shown how care is relational and enacted in the moment, yet continuities of role and boundaries persist. In the ward setting the social roles of participants appear to be categorically distinct, for example the clinician is clearly separate from the patient. Participants act out their own particular position in the moment in order to achieve care. Their appearance in dress, accoutrements, language, behaviours, set them apart from one another. The doctor has a stethoscope, a name badge, a bleep, a pen and some paper, holds notes or files, stands or crouches but rarely sits at the bedside, is dressed smartly, has sleeves rolled up, no watches or ties, speaks in medical jargon to peers. The patient is in pyjamas or casual clothes, is in bed or in a chair, may be attached to wires or tubes, is covered in bits of tape and Elastoplast, bruises and venepuncture marks, is surrounded by personal items like ‘get well’ cards, novels, magazines. These differences contribute to the performance of their particular social role in the moment of care and the boundaries separating social domains.

In considering the situated nature of care, it is important to understand the concept of boundaries. Boundaries result from the way we conceptualise and group activities, people, things and self into categories that are distinct, “realms” of life, such as “home” or “work”. Boundaries may be mental or behavioural as well as physical, rather than being an objective or tangible entity. They are socially constructed, “built by social actors through repeated practices” but each individual enacts their own “personal realm configurations”. These reflect their own experiences and balance the particular demands, rules, expectations and material constraints on them at that moment. They are best viewed as existing along multiple dimensions, and as a continuum where, at any one time, two realms are more or less integrated or segregated. They are subject to change and are “negotiated, placed, maintained and transformed”. This returns us to an idea of an onus of responsibility lying with the individual. The benefit of boundaries are that they “enable one to concentrate more on whatever domain is
currently salient and less on other domains”. The relevance of boundaries is that care is situated within social domains and as such, influences, and is affected by, the potential for domains to conflict (‘spillover’) and to the work that individuals perform to construct, maintain and overcome boundaries (‘boundary work’). These concepts will be explored within the next section on ‘care multiple’.

Returning to the situated nature of practice, we can see specifically how it relates to mobile phone use across the data set. One clear example is the difference in phone use by juniors between the surgical and medical wards due to context-specific need. Surgical wounds need senior opinion which is hampered by the space and time constraints of surgical operating lists (interviews MS8, SS1); this is not an issue for the physicians. The surgeons have developed a work-around using mobile phone photographs, and as we will see, this lays open a complex mire of conflicting goods. Prescribing information is another disparity. The physicians have a ward pharmacist to use as a source of knowledge for prescriptions whereas the surgeons have to be self-reliant and turn to their smartphones (field notes MWR1, SWR3). Junior behaviour varies depending on which consultant is present, perceiving a variation in acceptance of mobile phone use (interview MS8, field notes MWR1). The majority of patients alter their normal behaviours with their phones to minimise the impact on their neighbours, turning down ring tones or talking in hushed tones (interviews MP4, SP1).

The decision made for each episode of phone use/non-use can be seen to be inextricably linked to the context in which the activity is embedded. Each instance is influenced by multiple factors, each of which may be more or less supportive of phone use. This nuanced nature is too complex to untangle easily in a qualitative study, let alone in a quantitative one. This is also going to make it difficult for any top-down policy to adequately grapple the situation on the ground, making it much more likely that simple diktats at the negative end of the spectrum will result as this is more straightforward, and more immediately safe. Trying to include caveats, and “what if’s” does not make for useful or easily enforceable policy. Failing to acknowledge the problems that may be associated with the introduction of technology into care practices belittles the experiences and difficulties that users face, fails to grapple with the underlying reasons for rejection of technology and leaves users unsupported and less likely to get the best of the opportunities that technology can offer. How then to stop perpetuating the dissonance? Studies such as
these, “accounts of technologies in practice” are a starting point to describe what is being done and why, before looking to quantify outcomes.\textsuperscript{75}

In many instances, the onus was understood to come down to the individual. Developing the ability to pick up on the contextual factors, read them, and then act appropriately has to be the responsibility of the individual as well as requiring external support (interviews SP4, ST2, ST3, MS5). The decision to act is the individual’s but this could be more or less informed (interview MP5). This, as yet, is not something covered in the formal curriculum, but can be seen within Lave and Wengers’ communities of practice, as newcomers learn to be, to act, to speak as their community does (interviews MS1, ST1). There could be more signposting of expectations of behaviour, and more of the contextual made explicit rather than implied, such as the prevailing attitudes of those in charge (field notes MWR1, interview MS7). The community itself has a responsibility, especially the ‘experts’.

\textbf{6.2.2 Care multiple.}

Having just discussed how individuals enact social domains and boundaries between, in this section we can see how Law’s conceptualisation of ‘care multiple’\textsuperscript{102} mirrors the idea of multiple domains of responsibility, and speaks to the problem of spillover and boundary work. It is at the core of many of the conflicts that must be accommodated for the successful integration of mobile phones into practice in this study. Consultants have to care simultaneously for the immediate patient, the other patients on the round, other patients at a distance, their team, their students, their other commitments and responsibilities as well as themselves. It is easiest to visualise as an idea of multiple ‘hats’, each representing another call on the consultant’s time and attention, but only one of which can be worn at any given moment. This is a concept that is brought to the fore when mobile phones are introduced into care practices. Mobile phones may ameliorate or exacerbate conflict. For example, the ‘goods’ being weighed are caring practices such as enhanced efficiency, coordinating care, providing emotional support, being contactable in an emergency, all enabled through a mobile phone. However, what is good for one may be detrimental to another, leading to conflicts and tensions arising from the negative aspects of phone use (interviews MS2, MS4, MS5, MS7, SP3).\textsuperscript{62,82}

Boundary work consists of both boundary placement and boundary transcendence, i.e. both establishing a degree of separation and allowing crossover. It determines how far domains
may merge or be kept separate (interviews MP2, SP5, MS8). It is the “everyday choices and practices” that we engage to “create, maintain and modify cultural categories” and how they should relate. These practices include ones “aimed at controlling the flow of information, communication and demands across this boundary.” For example one consultant talked about his son and another about the cricket in ‘off moments’ to other staff members but they did not do so in front of or to patients (field work, MWR2 and MWR3). Home was distinct from work, but was allowed a degree of ingress, depending on the individual and the immediate context of the moment. Another good example of behavioural boundary construction is seen in how the members of the ward round constructed boundaries around the consultant as “care-giver” during each episode of direct patient contact. Anything other than matters about that patient’s direct care are put on hold until the consultant has stepped back from that interaction, whether it be for teaching and learning, or a consultation about another patient’s care (field notes MWR1). Other domains are not allowed to intrude. I argue that performing boundary work is one way of managing care multiple, working to reduce or mitigate potential conflicts and overlaps.

This is important when considering mobile phones as, although boundary conflicts arise with or without them, mobile phones offer connectivity which means that the boundaries between domains have the potential to be dissolved or blurred. The phone becomes a “primary site of negotiating social relationships and conflicting roles in everyday life.” This negotiation is part of boundary work – controlling the push-and-pull of conflicting roles. The net outcome of boundary work, the intrusion of one domain into another, is referred to as spillover.

Spillover is the intermingling of social domains, where one is physically in one domain, but “psychologically or behaviourally involved in another role.” The concept of multiple social roles and conflict between them predates by decades the advent of the mobile phone era, although the constant connectivity of mobile phones offers significant potential for boundary blurring. It leads to problems such as “offensive disengagement” or “absent presence”, where the phone user chooses to engage with the phone (and/or a distant other) rather than the person physically with them (interviews MP2, MP5, SP3, SS1).
In this next section I am going to discuss the theme of spillover facilitated by mobile phones as manifested within this study, focusing on work/home and patient enacted boundaries.

**Home / work**

As in the example of the medical consultant above, data from this study support the construction of a boundary between work and home as enacted by participants (interviews SP5, MS1, MS7, MS8). Although the permeability of this boundary was important to participants in theory, whether positively (as parent in an emergency, interview MS3) or negatively (as an unimportant interruption, interviews MS7, ST2), actual experience of home to work spillover was limited. The relative rigidity / permeability of this boundary was contingent upon the perceived urgency and importance of the intruding contact. Family emergencies were the key such example cited. However, one could argue that other modes of emergency contact could be utilised, such as the ward phones or the bleep system, and whether the infrequency of need balances the risk of temptation or negative consequences (interviews MS1, MS3, MS4, MP3).

There were ‘softer’ examples of home to work spillover that were not recognised as such by participants, such as sharing family news or photographs (field notes SWR3), which seemed to support the development of working relationships. The importance of the home-work boundary was also marked by occasions when spillover occurred in the opposite direction, with work impacting on home life (interview MS8). This “colonis[ation of] the social spaces and times once reserved for family life” results from the “perpetual contact” that mobile phones and other ICTs enable. Although participants were choosing to allow work-home spillover in some ways, such as using personal devices and their own minutes / data allowances (interviews MS2, SS1), they were unhappy when work-home spillover was inflicted upon them, such as being contacted while off duty or on holiday (interview MS8) . However, as Wacjman also argues, mobile phones offer varying degrees of control over permeability if the user chooses to implement them, whether it be through
screening callers, using voicemail or leaving the phone behind entirely (interviews MS1, MS4, field notes MWR1, SWR3).

It is arguable whether spillover between boundaries facilitated by mobile technology has an overall positive or negative effect. Adding to the literature, this study shows how the benefits and disadvantages of spillover depended on the situated activity of the user, the present non-user and the distant other (interviews MS2, MS7, MS8, SP3, MP3, ST1). This required new negotiations by individuals in how and whether to segment or integrate domains which had previously been more discrete, through boundary work. Boundary work was also influenced by the social expectations and shared norms about the permeability of the boundaries, especially professional ones (interviews SP2, SP3, SP5, MS1, ST3). This again reflects the situated nature of care. As discussed earlier, boundaries are based on cultural constructs. Staff and students act both to maintain, and to be seen to maintain, clear margins around their work, and being ‘professional’ (interviews MS1, MS2, MS5, ST1, ST3). Patients expect them to ‘be’ professional (interviews MP1, MP3, SP5). As one of the patients described:

“Everybody’s got two lives, you know, you’ve got your private life and your business life and they can’t mix. When you come into work, at the hospital door, you are a professional person. When you go out at night you are one of the girls, you are one of the boys, there are two parts to it all and you can’t cross them.” (Patient interview SP5, 148-153).

Mobile phones challenge this demarcation and require new negotiations and behaviours to integrate them into practice without detriment.

**Patient enacted boundaries**

Individuals choose how much to integrate or segregate their home and inpatient lives. As with Wacjman, participants are able to maintain intimacy while geographically distant, the “lifeline” that patients referred to (field notes SWR2, SWR3, interviews MP5, MP6, SP5). Phones help overcome the temporal boundaries of the ward, as patients could make contact “whenever they feel like it” (interview SS1, field notes SWR2). Equally, others maintain control by choosing to not have their phone with them or turned on, erecting a boundary deliberately (field notes, SWR2). Patients try to limit the intrusive effect of their own use on their fellows as far as they could, such as by talking quietly, turning phone ringers low
or off, and by actively ‘blocking out’ conversations they could overhear (interviews MP4, SP1, SP4). The dependence of boundary permeability on the immediate situation was also demonstrated, such as the tolerance shown in a shared patient bay of the repeated overnight phone use of a patient who had become acutely unwell (interview MP5).

This study also describes the additional boundaries for patients between the realms of work and inpatient care which may therefore also be disrupted. These have not previously been elaborated, therefore the current literature cannot tell us how blurring this work/care delineation affects patients and their care experiences and outcomes. This study opens awareness and consideration of these. For example, the self-employed patient who had managed to continue to run his business for most of his 17 week inpatient stay (interview MP3) contrasts with the clinician’s concerns about a negative impact on patient recovery, and on whether patients, unwell enough to need to be in hospital, are cognitively placed to make the best decisions (interviews MS7, SS1).

Work /care spillover creates new burdens and new opportunities for patients, which in turn makes it new territory for health professionals and patients alike to have to learn how to manage this for the best. The shifting and unique circumstances of each individual must be taken into consideration (interview MP1). This is something that needs to change in the way that care is practised. Clinicians need to be aware that this is a potential issue for patients, and need to include it as a matter of course in their dialogue with patients. There are going to be times when patients should be advised that it is inappropriate, for them, in their particular context of illness in the moment, to allow work to encroach (interviews MS7, SS1, SP2, SP5). Equally, it is something that needs to then be revisited as the patient’s condition changes and the balance of ‘goods’ shifts (interviews MP1, SP1, SS1). Supporting patients in this will help them to achieve a balance between the time they need to heal versus their need to work. I argue that this should become part of the clinician’s routine practice.

What is clear is that, with boundary work, where individuals have managed to find ways to either maintain boundaries, or to control what passes through them, positive effects are more likely (interview SS1, field notes SWR2).86, 204 This returns us to the contention that a deal of responsibility lies with the individual to assert control over their boundaries in a way that is socially and contextually appropriate; for health care workers, that also
necessitates being professionally appropriate. Nonetheless, there is an onus on institutions to support the development of their juniors in becoming professional, in light of the new opportunities and new responsibilities that mobile phones offer. We will explore in the next section how participants strived to achieve this.

### 6.2.3 A shared repertoire of resources

Boundary conflicts must be reconciled in some manner, whether through deliberate or subconscious strategies. These strategies contribute to boundary work. Each episode of phone use or non-use requires individuals to make a judgement of goods (interviews SP1, SP4, MP6). They assess whether or not it would be appropriate and beneficial to use their phone, for that purpose, at that moment, in that activity, in that place (interviews ST1, ST2, MP4, MS7). They then amend whichever variable needed to achieve phone behaviours that are acceptable. For example, where to hold the phone, where to stand and which way to face, whether to take the call or ignore it, whether to look up the answer now or later. Some boundary work is deliberately explicit in order to demonstrate a clear recognition of the potential for spillover, such as the senior nurse making it clear that her phone use is for work purposes rather than personal (interview MS6). Other strategies are performed subconsciously, engrained into behaviours without participants being overtly aware (field notes MWR2, MWR3). Even an awareness of the potential problem is an important skill that has to be developed (field notes MWR1, interview ST1). In this section we discuss the temporal and spatial strategies that participants held in their repertoire of resources as ways of successfully integrating mobile phone use into their care practices.

*Rhythms of use* reflect in part the temporal strategies and behaviours that participants engaged to integrate mobile phone use into the local temporalities of the ward, such as turning their phone off or to silent during the ward round (field notes SWR3, interviews MS3, MS5, ST3), or postponing calls until between patient facing moments (field notes MWR2, MWR3, interviews SS1, ST1). However, in contrast to the idea of ubiquity and “forever ready-to-hand”, mobile phones in hospital care practices such as the ward round are not “desired and useful at all times” (interviews MS4, MS6, MS7, ST3), reflecting research findings in operational police work. *Rhythms of interaction* resonates more closely with hospital care practices. The need to be connected varies between activities and location. The marked absence of mobile phones from much of the ward round speaks to
this. Some activities are “highly technolog[ically] hostile”\textsuperscript{79} such as breaking bad news (interview MS4), while others demand connectivity, such as updating a patient’s family as soon as possible after surgery (interview SP1, field notes SWR2). Participants use the temporal patterns of work and practice as a way of successfully integrating phone use into their care, much as Reddy’s participants’ need for information and patterns of information retrieval were guided by the rhythms of their work.\textsuperscript{80} Participants were observed postponing a call until after the end of an interaction (interview SP4), and reported waiting to look something up later rather than in the moment, in front of a patient (interview ST1). They were able to control their “always-availability” by using features such as the vibrate function, screening incoming communications, or turning their mobile off completely at times (field notes MWR1, SWR3).

Analysis of the study data shows the importance of space as well as time in determining how care is accomplished and is supported by the literature on care practice (field notes MWR1, MWR2, SWR2, SWR3).\textsuperscript{102} There is also some evidence within the healthcare literature to support this, with use of a smartphone in the clinical environment spatially determined.\textsuperscript{57} As figure 8 shows, ward spaces vary as to how ‘patient facing’ they are, and thus how open to phone use (interviews MS3, MS6, ST3). Re-locating into the peripheries enables users to incorporate smartphone use into their practices (interviews ST1, ST2, MS1). Participants also use space as a means for integrating phone use into the ward round. Spatial relationships in ward rounds have been shown to mediate interaction and collaboration.\textsuperscript{111} This study shows numerous examples of how participants use space to balance the tensions between their different objects of care. Participants use body posture and positioning of the phone (field notes MWR1, MWR2, SWR3). They stand behind other participants, or they choose to talk in the corridor rather than the patient bay. On other occasions, a participant would walk away from the ward round to take a call (field notes MWR1). This resonates with the concept of coupling/decoupling as described above by Sørensen and Pica, as they engage or disengage from the ongoing activity of the ward round both physically and with their attention.\textsuperscript{79} Participants coupled and decoupled both with their mobile phones and with the ward round itself (MWR1, SWR3). Moreover, their behaviours reflect how “improvisation meet[s] routines”\textsuperscript{79} as individual participants find varying ways of integrating mobile phone use into the ward round (interview MP4, ST1, ST2, ST3, MS6, SP1, SP3).
These strategies comprise the shared repertoire of resources available to a community of practitioners such as the study participants. All of these are important constituents of socially and professionally appropriate behaviour, and mostly pass unheeded. They resonate with the idea of Jarvenpaa’s coping strategies developed by mobile phone users to address conflicts arising from technology paradoxes. Using the peripheries of time and space, choosing whether to engage or disengage, managing always availability, choosing who or what took priority are all part of the work done by participants in both maintaining boundaries and in allowing them to be crossed.

These strategies are important as they enable the integration of mobile phones into healthcare practices. But the question then lies in how are they acquired or developed? How is it that users manage to become users? Is it through trial and error, or through role modelling as some participants intimated, or through situated learning? What use are these strategies to others?

Collating the strategies implemented to integrate mobile phone use successfully into care practices is a valuable contribution to the literature, and may inform a number of teaching and learning interventions. It answers Pols’ call for descriptions of technology in practice in response to the promises made by government and industry about the benefits of introducing technology into health and to improve care. Unlike Pols, who argues that the mobile phone is a form of “domesticated” technology as it is widely used and has a “recognisable repertoire of (culture-bound) uses”, this study has shown that this is not necessarily true in the healthcare setting. Mobile phone use in healthcare lags behind the wider societal use, as demonstrated, and the combination of the multiplicity of affordances with the opacity of purpose means that the repertoire of uses is not recognisable and not yet widely accepted. However, this just adds weight to the necessity to capture exactly what it being done with mobile phones in healthcare.

Descriptions of mobile phones in practice begin to offer institutions both the information they need to develop teaching and learning materials to support care participants, as well as the impetus to do so. Again, Pols, in her work on patient knowledge, suggests that the issue is the collection and dissemination of techniques and knowing-in-action to make them useful to other patients and care providers. This requires collaboration between participants in care and institutions to organise making these materials useful and accessible. They can
then contribute to guidelines or teaching materials, both formal and informal. I argue that the same holds true for the knowing-in-action of care with mobile phones. A collation of the strategies that participants have used successfully could fill a toolbox of options for discussions of double-binds, or what-if scenarios in teaching on professionalism. Equally they could populate materials for patients to inform them of the ‘valid’ purposes that mobile phones are achieving, and the behaviours that they could expect from their healthcare staff and students.

Strategies alone are insufficient as a concept to depict a holistic picture of the processes enacted by participants as they practise care with mobile phones. It moves us on to a consideration of the goods that are being strived for, and the negotiated nature of care. For policy and individuals to be better informed, we need to understand the rationale behind the behaviours that are manifest. In the next section we will look at the ‘goods’ that are being weighed, and in section 6.3, the ‘weighing up’ process.

6.2.4 The goods in balance

Winance describes how care is a compromise, a situated negotiation of what is ‘good’. Looking to the goods that mobile phones may elaborate, returns us to the descriptions earlier in this chapter of the use of mobile phones by staff, students and patients. Above and beyond these are higher order effects that mobile phones have on care practices which will be discussed here. This includes the distributed nature of care, micro-coordination and effects on communication.

Mobile phones allow an individual, whether patient or healthcare worker, to draw on resources outside of the bounds of the ward or even the hospital. Staff are able to obtain senior advice or expert opinion without them needing to be physically present (interview MS8). Patients are also able to facilitate care at a distance, whether a medication change or home comforts (interviews MP2, MP6, SP1, SP3). Care crosses the physical boundaries of the ward setting, requiring more attentiveness to its distributed nature. Equally some of the temporal boundaries experienced by participants were altered by the connectivity of mobile phones. Instead of having to wait for fixed visiting hours in the afternoon and early evening, patients could speak directly with family and friends at other points during the day, whenever was mutually convenient for both patient and distant other (field notes SWR2). Staff and patients were able to ‘micro-coordinate’ activities through their
phones,\textsuperscript{15} such as the start of the surgical ward round (field notes SWR3), or the nurse who was running late and texted her senior (interview MS5).

In addition to the obvious, such as facilitating synchronous and asynchronous communication, phones add extra channels and dimensions to communication. Examples included enabling understanding through translating a discharge summary (interview SP5); or supporting dialogue between juniors and seniors, empowering the juniors to contribute and add to the discussion in real-time (interview MS8). Phones facilitate a more nuanced exchange, conveying extra information through words or pictures that influenced the response elicited. However, communication with a distant other and engaging / disengaging, as enacted through mobile phones leads to consultations being interrupted, care activities suspended and relationships impaired (interviews SP3, MS2, field notes SWR3). This applies across the participant groups. Even during social activities, being engrossed in the ‘mobile phone frame’ comes at the cost of co-local interaction, resulting in absent-presence (interview ST1). Communication in these instances is impaired rather than enhanced. Increased accessibility is counterbalanced by more disruption.\textsuperscript{65,206}

Here we can see a number of concepts from the STS literature applying in the clinical environment, such as ‘micro-coordinating’ and ‘more global, less local’. An awareness of the advantages and disadvantages of mobile phone use beyond the immediate goal is needed for participants to make decisions that are informed. It is also important at a macro level for policy makers and institutions such as the hospital to understand that there are consequences of introducing mobile phones widely into care that are not immediately obvious but that are no less important for that. Having discussed the ‘goods’ that are in balance, in the next section I will discuss the negotiated nature of practice as it applies to mobile phone use in care and caring: empirical ethics as performed in hospital care.
6.3 Empirical ethics

Participants try to use their mobile phones in ways that are socially (and professionally) appropriate according to the context in which they are practising. We return again to Fenwick’s description of medicine as “a set of localised sociomaterial practices, improvisations and contingent negotiations.” Having demonstrated the first two of these concepts I will now discuss the ‘contingent negotiations’. These negotiations reflect the empirical ethics that care participants practised with mobile phone use, navigating through a repertoire of strategies to find the most appropriate for that situation. Pols uses the term “know-now” in her description of patient knowledge particularly, but it would apply well here too. It is knowing what to do in new situations, how to understand and deal with the particular situation in hand through highly contextual improvisations and situated actions: “No primary cognitive strategy which one then puts into practice, but repertoires of possibilities to react to a situation”. 77 All of this resonates strongly with the “how-to” of this study. Participants model their own behaviour on others (interviews MS1, ST1), and amend their behaviours according to the immediate task, the activity in which use is embedded, the immediate and distant audience, their own ability and the phone’s functionality. They also bring into the decision-making process their knowledge (or not) of both explicit and cultural expectations of the hospital and ward, the ‘rules’ (SS1, MS3, MS5). Their decision-making manifests in self-regulation and is reciprocated by tolerance and trust (interviews MP5, MS3, SP5). This balancing of factors resonates with Harbers’s theory that caring is a ‘permanent consideration’ of the pros and cons of a particular situation.207 ‘Tweaking’ requires contextual awareness, cultural knowledge and Eraut’s personal knowledge, “what individuals bring to situations that enables them to think, act and perform.”69 It resonates strongly with Pols’ description of the process as empirical ethics, which in this case, can be described as negotiating the social and professional niceties that dictate when, where and how, a smartphone may be used to support practice and learning, for benefit rather than to the detriment of those involved.

I would like here to draw on Pols’ works within her research on care, in her explication of empirical ethics.201 Traditionally, medical ethics has been principle based (autonomy, beneficence etc). In contrast, empirical ethics looks at how people act in their every day practices in order to bring about ‘good’, rather than what counts as care, and as ‘good’ being predetermined. It uses ethnography to study “how people shape goodness in daily life and care”.201 It acknowledges that ideas of what good care is may conflict within
practices and allows for these to be drawn out. It acknowledges that there are multiple objects of care, with tensions arising between conflicting goods. It is based on the premise that care is not just about interactions between people, but their relations with things as well. It is the attempt to do good that matters and these attempts are manifest in a number of different ways. A description of a care practice from an empirical ethics perspective includes the goods that participants are striving for, the ‘bads’ they are trying to avoid and the norms and values being enacted as part of this. It also recognises the importance of context as practices take place within and are shaped by, circumstances and relations.

Through adopting a practice lens, this study makes it clear that each episode of phone use is conditional on the immediate environment, including place, time, people and activity. These inform judgements that balance possibilities with safety. Participants are engaging in empirical ethics in their everyday care practices, including those with mobile phones. I have highlighted the complexity of care practice and the “disjunction between the complexity of situated practice and the abstractness of formal rules.” Despite some absolutes, or “tight couplings” that have to be incorporated (such as the legislative aspects of the Data Protection Act), the solution to achieving good care for patients may not lie in merely creating formal rules for mobile phone use. Formal rules are still subject to the “complexity and richness of everyday activity”; rules have to be followed to be effective. As I have demonstrated, this does not always happen on the ground as the hospital would like, and expect. Given the evident dissonance between practice on the ward and the institutional expectations, as earlier, I argue that top-down hospital safety and quality efforts are struggling to address all the variables of situated practice relevant to mHealth. Greater responsibility needs to be taken at all levels of care services, from individual practitioners right up to the Secretary of State for Health, for their part in ongoing practices which are currently putting patient privacy and confidentiality at risk (interviews SP4, ST2, MS5, MS6, MS7). This is especially pertinent in light of a strategic drive to increase the use of mobile technology within healthcare.

How can this be achieved? As I have shown, there are a number of concepts from the STS literature that are applicable when considering mobile phones in care practices, such as absent presence and offensive disengagement, rhythms of use, rhythms of interaction and coping strategies. I have shown how boundary work is key, controlling conflict and spillover, and how participants are negotiating each instance of phone use, each time for the first time, employing empirical ethics. However, none of these are explicitly addressed within medical or nursing education. In fact, much of the essence of learning to
‘be’ a doctor occurs outside the formal, structured curriculum of medical education. Ozolins’ students described it as “teaching them ‘how to be’ and think like doctors”, in contrast to the formal curriculum which gave them the facts of medicine. Hafferty argues that medical education is best viewed as a learning environment with a three tiered curriculum – the formal, the informal and the hidden. The informal curriculum targets learning at the level of interpersonal interactions, and the hidden curriculum the “commonly held ‘understandings’, customs, rituals, and taken-for-granted aspects”. This provides the forum in which most mobile phone use in practice is currently learned.

How then do participants learn to ‘be’ professional with their phones? There is a whole body of literature which argues over what medical professionalism is, as well as how to teach and assess professionalism within undergraduate and postgraduate training schemes. The General Medical Council are responsible for setting the standards for professional behaviour, with the expectation on medical schools to ensure their graduates achieve the outcomes set out for “doctor as professional.” However, setting outcomes does not address the process by which students develop the behaviours and attributes expected of them by their patients, superiors and colleagues. Setting aside prevailing conceptualisations, such as professional artistry, professional socialisation, legitimate peripheral participation, and domains of professionalism, Dall’alba approaches professionalism as a process of becoming. Trainee professionals learn to become the professional, rather than just gain the relevant knowledge and skills of the profession, integrating “knowing, acting and being” professional. This is not achieved in isolation, as each individual’s past experiences influence the process, as well as interaction with others in and outside the profession. This is applicable to mobile phone use too, such as the student who described a specific interaction around mobile phone use with a teacher that then influenced her subsequent behaviour (interview ST1). Dall’alba refers to trainee teachers learning from their encounters and interactions with students and parents, as well as from colleagues, which is comparable with trainee doctors learning from their encounters with patients, families and other health professionals (interviews ST1, ST2, MS7). Applying this lens, we see that professional programmes that focus on epistemology, that is, on the knowledge and practical skills that students have to acquire, do so at a cost; that of a failure to provide support for the process of transformation into a skilful practitioner. If the programme fails to address the integration of being/becoming with knowledge and skills, then it is left up to the learner themselves to do this and learn how to be a professional in practice. Dall’alba argues that the focus of the medical school
should be “developing appropriate ways of being medical practitioners” rather than just acquiring and applying knowledge.\textsuperscript{219} Equally, the end of medical school does not fall at the end of the journey to become a professional.\textsuperscript{220, 221} Junior doctors continue to develop beyond graduation, with Eraut arguing that the first two or three years after qualification are the most influential in developing the “particular personalised pattern of practice” (p11).\textsuperscript{222} I argue that this holds implications for the institutional support required for learners to develop appropriate ways of being professional while using mobile phones in their care practices. I appreciate that this is problematic. As professional activities cannot be “set down in absolute routines, or be made visible in simple terms, and certainly are not able to be measured”,\textsuperscript{215} they are “extremely difficult to teach and to research”.\textsuperscript{215} However, this does not remove the responsibility from the institutions involved, both before and after qualification. What is clear is that the current dissonance between practice and policy, and lack of recognition within undergraduate and postgraduate curricula leaves healthcare participants unsupported and at risk of harm. Although I have demonstrated the situated complexity of phone use which inhibits the effectiveness and usefulness of institutional policy, more needs to be done by the organisations involved (hospital, medical schools, regulating bodies) to draw attention to mobile phone use, and establish its place in the formal curriculum. Training institutions need to acknowledge their role in “constructing definitions about what is “good” and “bad” medicine”\textsuperscript{211}.

I have already discussed how a compilation of strategies may be made useful to both patients and clinicians. The other aspect to this is making participants aware of empirical ethics as a concept, providing a way of understanding their own behaviours and thought processes. This would enable them to deliver on their own responsibility for their actions. Participants are already learning ‘how-to’ informally, but this needs to be made visible, “rendering manifest th[e] latent messages embedded in the culture of medicine”\textsuperscript{210}. This could be as part of the formal curriculum, delivered pre-emptively whether as a large-scale lecture or small group work. It could alternatively be used as a tool retrospectively in response to individual lapses in professional behaviour. Airing the internal dialogue and understanding the context and conflicts in which practice is situated, is essential to be able to explore and challenge an individual’s behaviours and their rationale.\textsuperscript{223} However, it would seem preferable to provide better support in order to pre-empt lapses in professional behaviour rather than waiting for them to occur. Rather, a responsibility lies with all clinicians to not only identify the ethical issues they encounter, but to share this recognition, their reasoning and their decision with their juniors and students.\textsuperscript{210} As we saw
above, learning theories such as Lave and Wenger’s situated learning, Eraut’s workplace learning and role modelling give the pedagogical basis for this. Given the complex, situated nature of care practice, making the empirical ethics of practice explicit on the ground, in the moment, would leave learners better placed to develop their own empirical ethics. As Iedema argues, while there are occasions for explicit rules, not all clinical activity can be “exhaustively pre-determined”208, and a culture of heedfulness may be more appropriate, allowing clinicians to experiment and monitor their work in order to achieve safe practice. I argue that heedfulness requires both insight and to be made explicit to be of greatest use.

In summary, empirical ethics offers an understanding of how people are managing the integration of mobile phones into their care practices. The role of empirical ethics must be appreciated and open discussion is needed to allow new practices to emerge whilst safeguarding the interests of all involved. As Pols describes, “an empirical ethics of care makes it possible to analyse the different and sometimes conflicting notions of what is good care within care practices.”201 Although there would be appear to be ‘red lines’ such as taking clinical photographs on a personal smartphone, on the ground, in the moment, rules are being broken. Instead of simply re-iterating the red line, as we have shown this to be inadequate, alternative solutions need to be sought and implemented. Responsibilities lie at all levels, at the level of government and policy, hospital and clinicians, and patients and learners. Whatever level these solutions are at, more can and should be done.

6.4 Summary of chapter 6

In this chapter I have answered the research questions posed regarding how staff, students and patients are integrating mobile phones into their care and learning to care practices. I have also discussed the limitations and technocentrality of the mHealth literature, and the benefit of alternative approaches taken from the STS literature, specifically the sociomateriality of care and the conceptualisation of care as practice. I have shown how this has allowed mobile phone use in the ward and ward round to be described and analysed at a number of levels, drawing out aspects such as the repertoire of strategies participants employ, the goods in balance, and finally, the negotiated nature of practice enacted through empirical ethics. I have argued that responsibility for the successful integration of mobile phones into care lies at all levels, from the individual at grass roots to the policy makers, and those in between.
CHAPTER VII: CONCLUSION

7.0 Introduction

This study set out to explore the implications of increasing mobile phone ownership in the specific context of healthcare in the hospital ward. It has identified: the purposes mobile phones are being used for; the caring practices which they support, change and introduce; and the professional and ethical implications that result. This was possible due to engagement with social science research. The prevailing research paradigm within healthcare has underserved the complexity of mobile phone use within the healthcare setting, resulting in a gap in the literature, failing to answer the how and why questions. It is not just the literature that tends to focus on or promote a single aspect of mobile phone use associated with a single purpose, but healthcare policy directives as well. Methodological limitations stem from how phenomena are conceptualised. A study design aimed at stable, determinate interventions will not fill the evidence gap. If we reduce a phenomena, such as mobile phone use, down to simple characteristics in order to be able to study it with the tools available, we will miss the diversity and ‘messiness’ of phone use. Rather, this study has ‘borrowed’ its approach from social science research, applying it to the problem in hand to gain richer pickings than a randomised controlled trial may offer. This research has shown that whilst focus is important, mobile phone use is relational, context-specific and multi-dimensional.

Choosing to study in this way entails its own limitations, such as recognising that it cannot offer answers that are cause and effect in character, but it provides a better understanding of a widespread phenomena with the potential to affect every area of patient experience and clinical practice. By exploring social science research methods, these kind of complex phenomena become available to research, and open up new spaces for reflection on positionality and the shared work of care.

Looking to further application, beyond accounts of technology in practice, these methods may also offer opportunities for exploring quality and safety issues, and patient safeguarding, such as described within this study. A research approach such as in this study, provides a basis to challenge policy assumptions as well as a robust counter-position to support understanding and methodologies for studying complex interventions.
This chapter summarises how, in answering this question, this study offers new contributions to knowledge concerning mobile phone use in healthcare through: its novel empirical findings; its theoretical conceptualisation of care, ethics and phone use as a continuity; and the insights generated to inform future policy and research. Finally, it explores how this new knowledge may be applied before setting out the strengths and limitations of this particular study.

7.1 Empirical findings

This research shows that phones are transient members of the ward round, flitting in and out of view and use. Although the overall impression generated by observing phone use on the ward is that their usage is relatively low, phones were nonetheless being used by all participant groups and all ages in their care practices. They contribute to the distributed and shared nature of care, blurring the boundaries of time and space of the ward and ward round while simultaneously reproducing them. As such they play an important role in boundary work and in enabling and constraining boundary ‘spillover’. Participants using mobile phones on the ward found ways to benefit from the potentialities of mobile phone use but also had to engage with the complexities of spillover, how to ‘be’ on the ward and how to use phones appropriately. Participants are learning with their mobile phones, engaging in ‘just-in-time’, collective and opportunistic learning, engaging in dialogue with their seniors, and applying the knowledge gained in practice, in context.

This research also shows that care on the ward is enacted through spaces, rhythms and roles requiring ‘boundary work’ which mobile phone users learn to negotiate. Each episode of use is distinct, contingent and requires nuanced judgements that balance possibilities with safety: the empirical ethics of the everyday practice of care.

7.2 What is missing?

7.2.1 Patient self-care

There are some important issues that are conspicuous by their empirical absence. The first unanticipated finding was with respect to the conceptual significance of self-care as predicted by the mHealth literature, and as included within the research questions. How are mobile phones being used by patients in support of self-care? The answer to this was surprising given the drive within the medical literature and strategic direction present in
policy. Aside from access to mobile information resources, there was little knowledge or experience on the part of participants of other forms of mHealth, such as treatment support or remote monitoring. Patients were not using smartphone apps to monitor their parameters or accessing information through the internet. A possible explanation is the low penetration of smartphone ownership amongst the relatively elderly patient population - most of them only owned phones with very limited capabilities. Additionally, several were limited in their phone interactions by physical issues such as visual impairment or restricted dexterity. Others were unsure whether they were allowed to use their phones. Looking at the whole picture of use on the ward and ward round, mobile phones were more conspicuous by their absence than their presence. This is in stark comparison to the findings of Wu and others. We can only speculate about the reasons for this – whether it is societal norms that differ markedly between the US and UK hospital medicine, or a lack of role-modelling by seniors, or still a hangover from the previous NHS ban on use. However, what is clear, is that the top-down drive for “digital by default” is going to struggle to engage the population most in need when it comes to health.

In contrast, what is apparent is that, in a wider conceptualisation of care, there were multiple strands of patient self-care being enacted, as described in section 6.1.3. A wider continuum of care allows for the recognition of activities as mundane as arranging for lemonade to be brought in, or setting the general practice telephone number to speed dial, as contributing towards care.

7.2.2 Clinician self-care

The second issue that was surprising by its absence was self-care by clinicians, in terms of sourcing emotional support through their mobile phones. In contrast, patients regarded their phones as a life-line, using them for emotional support through communication. This was notably absent in the data for staff and students, despite the emotional challenges that arise for those engaged in clinical practice. There could be a number of explanations for this: not sharing the information with the researcher; not recognising or recalling emotional support as a feature of their phone use; or simply not actually using their phones as a means of emotional support. My own personal experience would favour the last of these: at least, during work hours. Emotional support would either be in person or the need would be put on hold. And I would not have thought to tell a researcher about the phone conversations held on my time, through which I gained emotional support. But this study cannot offer the answer to this. The closest example to emotional support for clinicians
was seen through their use of their phones to arrange for a team lunch after the end of the ward round.

7.3 Theoretical implication

7.3.1 A reconceptualization of care

The study contributes to the understanding of how phones are being used on an everyday basis in a distributed network through which care is (or is not) accomplished. The examples of how mobile phones contribute to and alter healthcare practices described produce a different understanding of care and phone use. Care is broader than the dictionary definition: acts of caring with a mobile phone would not meet a classic description of care, but arguably should be considered as such. Healthcare is not just the provision of medical services from professional to patient; nor is it the patient as consumer. Healthcare is also the act of a nurse looking up football results on his mobile phone to share with the patients in his bay; it is the nurse handing over her own mobile phone to a patient and walking away to allow that patient to hold a conversation in the relative privacy and comfort of their own bed space rather than having to use the landline at the nurses’ station. It is self-care by patients through developing a social network of their fellow patients and their driver, extending that to their families through their mobile phones. All these examples recognise the accomplishment of care as a situated network involving the material as well as the human; they would not have been possible without the agency of the mobile phone. Nor do they ignore the social, human factors that contribute to the whole, the practice of care.

7.3.2 The methodological approach

Taking an alternative conceptual lens and an alternative methodological approach has allowed this study to open up knowledge around mobile phone use in healthcare practices in new ways. Performing hospital-based ethnographic work allows the “interrogation of the complexity of clinical environments”. It has given voice to both the technology and to patients, both of whom are silenced by the normative approach in healthcare research. Given the prevailing drive for patients to be empowered and for technology to be embraced in healthcare, incorporating these voices as active participants in knowledge construction contributes to an important change in research culture. The practice lens has also answered one of the criticisms of the mHealth literature, that of its tendency to concentrate on single
facets of phone use, whether it be text messages or an app. Interestingly, the same tendency was enacted by participants when asked about phone use, as their first response would invariably be around their person-to-person communication through a mobile phone. However, the data shows how much broader phone use really was in practice, with the multiple facilities that even a simple mobile phone offered. The conceptual approach taken allowed this to be captured and explored.

**Methodology reflections**

Using ethnographic techniques in healthcare has also given research experiences that will add to the literature on participant observation in healthcare, with considerations around ethical and practical issues, as well as the concepts of insider / outsider-ness and participant observation. The degree of participation and positioning as insider / outsider is not fixed but fluctuant, even within a single interaction. Both researchers and participants actively push and pull, towards and away from each other. Each person holds a status repertoire rather than a single position. In my experience, I have found that it is not possible to be truly, wholly participant while observing, as neither goal can be fully achieved without some cost to the level of performance. Even after completing my research and returning to clinical practice, there are still aspects of my research experience that contribute to my daily work. I now do remember to ask patients about work, and whether it is an issue for them. I use the hospital clinical photography service on a regular basis, and contribute to a collective understanding that mobile photographs are unacceptable. I am more conscious of my behaviour with a mobile phone and that of those around me. I can look with new eyes at my familiar work environment, and try to see it from another’s perspective. And I can look at the complex issues that arise within practice and see a way of exploring the richness of them through the methods I have learned and used.

**7.4 Policy implications**

The primary issues for policy arising from this study are around patient safety, as seen through the consequences of absent-presence and clinical photographs. Of great concern, especially with respect to taking photographs, is that these went unrecognised or unacknowledged by the majority of participants. As discussed in the previous chapter, patients are not being safeguarded sufficiently by the current culture of behaviour on the ward. This in itself requires addressing, but it also exemplifies the increasing potential for
conflicts and clashes in the clinical environment, given the changing status quo and rise of phone use. Equally, the complexity of practice means that top-down policies or guidance are unlikely to provide sufficient support to care participants. There is a divergence between ‘espoused practice’ and ‘actual practice’, and the contextual, negotiated nature of ‘real work’, that “cannot be governed in abstract by executives”.99 How best, then, can participants in care be supported by the institutions and structures in which they are acting?

The clinical risk management literature also describes contradictions and conflict between a top-down, rules-based system and bottom-up, self-regulatory practices.208, 225 I propose that ideas from other areas, such as root cause analyses could be applied to the issues around mobile phone practices. The benefit of these are an involvement of staff in “thinking and talking about the organisation of their and others’ work”.208 This could either be done at the level of the individual in response to discrete episodes, or at a macro level where the trust draws lessons across investigations.226 Both would provide an opportunity to realise and appreciate the problems that may arise from taking photos as well as finding solutions that would prevent recurrent events. It may even be that if such practices are common across hospitals, that actions need to be directed at the level of the health system rather than individual hospitals.226

Regardless, this study contributes to this process by providing a detailed description of the caring practices that can be and are accomplished with mobile phones, and has highlighted associated hazards arising in clinical practice; the next step would be to use this information to derive actions or interventions to mitigate this risk. As argued in the literature, and as demonstrated in this study, actions such as issuing policy have a low probability of reducing risk. Despite an argument that re-education is also poor in effecting change when it comes to risk reduction, several voices in the medial education literature urge for this. For example, a call for ‘e-etiquette’ to be included in medical school curricula,72 for education of all grades of doctors and students to overcome the difficulties and barriers associated with mobile phone use,18, 65 and for students to “be introduced to skills that will enable them to use mobile learning in the workplace both efficiently and appropriately”.67 This could include learning opportunities for participants to develop the tools to take with them into their everyday ‘tinkering’, to reduce the chances of harm through distraction or absent-presence. Other actions could include redesigning processes that would remove the need for clinicians to take their own photographs, or allow them to do so in a safe, controlled manner.
A second issue that is of importance to professional practice and policy is that of supporting patients in their work/care boundary management. This currently is not part of routine ‘doctoring’ but easily could be. It feeds into the ‘biopsychosocial’ model of medicine, in which it is recognised that social and psychological factors influence disease and recovery, as well as people’s responses and behaviours. Over thirty years ago, Engel advised that:

“to best serve the patient, […] the physician identifies and evaluates the stabilizing and destabilizing potential of events and relationships in the patient’s social environment.”

I have shown the concerns raised by work/care spillover and the balancing required of patients in their boundary work. The need to address work/care spillover explicitly and for supporting patients in managing this should be included in medical school curricula.

Another consideration at the level of the individual is the place for role-modelling. This research showed that role modelling by seniors was an important influence for phone use by both juniors and patients. The relevance of this is that I would argue that there is then an onus on them to demonstrate acceptable and beneficial behaviours, and to make their position and their rationale more explicit. Such openness could facilitate the integration of phones into practice more successfully.

### 7.5 Limitations

The strengths of the study have been described above but it is equally important to acknowledge that there are some limitations of the study that need to be discussed.

#### 7.5.1 Inexperience in qualitative research

I have discussed previously the rationale for using the qualitative research approach taken in this study, but there has to also be some discussion around the limitations of taking such an approach within a predominantly quantitative research environment. I had had only limited exposure to qualitative research within my training and clinical practice, so that both ethnographic observation and research interviews were a new method of data collection for me. Although I improved with increasing experience, a more experienced researcher may have gained insights that I did not elicit or observe. I tried to address this through critically reflecting on my technique, and through taking advice both from the literature and from experienced colleagues. There was also a limited amount of qualitative
research being conducted within my immediate institution, with regular research meetings and presentations geared towards laboratory-based research. This reflects the gap in the medical literature and the resistance towards qualitative research I experienced being expressed by many clinicians. As Greenhalgh reflects, alternative methods such as these are “not well understood or valued by the mainstream medical community.”230 This study was made possible by the openness of my medical supervisor to alternative research methodologies, and by the welcome and support of the applied sociological sciences department, providing the grounding and knowledge needed. Inter-departmental working opens up possibilities for approaching complex questions within healthcare that are underserved by traditional medical methodologies.

I also found it challenging to shed my doctor perspective throughout the research process, from which journals I search in and reference, to the assumptions I make in the field, to the importance I give to the research outcomes and the solutions I suggest, so there is undoubtedly a slant to the research that a non-medic would not have. However this can be redressed by awareness of such bias, and of working to mitigate the effect through deliberately trying to make the familiar strange, trying to see things from alternative perspectives and letting the data speak.

7.5.2 Constraints of the ethical procedures

There were limitations due to the ethical constraints on the study requiring standard informed consent procedures. As discussed in chapter 3, these restricted the number of participants that could be recruited, the number of ward rounds that could be observed, and the research sites that could be included. It is not clear how much impact the first two of these had in the end, as it would have been difficult to process and incorporate more data due to time constraints. However, it is important to capture differing contexts and differing patient groups, such as those for whom the hospital stay is very short, or who just attend outpatients. I think that there is a possibility that recruitment was more likely to be successful with mobile phone users rather than non-users, which may have influenced the data captured. But overall it begs the question as to whether such thorough consent processes are appropriate and beneficial. Research ethics in the UK is purposed for evidence-based medicine, geared to ensure interventional and potentially dangerous trials are as safe as possible and ethically sound. This is very different to qualitative studies such as these, especially about topics that are likely to be of low emotional impact, such as mobile phones. Participants who are omitted are necessarily silenced. Regardless of their
own stance, they experience the practices and behaviours being done around them and to them. A commitment to striving for the best needs to be informed as to what is actually being done. Poor behaviour cannot be addressed if it is not captured, nor can good practice be emulated and disseminated. Are the specific requirements of the ethical process excessive for the fieldwork component of the study? An equivalent study in the Netherlands would probably not have required ethical permission from participants in fieldwork, as it is a “qualitative study without burdens or risks”75. It would make ethnography a much more attractive option for studying hospitals and hospital practices if that were the case in the UK as well. Currently research such as this is being hampered by the bodies that aim to protect participants, and as such, may be doing them harm.

7.5.3 Problems with the research questions

There are some problems with the division of the research question into subquestions. Despite taking a sociomaterial perspective, the research questions fail to ask what changes mobile phones are engendering. If we look at Pols’ work on telecare, the research questions are two-fold – firstly about the human participants and secondly about the technology. This study has in fact explored these aspects, but the technology was not given an active voice up front as it should have been. Another problem is that the question neglected the learning practices that are part of care for both staff and patients, assigning it only as an issue for students. Furthermore, as staff reflected the multi-disciplinary nature of the care team, so too should have the students in the question posed – i.e. not just medical students, but nursing too. This was in fact addressed in the process of study recruitment, with both nursing and medical students participating in the study. A final problem with the research question is the concept of users as it is important to find out why non-users are non-users – what it is that is inhibiting or hindering them from engaging with mobile phones. This study was designed in a way that allowed for non-use to be ‘captured’ but non-users could probably have had more of a voice. But again, given my experience, they would probably be harder to recruit.

7.5.4 Generalisability

Accepting that the situated, contextual nature of practice and how the “fine-grain” details of phone use in practice matter, as well as recognising the differences from other similar technologies such as PDAs, means that over-generalising from this case study to other
technologies, practices or contexts is tricky. This is also a frequent criticism of case study research in its own right. However, there may be analytical generalisation. Furthermore, Pols argues that it is important that the ‘goods’ and ‘bads’ of practices are considered from different value standpoints and agendas. The outcome of the analysis does not give a prescriptive answer but can give suggestions for ways to practice that may be of benefit in another setting (whether disease, technology, location). Devices have to be ‘re-localised’ to be successfully integrated, but “learning about experiences from elsewhere” allow patients and carers to be “supported in translating findings to their own practices”.

7.6 Recommendation for future research

This study offers a proof of concept, a way of approaching an everyday phenomenon in a way that can better inform the way care is practised. Rather than assuming that technologies in healthcare will integrate seamlessly, implications need investigating and studies such as this can offer useful insights to enable good care. As a consequence, more of this type of research is needed – we need more descriptions of the everyday mundanity of hospital life in its entirety, the use of ethnography to bring a balance to the voices of all participants, including that of matter and things, and an understanding of the situated and messy nature of life on the ward. We need more studies of mobile phones in practice within varying healthcare settings and populations: such as short stay patients; or those who just attend outpatients; or patient populations who we could anticipate may be very different in their experience of hospital and ill health, such as those patients whose stay is predicted rather than those for whom it was unanticipated (eg a planned operation or childbirth as opposed to an acute emergency); or in healthcare settings outside of hospitals. As discussed above, many of these patients are difficult to access with the current research ethics stipulations.

7.7 Conclusion

This thesis gives an account of mobile phones as they are facilitating and changing caring practices as they happen on the ward. Mobile phones entail boundary work to manage spillover and other consequences of mobile phone integration into care. Top-down hospital safety and quality efforts are likely to struggle to address all the variables of situated practice relevant to mHealth. Nonetheless, working with, rather than against
mobile phones in care practice requires an appreciation of empirical ethics and open
discussion to allow new practices to emerge whilst safeguarding the interests of all
involved.
REFERENCES


175


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APPENDICES

Appendix A

A description of my professional and research background

My own personal involvement with this topic comes from my position as a clinical teaching fellow at a UK undergraduate medical school. I started in post in May 2010, with a major remit to help deliver a mobile learning project to the clinical students, and to conduct the research as directed by the project steering group. This led to our previous study of how the medical students use mobile learning resources to learn. This study raised a number of contextual issues which the students had encountered which prevented fully optimal use of the resources. As I needed a research project for my MD in medical education, and there seemed to be little in the literature addressing this area, I felt that this would be a valuable subject to explore further. As a member of faculty I have responsibilities for teaching and examining students who may be involved in the study. I am also a practising physician in training having spent six years in medical school and eight years in clinical, hospital based practice before coming to this post; two of these were at the teaching hospital in which this study is located. My position as an infection specialist was also known to many of the clinicians involved in the study beforehand, and others would establish my specialist area as part of social intercourse during the study.
Reflexive notes on the effect of my background on the research process

A privileged position? 18.07.13

My position as insider/outsider seemed fluctuant. I had visited the ward on several occasions while working at the Trust between 2008-10, and was known to many of the consultants in my capacity as an infectious diseases registrar. I was also known to some of the medical students and junior doctors from my role as a medical school teacher. There were very few staff for whom I was a ‘researcher’ first and foremost, and even then, they seemed aware that I was a doctor, although this was not the case for patients. This duality of roles had been very apparent during the pilot observations that I conducted, as I found that I was affecting consultant behaviour through their knowledge of my background, for example with respect to infection control practices. I had also found that students were using me directly as a source of knowledge, and felt conflicted in how best to deal with this, as it went against the grain not to help. As a direct result, the departments included were ones in which I was more unfamiliar with the consultant body, and in which the specialty knowledge area was one in which I would not feel that I could be a reliable information source, so could redirect queries without qualm. Despite this, there were still a couple of episodes in which my microbiology ‘hat’ caused me to be pulled into the events that I was observing, but it was much less evident than feared. Beyond this, I found it very difficult to appreciate or assess the degree of impact my insider position as a doctor effected. I made research decisions that were based on knowledge that seemed intrinsic to me: for example, the junior doctor handover in August, the end of year examinations in July for year 3 and 4. I also felt comfortable with the medical jargon, and the process of the ward round, as it was familiar practice to me albeit with a specialist flavour. Learning to tease out these assumptions, and to try and stop making them, was a slow process.
Appendix B

The bed state on the surgical ward from a recruitment perspective

<table>
<thead>
<tr>
<th>37 beds on the ward:</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 / 37  Under a different team</td>
</tr>
<tr>
<td>6 / 37  Unable to give consent (2 asleep, 3 confused, 1 vomiting)</td>
</tr>
<tr>
<td>4 / 7   Previously declined</td>
</tr>
<tr>
<td>1 / 37  Due to be in surgery at time of ward round</td>
</tr>
<tr>
<td>1 / 37  Due to be discharged at time of ward round</td>
</tr>
<tr>
<td>3 / 37  Declined</td>
</tr>
<tr>
<td>14 / 37 Consented to observation</td>
</tr>
</tbody>
</table>
Appendix C

A description of the recruitment process

Fieldwork excerpt 18.06.13:

I have decided not to approach at all patients who declined before, and to try and say hello to people who said yes before and check they’re still happy. If that is not possible (away from bedspace, busy etc) then I will still include them as they are on the same admission and have consented previously.

This week I ask the FY2 for a copy of the ward list, and he shows me where they are stored on the shared drive, and where they print off; he then goes through the list with me, but does it very differently to the sister: his categories are specialty / non-specialty patients, different to the sister’s which seems to be based on their clinical status, their general disposition and their capacity. I run through the list, crossing off names who have declined previously, and crossing off outliers...

I then get out a PIS, choose a name from the list who hasn’t been crossed out and go and have a look at the bed/ patient. If they are there, and not busy, I assess whether I feel it is appropriate to approach them. If I’m not sure, I check with the nurse looking after them. I don’t like to wake patients up, so I tend to go and come back a few times. I make sure I have the right name in my head before I go up to them, and I use their name (first and family name) as I approach to check I have the right patient. If they are male, I call them Mr after that; if female, I ask if they are Miss or Mrs, to get it right and be polite: I don’t call them by their first name unless they tell me to. I also ask how to pronounce it if I am unsure. It feels like a good way of showing politeness, and a gentle start to a conversation. I also ask if it is ok to interrupt them, and to borrow 2 minutes of their time. I tell them a bit about the study, and why I am specifically approaching them, and why I need their consent, and what (little) it involves for them. (I quite frequently get patients who seem to be willing, but say that they do not have or use a mobile phone, so
they feel they should not be part of the study; I then explain that even if they don’t use a mobile, people around them are, and that that affects them, and their opinions are valid and important too.) If they seem willing to be involved, I offer a PIS: as I do, I apologise for the small print, and the longwinded nature of it. I offer to read it to them if they look a bit uneasy, or if they can’t do it themselves. I also ask where they would like me to put it for them. If I have read it to them, I also leave them a copy (and tell them that I am) in case any relatives/visitors come. I also try and make it clear that they don’t have to participate, and I try and watch for signals that they would really rather I left them in peace. If that’s the case, I withdraw gently, no guilt tripping, and remain as polite and as cheerful as if they’d said yes. Going back for consent: I now make sure that I have warned them the day before that there will be a sign to form so that it isn’t a surprise, and I talk them through the different sections…. If they have been particularly talkative, volunteering comments without prompting (many do) then I offer them the opportunity of doing an interview as well, and that I will come back after the ward round if they would like to. I also try and approach patients for interview when I have observed mobile phone use in front of them on the WR.


## Appendix D

### Table 9 Interview details

<table>
<thead>
<tr>
<th>Participant</th>
<th>Date of interview</th>
<th>Total duration</th>
<th>Not transcribed</th>
<th>Gender</th>
<th>Age (staff given as range)</th>
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<tr>
<td>MP1</td>
<td>23.05.13</td>
<td>12:08</td>
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<td>M</td>
<td>62</td>
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<tr>
<td>MP2</td>
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<td>25:42</td>
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<td>M</td>
<td>55</td>
</tr>
<tr>
<td>MP3</td>
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<td>71</td>
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<tr>
<td>MP4</td>
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<td>70</td>
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<tr>
<td>MP5</td>
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<td>74</td>
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<td>79</td>
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<td></td>
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<td>25-50</td>
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<td>18:13</td>
<td></td>
<td>M</td>
<td>25-50</td>
</tr>
<tr>
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<td>23:48</td>
<td></td>
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<td>25-50</td>
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<td></td>
<td>M</td>
<td>25-50</td>
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<td>MS5</td>
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<td></td>
<td>F</td>
<td>25-50</td>
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<tr>
<td>MS6</td>
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<td>25-50</td>
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<td>M</td>
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Total: 8h 28min 46sec
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<th>What</th>
<th>Record</th>
<th>Hours on ward (including interviews and WR)</th>
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<td>12.06.2013</td>
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<td>Consent forms</td>
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<td>4</td>
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<tr>
<td></td>
<td></td>
<td>Interviews: MP4, MP5, ST1</td>
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<td>8h30 (WR 3h45)</td>
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<td>(includes description of consent process)</td>
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<td>What</td>
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<td>-------------------------------------------</td>
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<td>---------------------------------------------</td>
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<tr>
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**Total time 56.25 hours (11.25 on ward rounds)**

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</tr>
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<td>Pilot ward round observation (SWR1)</td>
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<td>(3)</td>
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<td>2.5</td>
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<tr>
<td>20.11.2013</td>
<td>Surgical ward</td>
<td>Consent forms</td>
<td>Field notes</td>
<td>3</td>
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<td>21.11.2013</td>
<td>Surgical ward</td>
<td>WR observation (SWR2). Interviews SP1, SP2, SS1</td>
<td>Field notes</td>
<td>5.5 (WR 4)</td>
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<td>27.11.2013</td>
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<td>Hand out PIS</td>
<td></td>
<td>2.5</td>
</tr>
<tr>
<td>28.11.2013</td>
<td>Surgical ward</td>
<td>Consent forms and interviews SP3,SP4, SP5</td>
<td>Field notes</td>
<td>2.5</td>
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<td>29.11.2013</td>
<td>Surgical ward</td>
<td>WR observation (SWR3)</td>
<td>Field notes</td>
<td>5.25 (WR 2.5)</td>
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</table>

**Total time 21.25 hours (6.5 on ward rounds)**
Appendix E

Implementing tools to ensure rigour

Reflexive memo 17.10.13: reviewing my interview technique

There are bits, especially in MP1 where I feel as if I have missed an opportunity to take things further, explore each area more fully before moving on to the next. How to address this? Maybe asking them to describe an example if they’re making general remarks; maybe asking them to consider the pro’s and con’s. if applicable, asking them how it made them feel.

There are moments when I have let the interviewee pause, and I’ve not jumped in, and he’s continued, which I am pleased with; although I know that that is not a consistent trait of mine from other interviews. It is really useful to identify where I have used leading questions; it is harder to recognise the “distorted” questions that they warn against. Finding an alternative way of asking the same question but without any element of leading at all is a constructive thing to take out of this process. It will also help identify questions that ‘work’: ie that generate a good (ie long and relevant) response from the interviewee, that aren’t leading.

What’s not included in the Field and Morse lists of interview flaws,^{145} is a failure to clarify something; so there are comments that MS8 has made that in hindsight, I’m not entirely sure what she meant. (eg lines 89 +91). Although this is included in Dohrenwend’s paper (p30). I would also add missed opportunities to their list.

Doing it with external input: this did make a difference. I took a couple of examples to Wesley, an experienced qualitative researcher in the department. Coming at it detached, and without agenda, allowed him to assess them in clear light. Even just reading them out loud, with a flat tone of voice, clause by clause, made the category instantly clearer. I can feel myself not wanting to categorise questions as closed or
not related, because these seem to reflect poorly on my performance, hangover from years of training to take medical histories with open questions not closed. Although with my clinical hat on, I would definitely use a mixture of open and closed questions to get the information that I need.

Reviewing the same interview after the conversation with Wesley, and doing it just with the printed transcript rather than listening to the interview at the same time, I reclassified a number of the questions from open to either open-closed, or as closed.

I have a dreadful habit of asking several questions in a row; sometimes qualifying the original one (open to closed). I must learn to ask and then stop. And wait. And hold the thought for the next question, if it is still relevant to their answer.

I think another common mistake of mine is to rely on an open–ended question that I’ve failed to finish, giving one alternative and then a pause; and finishing on an up tone rather than a down tone to elicit a reply from the participant, rather than creating robust open questions.

MS3: this interview is disappointing to review. I felt immediately after the interview that it had not been a ‘good’ one, but transcribing it had made me feel more comfortable about some of the subject matter, and how I had dealt with the interaction part of it, the negotiation, making my informant feel comfortable after a poor start. However, using the systems above to analyse it reinforces that initial reaction as accurate. There are several areas that need to be improved: too many closed questions, too many passages of text by me that don’t make sense, and don’t result in a question; too many potentially leading bits. Even with these, I don’t really keep control of the interview and manage to keep the data on track. That being said; I do manage to re-engage with my informant, she does start talking more freely (even if not all relevant), we do manage to overcome the interruption and distractions that
occur. But poor. What is interesting is trying to come up with alternatives to the closed and leading questions to ones that I could have / should have asked instead.

Eg “have you seen much difference in terms of use between nurses using them and doctors using them?”

To: can you describe the ways in which people use their phones on the ward? What about the doctors? The various subgroups? What are the similarities and differences?

Or “have you found other useful uses for your phone?” to “what other uses have you found?”
Table 11 Dohrenwend and Richardson as applied to this study

<table>
<thead>
<tr>
<th>Component of interviewing technique</th>
<th>Category</th>
<th>Example from the data</th>
</tr>
</thead>
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<tr>
<td></td>
<td>Control of the topics of the interview</td>
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<tr>
<td></td>
<td>Not related</td>
<td>No example identified</td>
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<tr>
<td></td>
<td>Related to last response</td>
<td>MS8 “cos you were saying about different consultants, from what you were saying now…how does that affect your behaviour”</td>
</tr>
<tr>
<td></td>
<td>Related to previous responses</td>
<td>MS7 “And going back: so you would rather not use your phone to be contacted. How do you contact your colleagues of yours then in the reverse?”</td>
</tr>
<tr>
<td></td>
<td>Related to any of the interviewer’s previous questions</td>
<td>ST1 “And right at the very beginning you said something about using your phone …”</td>
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<tr>
<td></td>
<td>Restriction of the length of the informant’s responses</td>
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</tr>
<tr>
<td></td>
<td>Closed: yes/no</td>
<td>MP1 “you have a blackberry, so do you get apps on it or not?”</td>
</tr>
<tr>
<td></td>
<td>Closed: explicit alternatives</td>
<td>MS4 “Cut it short as in answer it and cut it short or just literally turn the ringer off”</td>
</tr>
<tr>
<td></td>
<td>Closed: identification</td>
<td>MP4 “So how long have you had it?”</td>
</tr>
<tr>
<td></td>
<td>Open</td>
<td>MP1 “Tell me about your phone and what it means to you”</td>
</tr>
<tr>
<td></td>
<td></td>
<td>MS8 “how does that affect your behaviour?”</td>
</tr>
<tr>
<td></td>
<td>Open / closed (the interviewer may ask an open question, but in the pause before the respondent can reply, restates it in a closed format.)</td>
<td>MP1: “how do you feel…? Are you happy for doctors to look things up in front of you or would you rather they…”</td>
</tr>
</tbody>
</table>
3. Restriction of the content of the informant's responses

| Objective | ST1 “and you said about looking things up on your phone, what kind of particular software do you use for that?” |
| Subjective: Self | ST1 “How did that make you feel?” |
| Subjective: other | MS4: “What else do you think influences their use of the mobile phone?” |

4. Suggestion of the content of the informant's responses

| Leading question: one in which the question suggests the answer | MP1: “do you think it is more difficult this time?” |
| Distorted question: one in which the interviewer repeats an interviewee response, but interprets it in an alternative way. | No example identified |
Appendix F

Example of within case analysis

<table>
<thead>
<tr>
<th>S: Yes I have. I think using your mobile, if it is directly related to that patient’s care, is completely acceptable like we did today. But on occasion I have seen people. Because you’ve got access to a phone and everything else that goes with it, you know, social media, text messaging, phone calls and so on, there is a temptation to use that whenever you have the phone in your hand and I have seen junior doctors texting their mates for example while on a ward round. Um. I think if what you’re doing on the phone is not related to that patient’s care or not relevant to their care, you probably shouldn’t be doing it at the bedside. B: How did you deal with that as the consultant? S: I told them to put it away. Or I would ask them a pointed question and it would be clear they weren’t paying attention. If you put your phone away you’ll know what’s happening</th>
<th>Ethical use</th>
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<tbody>
<tr>
<td></td>
<td>Misuse witnessed</td>
</tr>
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<td>Affordances</td>
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<td>Temptation (in vivo code)</td>
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<td>Ethical use - strategy</td>
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<td>Responsibility for other’s behaviour; strategy to address misuse</td>
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Example of close text analysis


S: *Medicine has become much more informal over the last few years I think, I don’t know if everyone else agrees with that, but it has become much more informal. We don’t wear ties or suits or white coats, they’ve all gone and this view that it must be a military style ward round with everyone standing to attention is a thing of the past really*

Both the symbols of formality (ties/white coats) and the behaviours of formality (military style, image of standing to attention) have been discarded; ward rounds as a practice have changed, become more informal. This may open up opportunity for technology to find a position within practice, which before would not have been countenanced, would not have stood up to the requirements of formal, top down practice. Mobile phones shift the balance of interactions, and this would have disrupted the traditional model. Medical attitudes and practice have changed.
Example of cross case analysis

Temptation

Having a device that broaches the work/home divide allows the opportunity for slippage: recognised as temptation, with self-recrimination, suggesting illicit behaviour. Others recognise the temptation but have ways of managing themselves, depending on the situation.

• ST3/288: And if you are using your own phone, you’re going to have your own messages and things coming through that you would be checking whereas say the iPad like Worthing or Chichester they are purely for hospital use they don’t have other things flashing through, or Facebook notifications or anything like that. Whereas somebody who’s reading, you know, the things, the texts you were saying, they would still have their own notifications flashing up, wouldn’t they?

• ST2/231: Well, I don’t actually have it on vibrate when I’m on the wards, I have it on like complete mute so it doesn’t even vibrate, so I can’t tell if anything’s come through unless I do that, but I’ve got it on vibrate now cos I was at lunch. So yes, unless I do that, I can’t tell. It’s not really an issue. I’d have to purposefully look to see if anyone’s contacted me

B: So do you tend to do that or tend not to do that?
S: I tend not to unless I’m expecting something, do you know what I mean, like, um

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<th>Hospital device limits temptation</th>
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<td>Strategy to limit temptation</td>
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<td>Context important: different behaviour for different context</td>
<td>Strategy to combat temptation; occasional imperative overrides normal pattern of behaviour: deliberate priorities</td>
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• ST2/245: Depends on the situation. Like if it’s a very busy ward round then obviously I wouldn’t even think about it, if not I do a quick scan, like scan through it to see if it’s important.

• MS1/148: cos then you found yourself maybe replying to a text message or replying to a Whatsapp and you’re just like “oh, I don’t need to be doing this, I could just do this at five o’clock cos no one needs to be getting hold of me”. I don’t know if I’ve just *divulged there

• MS4/69: But on occasion I have seen people. Because you’ve got access to a phone and everything else that goes with it, you know social media, text messaging, phone calls and so on. There is a temptation to use that whenever you have the phone in your hand and I have seen junior doctors texting their mates for example while on a ward round

• MS3/176: That’s it. The tendency, the disadvantage is you tend to, isn’t it, while you’re in there, you tend to, drift away from, oh ok, why did I check my Facebook. So ok

• MS3/188: Or actually I think I’ve done once before, like, it’s just a quick five minutes and then. cos my friend texted me. And then. Even texting, it’s just, you’re tempted to like, once, I put it on

Weighing up priorities. Temptation reduced by ?workload ?reduced opportunity ?other demands

Passive, not deliberate slip: temptation not initially recognised as such

Priorities used to combat temptation

Self-recrimination due to slip

Ward round not restricting behaviour; insufficient to counteract temptation

Licit use affords opportunity for temptation

Self-recrimination
silent, my phone, but you can feel the vibration, so you’re tempted to check, but I always check cos it might be my children in school, that you know, it’s an emergency but if like friends said check your Facebook, there’s something interesting, something that, you know, like that, so that’s I think that’s the disadvantage, the tendency of drifting from what you’re going to use it, for educational purpose, the tendency of drifting but it always happens anyway.

Licit use affords opportunity for temptation

Licit use affords opportunity for temptation