Learning from positive deviants to improve the quality and safety of healthcare.

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The candidate confirms that the work submitted is her own, except where work which has formed part of jointly authored publications has been included. The contribution of the candidate and the other authors to this work has been explicitly indicated below. The candidate confirms that appropriate credit has been given within the thesis where reference has been made to the work of others.

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All authors developed the concept for the systematic review. RB designed the study and conducted the searches, screening, data extraction and analysis with input from IK, NT and RL. RB drafted the publication and thesis manuscript. All authors provided comments and approved final versions.

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Abstract

Every day around the globe, patients are harmed within healthcare organisations. Attempts to improve the quality and safety of healthcare traditionally focus on past errors and harm, yet there is little evidence of widespread improvement. In contrast, the positive deviance approach seeks to identify and learn from those who demonstrate exceptional performance despite facing the same constraints as others. Bradley et al. (2009) have proposed a four stage process to apply positive deviance within healthcare organisations: 1) positive deviants are identified using routinely collected data; 2) hypotheses are generated about how they succeed; 3) these are tested within representative samples; and 4) the successful strategies are disseminated. Despite this, limited guidance exists to support applications. This thesis sought to test a robust and pragmatic method for applying the positive deviance approach within multidisciplinary healthcare teams.

Study 1 systematically reviewed the methods used to apply positive deviance within healthcare. Previous applications identified positively deviant organisations or individuals and focused on narrow outcomes or processes of care. Applications lacked quality and used extensive resources. Study 2 analysed NHS Safety Thermometer data to identify five positively deviant and five matched comparison elderly medical wards. In the main, staff and patient perceptions of safety on these wards supported their identification. During study 3, multidisciplinary staff focus groups were conducted to explore how these wards delivered exceptionally safe care. In total, 14 behaviours and cultures were hypothesised to facilitate positive deviance at ward level. Study 4 assessed the feasibility of applying positive deviance within a general practice setting. Findings highlighted challenges of selecting data to identify positive deviants, recruiting general practices to participate, and generating hypotheses about success strategies that were unique to positive deviants yet common among them.

In combination, these studies generated guidance to support rigorous applications of the positive deviance approach within healthcare organisations. The evidence suggested that, in the future, it may be possible to improve the quality and safety of care by focusing on those that demonstrate exceptional rather than poor outcomes of care.

Table of Contents

List of Tables

Chapter 2

Chapter 3

Chapter 4

Chapter 5

List of Figures

Chapter 1

Chapter 2

Chapter 3

Chapter 4

Chapter 5

List of abbreviations

AMI	Acute myocardial infarction
AH	Alex Howat
AHP	Allied Health Professional
ASPIRE	Action to Support Practices Implementing Research Evidence
CCG	Clinical Commissioning Group
CORE	Child Survival Collaborations and Resources Group
CQC	Care Quality Commission
CQUIN	Commissioning for Quality and Innovation
CR	Caroline Reynolds
DAD	Discovery and Action Dialogues
FFT	Friends and Family Test
GP	General Practitioner
HCA	Healthcare assistant
HES	Hospital Episode Statistics
HRO	High reliability organisation
HSOPSC	Hospital Survey on Patient Safety Culture
HSCIC	Health and Social Care Information Centre
IK	Ian Kellar
IMD	Index of Multiple Deprivation
LCA	Latent Class Analysis
LT	Liz Thorp
MAR	Missing at random
MaPSaF	Manchester Patient Safety Framework
MCAR	Missing completely at random
MDT	Multidisciplinary team
MM	Mohammed Mohammed
MVA	Missing Value Analysis
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NT	Natalie Taylor
OT	Occupational Therapist
OTAS	Observational Teamwork Assessment for Surgery
PMOS	Patient Measure of Safety
PROM	Patient Reported Outcome Measure
PSG	Patient Safety Grade
PU	Pressure ulcer
QOF	Quality and Outcomes Framework
RB	Ruth Baxter
R&D	Research and Development
RF	Robbie Foy

RL	Rebecca Lawton
RW	Robert West
SAS	Statistical Analysis System
SE	Standard error
SPC	Statistical Process Control
SPSS	Statistical Package for the Social Sciences
ST	NHS Safety Thermometer
UK	United Kingdom
US	United States
UTI	Urinary tract infection
VTE	Venous thromboembolism
VP	Victoria Pye
YCF	Yorkshire Contributory Factors framework

Publications and presentations

Peer reviewed publications

Baxter, R., Taylor, N., Kellar, I., & Lawton, R. (2015). What methods are used to apply positive deviance within healthcare organisations? A systematic review. BMJ Quality and Safety, Published online first 20th November. doi: 10.1136/bmjqs-2015-004386

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Oral conference presentations

Baxter, R., Taylor, N., Kellar, I. and Lawton, R. (2016, November). Identifying and understanding positive deviance in elderly medical wards. In R. Lawton (chair), Being positively deviant: how do organisations and teams deliver patient safety? Workshop conducted at the Science of Improvement 2016 conference, Harrogate, UK.

Baxter, R., Taylor, N., Kellar, I. and Lawton, R. (2016, October). How to achieve safety excellence on elderly medical wards: A positive deviance approach. Oral presentation at the International Society for Quality in Health Care, Tokyo, Japan.

Baxter, R., Taylor, N., Kellar, I. and Lawton, R. (2016, July). What does exceptionally safe care look like on elderly medical wards? A positive deviance approach. Oral presentation at the Health Services Research UK conference, Nottingham, UK.

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Chapter 1

Introduction: Overview of the literature, thesis aims and objectives.

1.1 Chapter summary

This chapter provides an overview of the current literature on the quality and safety of patient healthcare. It discusses the efforts made to make care safer and outlines a new way of defining patient safety. The 'positive deviance approach' to quality improvement is then described. This approach seeks to identify and learn from those who demonstrate exceptional performance despite facing the same constraints as others. The overall aim of this thesis was to generate robust evidence regarding the use of the positive deviance approach to improve the quality and safety of patient care. The research studies that were conducted in order to explore and critically appraise this positive deviance approach are outlined in the thesis aims and objectives.

1.2 The quality and safety of patient care

Over fifteen years have passed since the publication of 'To Err is Human' (Kohn, Corrigan, & Donaldson, 1999) yet patients within healthcare organisations around the world continue to be harmed every day (Hogan et al., 2012; Landrigan et al., 2010). This seminal report, along with others such as 'An Organisation with a Memory' (Department of Health, 2000b) and 'Crossing the Quality Chasm' (Institute of Medicine, 2001), placed patient safety and quality of care firmly onto policy agendas and spearheaded national and international campaigns to reduce error and harm within healthcare organisations (Lamont & Waring, 2015).

Since then intense focus and resources have been directed towards addressing patient safety problems. Numerous national agencies have been formed which are both embedded within and independent of national healthcare systems (for example the NHS National Patient Safety Agency (2010)[1] and the US Institute for Healthcare

[1] Note: the NHS Patient Safety Agency was disbanded in 2012

Improvement (2016a), respectively). The World Alliance for Patient Safety has made the pursuit of safer healthcare a global endeavour (World Health Organization, 2016b), and a dramatic increase in research has progressed a number of patient safety issues (Lilford, Stirling, & Maillard, 2006; Wachter, 2010).

During this time there have been some notable large scale improvements in a range of patient safety issues (Vincent & Amalberti, 2016). For example, interventions have successfully and sustainably reduced catheter-related bloodstream infections in Michigan intensive care units (Pronovost et al., 2010; Pronovost et al., 2006), and the introduction of the surgical checklist has reduced surgical mortality and complications rates globally (Haynes et al., 2009). However, these improvements are isolated.

Considering the scale of the problem faced, overall progress is remarkably underwhelming and levels of harm remain stubbornly unchanged (Baines et al., 2013; Landrigan et al., 2010; Shojania & Thomas, 2013). Preventable patient deaths due to error and harm continue to be a global problem. Makary and Daniel (2016) estimate medical error to be the third leading cause of death in the United States, while closer to home within the English National Health Service (NHS), Hogan et al. (2012) suggested that there were 11,859 preventable adult deaths during 2009 (5.2% of 1000 case record reviews). Although estimates of the number of preventable deaths vary depending on the methods used, the majority of errors result in patient morbidity or disability rather than death (Hogan et al., 2012). Recent high profile government reports have highlighted widespread poor quality care and failures to maintain patient safety within UK healthcare organisations (Berwick, 2013; Francis, 2013; Keogh, 2013). Furthermore, a large amount of unwarranted variation exists in the quality of care that is delivered (NHS Right Care, 2016) which can negatively impact health outcomes, the equity of accessing high quality services, and the efficiency of using resources (Appleby et al., 2011).

1.3 Improving the quality and safety of care

Patient safety is considered to be only one aspect of the broader concept of ‘quality’. Quality is widely considered to be multi-dimensional, however, within healthcare there is no single accepted definition (The Health Foundation, 2013). NHS England (2016d) consider quality to be clinically effective and safe care that provides a positive patient experience, while the Institute of Medicine (2001) provides one of the most commonly used definitions - care that is safe, effective, patient centred, timely, efficient, and equitable. This thesis focuses on the safety of patient care which is a central tenant to most definitions of quality.

Substantial efforts have been made to improve the quality and safety of patient care, however, many improvement projects face difficulties in achieving their objective and embedding sustainable, positive change (The Health Foundation, 2013). 'Quality improvement' broadly refers to improving patient experience and outcomes by changing provider behaviour and organisation through systematic methods and strategies (Øvretveit, 2009a). Quality improvement has become prominent within healthcare over the past few decades and applies a range of methodologies, approaches, and tools, many of which originated from organisations and industry (The Health Foundation, 2013).

Within the fast paced environment of healthcare it is well recognised that the urge to act can overpower the need for evidence (Auerbach, Landefeld, & Shojania, 2007). Many patient safety interventions lack a sound evidence base (Shojania, Duncan, McDonald, & Wachter, 2002) and/or are poorly evaluated to understand whether and how they effectively add value (Dixon-Woods, Leslie, Tarrant, & Bion, 2013). Implementing initiatives which 'seem like a good idea at the time' can have negative outcomes such as a lack of positive improvement and the subsequent waste of resources, staff energy, and engagement (Auerbach et al., 2007; Marshall, Pronovost, & Dixon-Woods, 2013). Consequently, the adoption of a more scientific approach has been purported to help healthcare organisations improve the quality of their care (Marshall et al., 2013). Further to this, improvements gained through some interventions do not always transfer into other healthcare settings. This was the experience of the UK's 'Matching Michigan Project' (Bion et al., 2013) which tried to replicate the successful Michigan intensive care unit intervention to reduce bloodstream infections (BSI) from central venous catheters (Pronovost et al., 2010; Pronovost et al., 2006). Although the Matching Michigan project reported a 60% reduction in BSIs on adult intensive care units, further interrogation of the data revealed strong secular trends and reductions in infection rate in pre-intensive care units (Bion et al., 2013). This suggested that success was due to concurrent and preceding improvement efforts rather than the complex Matching Michigan intervention itself (which involved technical and non-technical interventions to improve evidence based practice, culture, and system, and the establishment of a national reporting system).

Improvement science (also known as implementation science, quality improvement science, translational research and more) is a relatively new field of research designed to increase the rigour through which the quality of healthcare is improved. Again, although definitions vary, improvement science broadly assesses 'what works' by focussing on the scientific study of the methods, theories, and approaches that enable quality improvement work to be undertaken well (The Health Foundation, 2011b). The applied nature of improvement science ensures that practical solutions are sought for

real life contexts while being effective and generalisable to a wider audience (Marshall et al., 2013; The Health Foundation, 2011b). Taking an improvement science perspective, this thesis aims to conduct robust research on a relatively new approach to quality improvement within healthcare – the 'positive deviance' approach.

1.4 Reframing patient safety

Considering the enduring problems and limited improvements that healthcare organisations have made in delivering high quality, safe patient care, it is widely recognised that a new approach or perspective is required (Bisognano & Schummers, 2014; Hollnagel, Braithwaite, & Wears, 2013b; Vincent & Amalberti, 2016). Patient safety had traditionally been defined and measured by its absence – the absence of error or harm, unwanted outcomes, or unacceptable levels of risk. Errors are identified, causes and explanations are sought, and barriers are implemented to prevent them from happening again. Although around 10% of hospitalised patients are harmed (Vincent et al., 2008) with slightly lower rates reported in primary care (Gaal et al., 2011), we must acknowledge that for the majority of the time things go right within healthcare much more frequently than they go wrong.

Habituation offers one explanation as to why we focus on errors and harm within healthcare (Hollnagel, 2013; Thompson & Spencer, 1966). To filter the large amount of sensory information within our environments we stop attending to actions and their outcomes as soon as they become common place. We attend to errors as they are relatively uncommon, however, we don't notice the everyday activities that are regularly successful (Hollnagel, 2013). This drive to look for error within healthcare is also reinforced by regulators, systems (e.g. incident reporting), and the methods used to understand them (e.g. root cause analysis). Cause and effect relationships are traditionally used to explain error, however, this binary view of incidents suggests that things either succeed when everything goes to plan, or fail when something causes an unacceptable outcome (Hollnagel, Wears, & Braithwaite, 2015). This view assumes that safety can be maintained by blocking this transition to failure and so compliance is promoted (e.g. to policies and protocols) in order to reduce performance variability (Hollnagel et al., 2015).

This reactive 'find and fix' approach to safety management, known as Safety-I (Hollnagel et al., 2015), tells us nothing about the presence of safety. Over recent years healthcare systems have become increasingly intractable with an ever tighter coupling of multiple interdependent technologies, systems, and environments (Hollnagel, 2010). However, the Safety-I perspective, which has had limited success, assumes that these systems are linear and tractable.

In contrast to this, an alternative approach – known as Safety-II – focuses on what goes right and can be defined as 'the ability to succeed under varying conditions so that the number of intended and acceptable outcomes (i.e. everyday activities) is as high as possible' (Hollnagel, 2013). Resilience is considered to be the intrinsic ability to adjust prior to, during, or following changes and disturbances in order to sustain the required performance under expected and unexpected conditions (Hollnagel, Braithwaite, & Wears, 2013a). Safety-II assumes that healthcare systems work because the people within them adjust what they are doing to overcome the conditions that they work in and to maintain safety. Rather than seeking to identify a new causal mechanism for error, things are considered to go wrong for the same reasons that they succeed. Actions that lead to error are likely to have been completed successfully many times before and so variations in everyday performance should be acknowledged, monitored, and controlled rather than eliminated (Hollnagel, 2013).

Safety-II provides a proactive approach to safety management. Adjustments are made before errors happen to prevent or minimise their consequences (Hollnagel, Braithwaite, et al., 2013b). While it is neither possible nor appropriate to completely move away from a Safety-I perspective, the current lack of progress and increasing complexity of healthcare organisations indicates that an alternative approach is also required.

1.5 The positive deviance approach

In line with this Safety-II perspective, positive deviance offers an asset based approach to quality improvement (Lawton, Taylor, Clay-Williams, & Braithwaite, 2014). It aims to identify and learn from those who consistently demonstrate exceptional performance on an outcome of interest. The approach is built on the premise that solutions to problems already exist within communities. Certain individuals, teams, or organisations – positive deviants – identify these solutions and succeed despite facing the same constraints as others in their community (Marsh, Schroeder, Dearden, Sternin, & Sternin, 2004). Their uncommon yet beneficial behaviours enable them to overcome the problem and succeed on the outcome of interest. In other words, the positive deviants possess a certain wisdom or tacit knowledge that can be generalised to others (Marsh et al., 2004).

In contrast to many of the traditional quality improvement approaches, which utilise external experts and top down interventions, the positive deviance approach seeks to identify solutions from within (Schooley & Morales, 2007). The behaviours and strategies that facilitate success are already practised by the positive deviants and so

they are likely to be affordable to implement, sustainable over time, and acceptable to others in the community (Marsh & Schroeder, 2002).

Originating within international public health to modify dietary practices in deprived populations (Wishik & Van Der Vynckt, 1976), the positive deviance approach has been used to address a number of intractable, complex health problems including female genital mutilation (Masterson & Swanson, 2000), weight control (Stuckey et al., 2011), and infection avoidance in drug users (Friedman, Mateu-Gelabert, Sandoval, Hagan, & Jarlais, 2008). It has also been used in a number of other sectors such as business (Pascale & Sternin, 2005) and education (Brock & Grady, 2011; Docherty, 2013).

The most renowned application of positive deviance addressed the issue of reducing childhood malnutrition. In the early 1990s two researchers, Jerry and Monique Sternin, together with the Save the Children charity, were tasked to reduce childhood malnutrition within rural Vietnam. Knowing that many previous interventions had failed and that the approach had previously been successful in reducing this problem (Zeitlin et al., 1990), the Sternins applied the positive deviance approach. They sought to identify families within the rural villages who, despite facing extremely impoverished circumstances, managed to raise well-nourished children (Lindberg, Norstrand, Munger, DeMarsico, & Buscell, 2009; Sparks, 2004; Sternin & Choo, 2000). By exploring the behaviours of these positively deviant families, the Sternins found that these mothers were adding small shrimps, crabs, and sweet potato greens to their children's meals. Although these foods were readily available within the local environment they were traditionally considered to be inappropriate for children to eat. In addition, children were fed three or four times a day rather than twice, and family members washed their hands prior to meals (Lindberg et al., 2009; Sparks, 2004; Sternin & Choo, 2000). The Sternins recognised that simply educating the other villagers about these behaviours was unlikely to lead to lasting behaviour change, therefore, villagers were invited to learn and practise the new behaviours alongside the positive deviants. In the positive deviance programmes that ensued, spreading these behaviours to others led to a 74% decrease in childhood malnutrition (Marsh et al., 2004).

1.6 How is the positive deviance approach applied?

A number of different processes have been proposed to support the implementation of the positive deviance approach primarily within public health settings. The Positive Deviance Initiative (2010), which aims to expand and enhance the use of positive deviance in communities worldwide, suggests a four stage process with two additional

steps that should be completed beforehand. Variations of this '4Ds process' include: *Define* the problem and what a successful solution/outcome would look like; *Determin*e the presence of positive deviants; *Discover* the uncommon but successful strategies that positive deviants use to succeed; and *Design* an intervention which allows others in the community to practise the new behaviours. Following this, some processes also monitor and evaluate the intervention's effectiveness and/or scale up its dissemination to wider communities (Sparks, 2004; The Positive Deviance Initiative, 2010).

When addressing the problem of childhood malnutrition, positive deviance has often been combined with 'hearth' education sessions (Nutrition Working Group: Child Survival Collaborations and Resources Group - CORE, 2002; Sternin, Sternin, & Marsh, 1998). Hearth sessions are group meetings held within community members' homes which provide an opportunity for the positive deviants to teach others the behaviours that lead to exceptional outcomes. CORE and Save the Children have published two different processes containing multiple stages which detail how to apply the positive deviance/hearth approach (CORE, 2002; Sternin et al., 1998). In contrast to these, Pascale and Sternin (2005) have proposed a six stage process for generating organisational change through positive deviance within a business context.

Many of the processes described above share commonalities in the key steps that they take. However, they have predominantly been designed for use in rural community settings, often within developing countries. Bradley et al. (2009), on the other hand, have proposed a four stage process for specific application of the positive deviance approach within healthcare organisations (Figure 1.1). Stage 1 involves identifying positive deviants who consistently demonstrate exceptional outperformance. Concrete, widely endorsed, and accessible performance measures (typically those that are routinely collected and publicly available) are used to assess the performance of individuals, teams, or organisations within a community. Stage 2 employs open ended, qualitative methods to explore the specific practices that positive deviants use to succeed and the broader contexts within which they operate. These enquiries enable hypotheses to be generated about potential positively deviant success strategies. Stage 3 statistically tests these hypotheses in larger, representative samples of the community to assess whether they are truly associated with exceptional outcomes. Finally, stage 4 uses members of the community and key stakeholders to help disseminate the positively deviant strategies to others. Despite the Bradley et al. (2009) process, there is currently very little guidance or evidence regarding the best and most effective way to apply the positive deviance approach within a healthcare setting (Rose & McCullough, 2016).

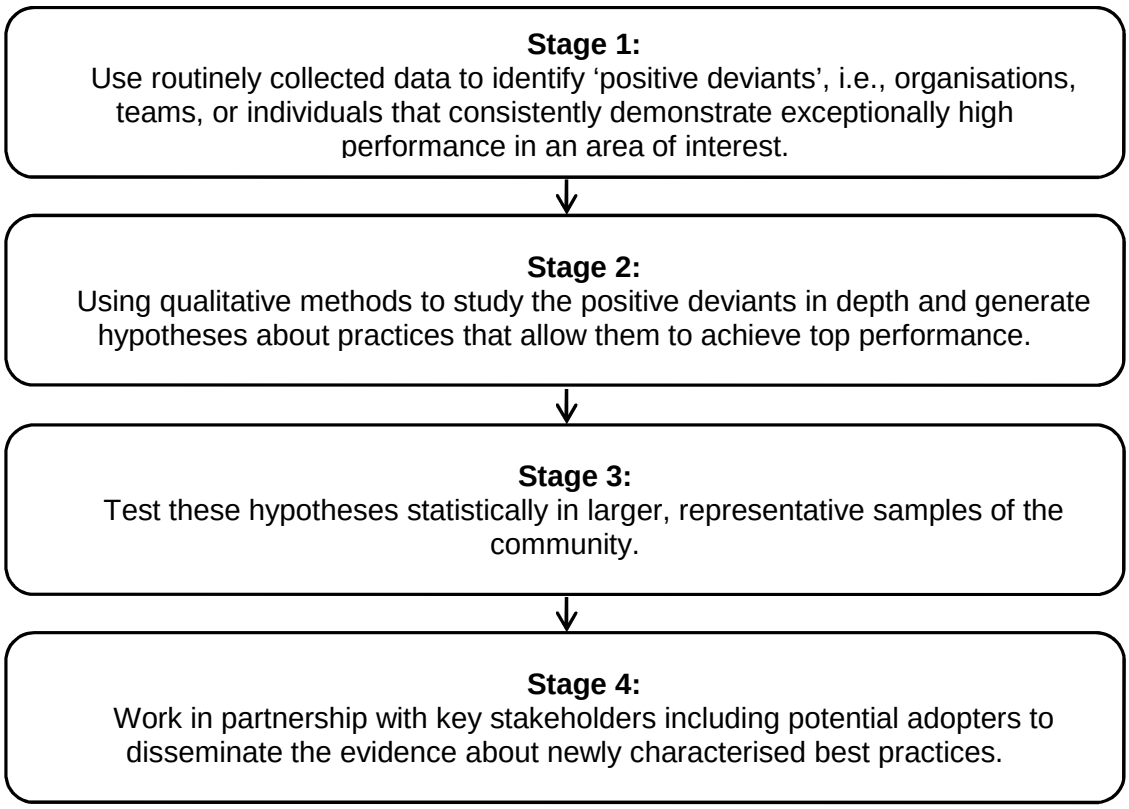

Figure 1.1 The positive deviance process for healthcare - adapted from Bradley et al. (2009)

1.6.1 Why might it be beneficial to apply the positive deviance approach within healthcare organisations?

As highlighted above, the positive deviance approach has increasingly, although sporadically, been implemented within healthcare settings. It can be used to identify and learn from exceptional performers at an individual, team, or organisational level (Lawton et al., 2014), and a number of applications have demonstrated its efficacy through improved patient outcomes.

Marra et al. (2010) applied the positive deviance approach to improving hand hygiene within a US hospital step down unit (similar to a high dependency unit in the NHS). A randomised control trial was conducted within two similar units. Within the intervention unit, nurse managers identified positively deviant healthcare workers who were good at performing hand hygiene and wanted to improve further. The positive deviants developed a number of ideas to improve, identified additional positive deviants, and stimulated others to comply with hand hygiene. After three months of the positive deviance intervention there was a statistically significant, two fold increase in the number of hand hygiene episodes. Subsequently, after applying the intervention to the control unit, an increase in hand hygiene episodes was associated with a decrease in healthcare associated infections. These effects were sustained for one year post

intervention and the results were replicated in multiple inpatient settings (Marra et al., 2011; Marra et al., 2013).

Also within secondary care, Bradley and colleagues have applied all four stages of the positive deviance approach to improve adherence to an acute myocardial infarction (AMI) guideline (Bradley et al., 2009; Cherlin et al., 2013; Curry et al., 2011; Krumholz, Curry, & Bradley, 2011; Landman et al., 2013). Between 2004 to 2005 less than 50% of AMI patients met the national guideline to receive appropriate treatment within 90 minutes of arriving at hospital (previously known as the 'door-to-balloon time'). Little improvement on this guideline had been made over previous years yet certain hospitals were able to meet it. Over a three year period the positive deviance approach was applied. Positively deviant hospitals were identified using national registry data and factors that facilitated success were explored. Those factors that statistically improved outcomes were disseminated through a public campaign and by 2008 guideline adherence had risen by 25%, which in turn had increased patient survival.

Although there are no published applications of positive deviance that report on all four stages of the approach within a western primary healthcare organisation (i.e. tested and disseminated the positively deviant strategies), the approach does seem to have potential within this setting. In the US Gabbay et al. (2013) identified five primary care practices with the greatest improvement in diabetes care. Compared to those with the least improvement the positively deviant practices had: greater structural capacity in relation to electronic health records and financial systems and processes; leadership which provided a shared vision and engaged others in the change process; a sense of collective team working; and the use of progress monitoring and feedback.

The current environment of economic austerity coupled with an aging population and increasing comorbidities provides a compelling case for using the positive deviance approach. Many quality improvement initiatives seek costly, top down solutions from healthcare managers or 'expert' outsiders. Staff do not always consider the chosen solutions to be the right ones, nor are they always effective in the environments where they are implemented (Dixon-Woods, McNicol, & Martin, 2012). The positive deviance approach is built on the premise that solutions already exist within communities and that positive deviants succeed despite facing the same constraints as others (Marsh & Schroeder, 2002). As success strategies are already used by positive deviants they should require limited or no additional resources and so should be affordable to implement. Furthermore, the solutions should be acceptable to others within the wider community as they are generated by peers on the front line.

Some quality improvement initiatives also have to overcome 'projectness' in order to sustain and embed improvement (Dixon-Woods, McNicol, et al., 2012). Positively

deviant solutions, however, are likely to be sustainable over time as they are internally generated and so resources (e.g. time, research staff, additional monitoring etc.) are not removed on completion of an intervention. Positive deviance therefore provides an empowering rather than dependency-creating method for improvement (Walker, Sterling, Hoke, & Dearden, 2007). This is likely to increase the probability of others adopting the positively deviant strategies in other similar healthcare organisations or teams.

As demonstrated above, the positive deviance approach has potential to overcome a range of different intractable problems and to be an effective quality improvement approach within healthcare organisations. It is well recognised that the greatest opportunity to improve patient outcomes is likely to come from a better understanding of how to deliver existing treatments and therapies more effectively rather than from developing new ones (Pronovost, Nolan, Zeger, Miller, & Rubin, 2004). Positive deviants are organisations, teams and/or individuals who are already doing this.

1.6.2 What are the challenges to applying the positive deviance approach within healthcare organisations?

Although it has been demonstrated that the positive deviance approach has the potential to improve the quality and safety of healthcare, there is limited guidance on how to implement each stage of the Bradley et al. (2009) process, and little evidence on the most effective methods to use at each stage (Lawton et al., 2014; Rose & McCullough, 2016; Schooley & Morales, 2007). A key challenge to implementing the positive deviance approach is the current orientation towards a Safety-I perspective. The focus on negative outcomes (e.g. through incident reporting systems and regulation) makes it difficult to define, let alone identify, those who demonstrate positive safety outcomes and behaviours (Lawton et al., 2014). As such, it is important to empirically assess whether we can identify and explore positive deviance within healthcare settings such as the NHS.

Many healthcare applications of the positive deviance approach have focused on improving specific outcomes or processes of care, for example, Bradley et al. (2009) assessed performance on a national AMI guideline and Marra et al. (2010) explored hand hygiene compliance. However, only addressing specific problems or aspects of patient care such as this can lead to a fragmented approach to improvement (Sutcliffe, Paine, & Pronovost, 2016). Narrow interventions do not address the wider problem and may create unintended consequences in other areas of care due to the extremely complex and integrated nature of healthcare systems. In one sense this could be seen as covering the problem with a sticking plaster. The extent to which failings were identified within the Mid Staffordshire NHS Foundation Trust suggested that a

“fundamental culture change [was] needed” (Francis, 2013). If we can identify positive deviants that demonstrate exceptional performance on a broad rather than narrow outcome measure of quality or safety, there are likely to be some underlying or latent factors associated with their success.

The process proposed by Bradley et al. (2009) provides guidance on how to apply positive deviance at an organisational level. There is a longstanding interest in high performing organisations as demonstrated by hospital league tables and ranking systems. However, it is well known that performance varies substantially not only between different healthcare organisations, but also within them (Taylor, Clay-Williams, Hogden, Braithwaite, & Groene, 2015). Ultimately the performance of any macro-system such as a healthcare organisation is based on the performance of the units from which it is comprised (Nelson et al., 2001). Within healthcare organisations these units, known as clinical microsystems, are the teams or groups of people that deliver frontline patient care, for example, multidisciplinary ward or general practice teams. Against this backdrop, this thesis assesses the positive deviance approach at the level of the clinical team in order to try to unpick the latent factors that facilitate exceptional performance.

1.7 Theoretical, methodological, and epistemological perspective

The positive deviance approach is neither theoretically nor methodologically underpinned. Its initial application within Vietnam was guided by a desire to improve childhood malnutrition rather than to develop a robust and rigorous approach to improvement (Saco, 2005). The methods have since been applied to a wide range of problems and, as highlighted in section 1.6, a number of different processes have been proposed. As this is a relatively novel approach within healthcare organisations and there is a lack of empirical evidence for both the Bradley et al. (2009) process and the methods used to implement it, the research reported in this thesis takes a methodological rather than theoretical standpoint.

Positive deviance is a multi-method approach to improvement. Rigorous quantitative methods including statistical analyses should be used during stage 1 and 3 of the Bradley et al. (2009) process (see Figure 1.1), while qualitative methods are fundamental to stage 2. Multi-method studies are defined in various ways and are frequently confused with mixed-method designs (Teddlie & Tashakkori, 2003). Within this thesis, multi-method designs are defined as qualitative and quantitative projects which, on their own, are relatively complete but when put together address an overall research programme (Morse, 2003). In contrast, mixed-method designs typically refer

to the use of quantitative and qualitative research methods within a single study or to answer a single research question (Johnson, Onwuegbuzie, & Turner, 2007).

There are a number of advantages to using multiple methods within health services research. First, the use of both qualitative and quantitative methods can provide a more comprehensive picture than either method alone (Morse, 2003). Mixed- or multi-method study designs are guided by the research question rather than the methods, therefore, constraints are removed as researchers can utilise the strengths of both types of method (Johnson & Onwuegbuzie, 2004). Second, multi-method designs enable a broader and more complex range of research questions to be addressed as confines to a single epistemological stance are reduced (Johnson & Onwuegbuzie, 2004). The positive deviance approach not only aims to explore quantifiable practices that positive deviants use to succeed (the what) but also the contextual factors that facilitate this (the how). Third, stronger evidence is provided when qualitative and quantitative findings corroborate each other which can increase the generalisability of the findings (Johnson & Onwuegbuzie, 2004). When disseminating positively deviant strategies to the wider community, the statistical analyses of stage 3 are more likely to engage frontline clinicians who tend to favour this form of evidence (Bradley et al., 2009; Giacomini, Cook, & the Evidence-Based Medicine Working Group, 2000).

The positive deviance approach does not assert a particular epistemological or ontological perspective. Quantitative and qualitative research are respectively aligned to post-positivist (or positivist) and constructivist epistemologies, each with their own views about how knowledge and truth is constructed (Creswell, 2009). Neither perspective is fully suited to answering many health psychology questions. Health occurs within a social and political landscape yet a post-positivist perspective prioritises a single form of knowledge to be ‘true’, thus ignoring alternate ‘truths’ (Cornish & Gillespie, 2009). Conversely, we are morally obligated to take action to alleviate health problems yet the wide range of truths associated with a constructionist perspective make it challenging to recommend a particular course of action (Cornish & Gillespie, 2009).

Pragmatism, the epistemological position taken within this thesis, straddles these two perspectives. Pragmatism considers the practical application of knowledge to be fundamental to meaning and truth (Dures, Rumsey, Morris, & Gleeson, 2011). Pragmatists focus on the purpose and consequence of knowledge, the importance of identifying solutions to problems, and the extent to which knowledge ‘works’ at the time (Creswell, 2009; Dures et al., 2011). As pragmatism is not aligned to any single philosophy or reality, researchers can draw on both qualitative and quantitative assumptions to more fully understand a problem (Creswell, 2009). It is therefore well suited to applied health research and is widely considered to provide a logic and

epistemological justification for conducting mixed- or multi-method research (Johnson et al., 2007).

The emerging discipline of Improvement Science is commonly considered to take a pragmatic approach. Its work aims to be practical and useful to everyday local problems, yet rigorous and credible to an academic audience in order to increase the generalisability of findings (Marshall et al., 2013). This pragmatic, Improvement Science lens was a guiding influence while designing the research studies that underpin this thesis. Some previous applications of the positive deviance approach have collected extensive and varied types of data. For example, Bradley et al. (2009) conducted numerous in-depth site visits and a total of 122 individual interviews which required extensive resources, skills, and time. If the positive deviance approach is to become a useful quality improvement method that healthcare organisations and clinical teams/networks can use on the front line, then the methods that are used to apply it must be accessible to the population and feasible within the setting. While acknowledging the benefits of using intensive methods (e.g. ethnography), the research methods conducted as part of this thesis were chosen for pragmatic reasons – to generate evidence regarding a practicable method for applying the positive deviance process.

1.8 Thesis aims

This chapter has presented a broad literature review on the positive deviance approach and its application within primary and secondary healthcare organisations to improve the quality and safety of patient care. There remain a number of unanswered questions which this thesis aims to address:

1. *What methods have previously been used to apply the positive deviance approach within healthcare organisations?*

This thesis aims to further our understanding of how the positive deviance approach has been applied within healthcare organisations to identify the strengths, limitations, and gaps within the current literature.

2. *Can positively deviant multidisciplinary ward teams be identified using routinely collected safety data?*

This thesis aims to further our understanding of whether positively deviant multidisciplinary ward teams can be identified within the UK and whether other perspectives of safety support their identification.

3. *How do positively deviant multidisciplinary ward teams deliver exceptionally safe patient care?*

This thesis aims to further our understanding of the cultures, behaviours, team dynamics, and concrete strategies/tools that enable positively deviant ward teams to deliver exceptionally safe patient care.

4. *Can what underpins positively deviant success within multidisciplinary ward teams be identified using limited time and resources?*

This thesis aims to further our understanding about the pragmatic methods that can be used to identify positively deviant strategies.

5. *Is it feasible to apply the positive deviance approach in order to identify and learn from positively deviant general practices that deliver exceptionally high quality, evidence based care?*

This thesis aims to further our understanding of whether it is feasible to identify positively deviant general practices that deliver exceptionally high quality, evidence based care and then explore the factors that underpin their success.

1.9 Thesis overview

To address the research questions outlined above, three substantive research studies were conducted. The first was a systematic review to explore the methods used within healthcare applications of the positive deviance approach (study 1). The subsequent research applied stages 1 and 2 of the Bradley et al. (2009) process within two different healthcare settings: acute NHS hospitals (studies 2 and 3) and general practices (study 4). As this thesis is methodologically driven, the research studies were a vehicle through which the lens of positive deviance could be applied.

Chapter 2 reports on study 1: 'What methods are used to apply positive deviance within healthcare organisations? A systematic review' (thesis aim 1). A search strategy was applied across seven electronic databases. The review included articles which explicitly used the positive deviance approach within healthcare organisations and reported peer reviewed, primary research. Reference list/citation searches were conducted. Data extraction focused on methods used at each stage of the Bradley et al. (2009) process and quality assessments were conducted. Narrative synthesis was followed to assess: a) how the positive deviance approach had been defined; b) what the quality of the existing literature was; c) what methods were used to apply the approach; and d) the extent to which staff and patients were involved in these

methods. Findings from this systematic review contributed towards the development of the subsequent research studies.

Chapters 3 and 4 cover the second overarching research project which was conducted within an acute NHS hospital setting. Chapter 3 reports on study 2 which addressed stage 1 of the Bradley et al. (2009) process: 'Can positively deviant elderly medical wards be identified using routinely collected safety data?' (thesis aim 2). This chapter is split into three phases. Phase 1 explored the routinely collected data that are available within the NHS and assessed their suitability for identifying positively deviant multidisciplinary ward teams. Phase 2 tested a method for identifying positively deviant elderly medical wards. NHS Safety Thermometer data were extracted for all elderly medical wards within the Yorkshire and Humber region. Cross-sectional and temporal analyses were conducted to identify positively deviant wards that were considered to deliver exceptionally safe patient care (n=5). A sample of wards that performed slightly above average on the NHS Safety Thermometer were also identified as a group of matched comparators (n=5). During phase 3, primary data were collected from staff and patients to assess their perceptions of safety on each of the sampled wards. These other perceptions of safety were triangulated with the NHS Safety Thermometer data to assess whether they supported the identification of positively deviant ward teams.

Chapter 4 reports on study 3 which addressed stage 2 of the Bradley et al. (2009) process: 'An exploration of how positively deviant elderly medical wards deliver exceptionally safe patient care' (thesis aim 3 and 4). Multi-disciplinary staff focus groups and researcher field notes were used to explore how exceptionally safe patient care is delivered at ward level. Data from all wards were analysed thematically to create a framework of abstract behaviours and concrete strategies that enabled high performance. Differences between positively deviant and comparison wards were then identified to generate hypotheses about the behaviours and strategies that facilitate exceptionally safe patient care on positively deviant wards.

Chapter 5 describes study 4: 'The feasibility of identifying and learning from positively deviant general practices' (thesis aim 5). Routinely collected data assessing adherence to a range of different clinical recommendations were analysed to identify positively deviant general practices that delivered exceptionally high quality, evidence based care. Qualitative interviews and observation of practice team meetings were conducted to explore how these multidisciplinary teams succeeded. The study assessed the feasibility of applying the positive deviance approach within a general practice setting using different methods to those that had been used in the secondary care application (studies 2 and 3).

The final chapter, chapter 6, presents a general discussion. It begins by recapping the aims of the thesis and the research that was conducted to address them. Key findings from studies 1 to 4 are summarised in relation to achieving these objectives. A number of reflections about the positive deviance approach are made and the limitations of the research are considered. Finally some directions for future research and suggestions for practical implications are offered.

Chapter 2

What methods are used to apply positive deviance within healthcare organisations? A systematic review.

2.1 Chapter summary

This chapter reports on study 1 – a systematic review of healthcare applications of the positive deviance approach. Peer reviewed articles that apply the positive deviance approach within a healthcare setting were reviewed to explore: how the positive deviance approach is defined; the quality of existing applications; and the methods used within them. The results of this review are presented and discussed alongside some implications and recommendations for researchers and clinicians who wish to apply the positive deviance approach within healthcare organisations. Findings have informed the design of subsequent research within this thesis.

2.2 Introduction

As discussed in the introductory chapter, the positive deviance approach originated within the field of international public health (Wishik & Van Der Vynckt, 1976). However, over recent years it has increasingly been used to address complex, intractable problems within healthcare organisations (Lawton et al., 2014). An increasing number of research and editorial articles have been published within the peer reviewed and grey literature.

At the inception of this thesis only one systematic review on the positive deviance approach had previously been conducted. Bisits Bullen (2011) assessed the effectiveness of positive deviance in reducing childhood malnutrition when combined with ‘hearth’ education sessions (nutrition education delivered to groups of mothers in a community setting). Overall the included applications reported mixed results, but where more rigorous study designs had been used there was some evidence for the approach’s effectiveness – both in preventing and rehabilitating childhood malnutrition. However, overall poor quality study designs limited the conclusions for many of the included articles. Studies used pre- and post-test designs without controls, many did

not report the reference standards that had been used to measure performance, nor did they report the results of statistical and qualitative analyses.

Another non-systematic literature review has gathered information about how the positive deviance approach has been applied to address other aspects of maternal-child health that go beyond childhood malnutrition (Schooley & Morales, 2007). Overall their review highlighted the need for a more in depth understanding of the methodology in order to maximise the utility of the approach. Many studies did not test the results of their positive deviance inquiries, and most focused on narrow health outcomes (e.g. better child growth) without looking to more broadly assess the impact of positive deviance on achieving overall behaviour change (Schooley & Morales, 2007). Finally this literature review highlighted the importance of involving the community in applications of the positive deviance approach and of implementing it using culturally/contextually appropriate methods (Schooley & Morales, 2007). Although both of the reviews discussed above highlighted the methods that had been used within previous applications of the positive deviance approach, the research settings (rural villages and developing countries) and intractable problems that were addressed (maternal/child nutrition and health) differed dramatically from delivering exceptionally safe patient care within well-developed, complex healthcare organisations.

2.2.1 Healthcare applications of positive deviance

During chapter 1 (section 1.6.1) some examples were presented of how the positive deviance approach has been implemented within healthcare organisations. For example, Marra and colleagues applied the approach to improve hand hygiene within US hospital step down units (Marra et al., 2010; Marra et al., 2011; Marra et al., 2013), while Bradley and colleagues sought to improve guideline adherence for the treatment of patients with acute myocardial infarction (Bradley et al., 2012b; Cherlin et al., 2013; Curry et al., 2011). Despite these successful applications, and the publication of the Bradley et al. (2009) four stage process for implementing the positive deviance approach within healthcare organisations, our understanding is currently limited as to whether the approach is effective, and how each stage of the process should be operationalised (Lawton et al., 2014).

Positive deviants appear to have been identified within healthcare using a number of different methods, some of which may have lacked validity and/or reliability. For example, Griffith et al. (2013) selected annual award winners as their positive deviants. Furthermore, the extent to which each stage of the positive deviance process is implemented may be limited, consequently hindering assessment of the approach's efficacy (Lawton et al., 2014). Kim, Heerey, and Kols (2008) explored how positively

deviant nurses and patients effectively communicated family planning issues – stages 1 and 2 of the Bradley et al. (2009) process. However, they did not explain how they would assess whether these behaviours improved outcomes or not and/or how they would disseminate them to others. Kuhn (1970) proposes that as new disciplines emerge they transition through a series of phases or paradigms whereby evidence is generated and then conceptual breakthroughs are made. As such, it is important to generate further evidence and assess where our knowledge gaps are in order to develop the positive deviance approach and its application within healthcare organisations. For this, it is necessary to take stock and review what has been done in the past.

Ultimately, any application of the positive deviance approach aims to improve performance on an outcome of interest, and as such a key question for the approach is whether it effectively does this within healthcare settings. However, there have only been sporadic applications of positive deviance within healthcare organisations and so there is currently a lack of evidence to facilitate an effectiveness review. Studies have been conducted in different types of healthcare setting and they have addressed different problems and/or outcomes of care. As such the findings between studies are not comparable. However, to help further develop the application of positive deviance in healthcare settings, additional guidance is required to help identify and classify positive deviants, select the methods used at each stage, involve frontline staff and patients in the process, and effectively disseminate findings (Lawton et al., 2014).

2.2.2 Aims and research questions

The systematic review reported in this chapter synthesises applications of the positive deviance approach within healthcare organisations to better characterise the challenges faced, and to provide guidance for those implementing the approach. Although this thesis predominantly focuses on improving patient safety, a broader lens was taken during this study in order to maximise the learning from any application of positive deviance which has sought to generate improvement within healthcare organisations. The following questions were addressed:

1. How is positive deviance defined?
2. What study designs and methods are used at each stage of the positive deviance process?
3. What is the quality of existing research?
4. To what extent are staff and patients involved in the approach?

2.3 Methods

This systematic review adhered to the PRISMA statement (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) which is designed to support the reporting of systematic reviews and meta-analyses (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). Details of how this study fulfils the statement are outlined in Appendix 1. The protocol was also published on PROSPERO, an international prospective register of systematic reviews (Baxter, Taylor, Kellar, & Lawton, 2014).

2.3.1 Search strategy

The search was initially conducted in January 2014 and then updated in September 2014. The search term, 'positive devian*', was used to identify articles relating to positive devian*ce* and positive devian*ts*. A single search term was used in order to identify articles that explicitly used the positive deviance approach. Search terms for 'high performance' and 'positive outliers' were excluded as they lacked specificity and identified large numbers of irrelevant articles. Studies conducted within healthcare organisations were selected for inclusion by hand. The search strategy was applied to seven online databases: PsycINFO, MEDLINE, Web of Science, Cochrane Library, Embase, CINAHL and Global Health Database. Time restrictions were excluded from the search strategy to maximise the identification of all relevant literature. Appendix 2 provides details of the overall search strategy; the time periods covered within each electronic database; and the full search strategy results.

2.3.2 Eligibility criteria and study selection

The Centre for Reviews and Dissemination (2009) recommend that the PICOS criteria (population, intervention, comparison, outcome, and study design) are used to frame review questions and refine inclusion criteria. Table 2.1 outlines the full inclusion criteria for this review using the PICOS criteria. Eligible articles reported peer reviewed, empirical research that had explicitly applied the positive deviance approach within healthcare organisations.

Study selection was conducted in two stages by one researcher (RB) who met regularly with second reviewers (RL, IK and NT) to discuss article eligibility. The first stage involved the screening of study titles and abstracts and the second stage involved a full text review. At both stages, 10% of randomly selected articles were independently second reviewed by RL, IK, and NT (title and abstract review: n=83; full text review: n=36). Inter-rater reliability was assessed using a Kappa statistic (Landis &

Koch, 1977). Substantial agreement (k=0.64) existed between reviewers for the title and abstract review, and strong agreement (k=0.87) existed for the full text review. Discrepancies between reviewers were resolved either through a full text review or by discussion. The reasons for excluding articles were recorded, and reference list and citation searches were conducted for all included articles.

Table 2.1 Eligibility criteria for the inclusion of articles

PICOS	Details of eligibility
Population	Conducted within and/or involving the contribution of healthcare organisations (primary care, secondary care and national level organisations). Articles were excluded if the healthcare organisations were not directly involved, for example if the sole focus was on patient behaviours.
Intervention	Explicit use of the 'positive deviance' approach, applied on its own or within a complex intervention.
Comparison	Positively deviant individuals or groups could be compared to any other group or individual.
Outcome	The positive deviance approach could be applied to address any outcome, behaviour and/or quality improvement issue.
Study design	Peer reviewed reports of empirical research were included. Peer reviewed editorials reporting the results of empirical research were also included. General editorials about the positive deviance approach, non-peer reviewed articles, and grey literature were excluded. This provided an additional level of quality control and reflected the underpinning of healthcare within evidence based practice. Articles were included regardless of their study design, date, or country of origin. It was only possible to include studies published in the English language due to limited resources.

2.3.3 Study quality assessment

As discussed in chapter 1, the positive deviance approach is conducted using both quantitative and qualitative methods. However, tools used to assess the quality of

research typically evaluate these study designs separately (Sirriyeh, Lawton, Gardner, & Armitage, 2012). The Quality Assessment Tool for Studies with Diverse Designs (QATSDD) is a validated tool which standardises the quality assessment of research with heterogeneous study designs (Sirriyeh et al., 2012). Within this tool a total of 16 items are scored using four-point Likert scales; all of the items are relevant to mixed-methods research, 14 items are relevant to qualitative research, and 14 items are relevant to quantitative research. The tool includes guidance notes to reduce subjectivity, and a study's overall quality is expressed as a percentage. All articles that were included in this systematic review were assessed using QATSDD. To ensure that the tool was applied consistently, all reviewers assessed the same three articles and compared their results. RB completed the remaining quality assessments and these were second reviewed by RL, IK, and NT. Discrepancies were resolved by discussion and articles were included regardless of outcomes.

2.3.4 Data extraction and synthesis

A data extraction form was created and then piloted to ensure effective and consistent use. Data were extracted for the following broad areas (full details are provided in Appendix 3):

1. General information on the positive deviance project including: the research setting; the aims and objectives of the study; and the outcomes and/or behaviours that were explored.
2. The definition of positive deviance that was used and details of which process was followed.
3. The methods that were used to apply the positive deviance approach at each stage of the Bradley et al. (2009) process. Due to similarities between many of the different positive deviance processes (as discussed in section 1.6, chapter 1) all included studies were coded according to these four stages (identifying positive deviants, generating hypotheses about how they succeed, testing the hypotheses, and disseminating the positively deviant behaviours). The Bradley et al. (2009) process was selected due to its relevance to healthcare. Extracted data included information about the study designs, samples, methods or data/procedures used, and the roles of staff, patients, and researchers within the study.

Data were extracted by RB, second reviewed by RL, IK, or NT, and discrepancies were resolved by discussion.

The heterogeneous study designs, settings, behaviours, and outcomes precluded a meta-analysis or effectiveness review. Therefore, where relevant, Popay et al.'s

guidance for narrative synthesis was followed (Arai et al., 2007; Centre for Reviews and Dissemination, 2009; Popay et al., 2006). Their iterative framework is complemented by tools and techniques which can be used to synthesise literature (Popay et al., 2006). Initially a theory is developed of how, why, and for whom an intervention works. This aspect of the synthesis is not always conducted, and for this review it lacked relevance to the overall aims and heterogeneous articles. Groupings and clusters, tabulation, vote counting, and thematic analysis were then used to develop a preliminary synthesis. Relationships within the data were explored using textual/qualitative case descriptions, and finally, the robustness of the synthesis was assessed using critical reflections and validity assessments (Popay et al., 2006).

2.4 Results

The search strategy yielded 818 articles excluding duplicates. In total, 37 articles were included, seven of which had been identified through reference list and citation searches. The study selection process is documented in Figure 2.1. The 37 included articles represented 22 distinct positive deviance projects as some articles reported different elements or stages of an overall application of the approach. Articles were primarily excluded from the review for not explicitly using the positive deviance approach.

The key characteristics of included articles are outlined in Table 2.2. The positive deviance approach was most frequently applied in North America, within secondary care settings, and to address problems relating to healthcare associated infections and/or hand hygiene. Other applications included nurse-patient communication within Indonesian public clinics (Kim et al., 2008), clinical achievement within Pakistani medical schools (Zaidi et al., 2012), and immunisation coverage across Africa (Naimoli, Challa, Schneidman, & Kostermans, 2008).

A vote count highlighted that stages 1 and 2 of the Bradley et al. (2009) process were most frequently addressed – identifying positive deviants and generating hypotheses about how they succeed (Table 2.2). Hypotheses were rarely tested or disseminated (stages 3 and 4). 73% of articles were published after 2011, and study quality was predominantly low, ranging from 2.1% to 50.0%.

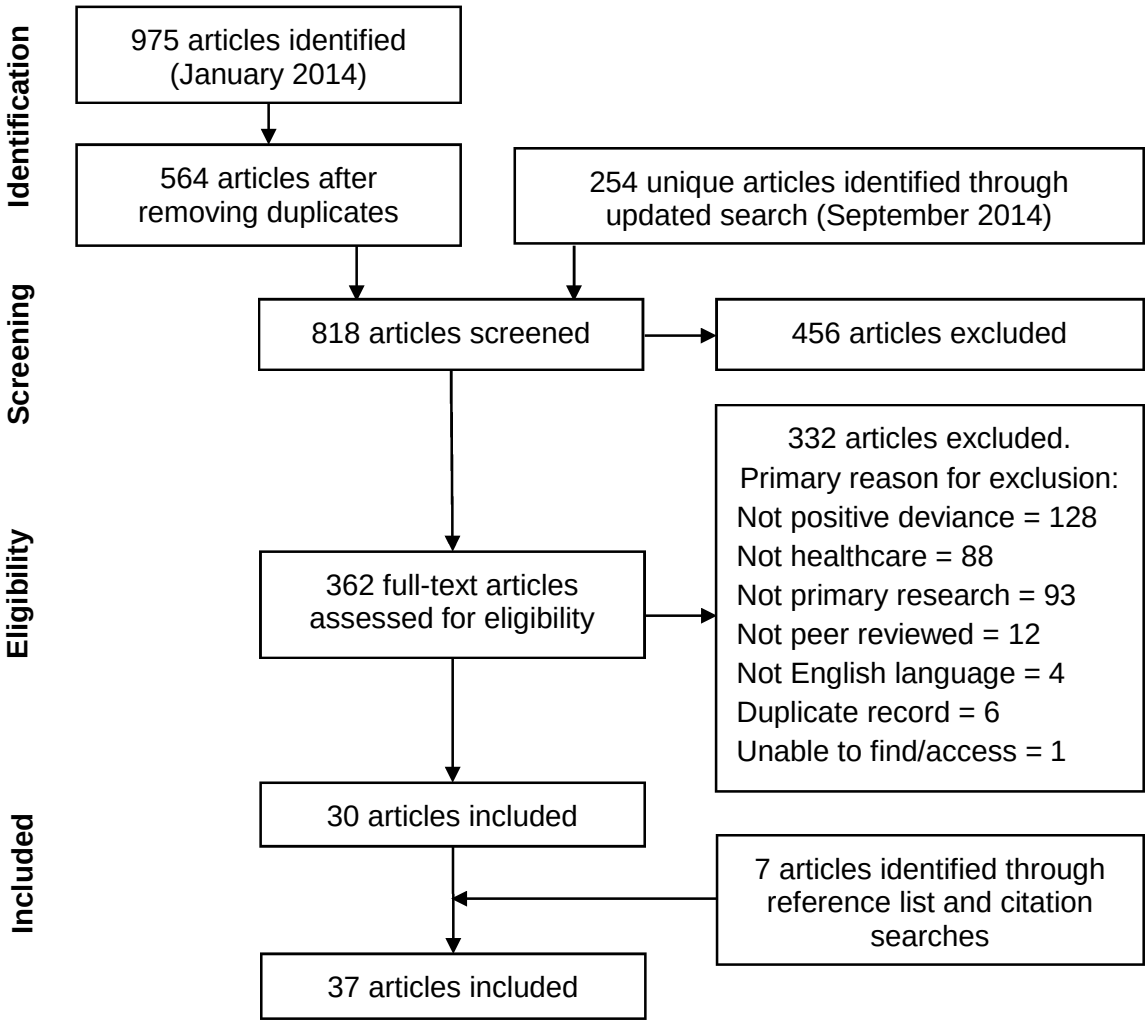

Figure 2.1 Flowchart summarising study selection

Most of the included applications focused on specific/narrow processes or outcomes of care. For example, Kraschnewski, Sciamanna, Pollak, Stuckey, and Sherwood (2013) explored the provision of weight loss advice for overweight patients, while the studies by Marra and colleagues specifically sought to increase hand hygiene compliance (Marra et al., 2010; Marra et al., 2011; Marra et al., 2013). Other studies focused on learning from the 2009 H_1N_1 vaccination campaign (Klaiman, O'Connell, & Stoto, 2013; Klaiman, O'Connell, & Stoto, 2014) or tried to reduce variation in anticoagulation control (Rose et al., 2012). Only three studies were considered to address broader problems. In Pakistan, two thirds of all infant mortality is related to neonatal mortality, therefore, Marsh et al. (2002) applied the positive deviance approach to assess household new-born care practices. Among other things, their broad inquiries assessed behaviours during pregnancy, labour and delivery; immediate new-born care; routine care; and home care and care seeking. Naimoli et al. (2008) sought to explore why some immunisations programmes were more

successful than others in six sub-Saharan African countries. Although positive deviants were identified using a specific measure (administration of the diphtheria-pertussis-tetanus vaccine), this data provided a barometer for a country's capacity to successfully execute routine immunisation programmes and was a proxy for the strength of a country's health service delivery. Finally, Bradley et al. (2012a) sought to explore why an intervention to improve the performance of primary healthcare units had been effective in some units but less effective in others. The intervention had taken a systems approach by targeting all patient populations and seeking to improve the infrastructure of healthcare centres, their supply chains, human resource capacity, systems for patient referrals, community health education, and set up new patient services (e.g. HIV testing). These three studies provide examples of positive deviance applications that have taken a much broader view. They have aimed to address complex problems where performance is influenced by a wide range of factors.

Table 2.2 Key characteristics of positive deviance applications within healthcare organisations.

Included studies are organised by setting (primary care, secondary care and regional / national level provision). Rows represent included articles (n=37). Rows grouped by colour (grey or white) represent unique positive deviance projects (n = 22).

Author and year	Location	Healthcare setting	Problem or issue addressed	Stages addressed:* 1	2	3	4	Quality assessment score	Context *	Process used *
Primary Care										
Bradley et al. (2012a)	Ethiopia, 4 regions	Primary Health Care Units	Why interventions to improve the quality, access, and utilisation of primary healthcare in rural, low income settings may or may not be effective.	Y	Y	N	N	38.1%	Single	A
Gabbay et al. (2013)	USA, Pennsylvania	Primary Care Medical Homes	Variation in diabetes care across medical home practices.	Y	Y	N	N	45.8%	Single	Infer B
Taliani, Bricker, Adelman, Cronholm, and Gabbay (2013)	USA, Pennsylvania	Primary Care Medical Homes	Variation in the definition and implementation of Care Manager roles.	Y	Y	N	N	35.4%	Single	Infer B
Kim et al. (2008)	Indonesia, East Java	Public clinics	Nurse - patient communication within a family planning context.	Y	Y	N	N	37.5%	Single	A
Kraschnewski et al. (2013)	USA, national	Primary care providers	The provision of advice to obese and overweight adults on weight loss / setting weight-loss goals.	Y	Y	N	N	23.8%	Single	A
Ma and Magnus (2012)	USA, Los Angeles	Community public health	Black mothers and women with low education or socioeconomic status have lower initiation of breastfeeding.	Y	Y	N	N	28.6%	Single	A
Marsh et al. (2002)	Pakistan, Haripur	Primary care	Infant mortality ratio.	Y	Y	N	Y	21.4%	Single	C
Rose et al. (2012)	USA, national	VA anticoagulation clinics – primary care	Substantial variation in anticoagulation control.	Y	Y	N	N	27.8%	Single	A
Secondary Care										
Abrahamson, Durham, Norton, and Anderson (2011a)	USA, Indiana	Cancer care organisations	Clinical practice to manage psychosocial distress in cancer patients.	N	Y	N	N	14.3%	Single	A

Author and year	Location	Healthcare setting	Problem or issue addressed	Stages addressed:* 1	2	3	4	Quality assessment score	Context *	Process used *
Abrahamson et al. (2011b)	USA, Indiana	Cancer care organisations	Clinical practice to manage psychosocial distress in cancer patients.	N	Y	N	N	14.3%	Single	A
Anzarut, Martens, and Tredget (2011)	Inferred as Canada	Inferred as acute hospital	Unsatisfactory plastic surgery journal clubs.	N	Y	Y	N	14.5%	Single	A
Curry et al. (2011)	USA, national	Acute hospitals	Variation in 30 day Risk Standardised Mortality Ratio (RSMR) for patients with acute myocardial infarction (AMI).	Y	Y	N	N	33.3%	Single	Infer B
Cherlin et al. (2013)	USA, national	Acute hospitals	Variation in 30 day RSMR for patients with AMI. One third of deaths contributing to RSMR occur after discharge.	Y	Y	N	N	29.1%	Single	A
Bradley et al. (2012b)	USA, national	Acute hospitals	Variation in 30 day RSMR for patients with AMI.	N	N	Y	N	50.0%	Single	Infer B
Landman et al. (2013)	USA, national	Acute hospitals and emergency services	Collaboration between hospital and emergency services to reduce variability in RSMR for patients with AMI.	N	Y	N	N	39.6%	Single	A
Griffith et al. (2013)	USA, national	Healthcare organisations	Use of Knowledge Management within healthcare practises.	Y	Y	N	N	14.3%	Single	A
Kennedy, Oakland, and Shaw (1999)	USA, mid-west	Children developmental clinics	Infants with very low birth weights are at higher risk of clinical problems. Premature infants who grow well have better developmental outcomes.	Y	Y	N	N	21.4%	Single	A
Lindberg and Schneider (2013)	USA, Maine	Medical centre (inclusing community hospital/tertiary care)	MRSA infections.	N	Y	N	Y	16.7%	Single	D
Lindberg et al. (2013)	USA, New Jersey	Outpatient haemodialysis centre	Blood stream infections.	Y	Y	N	N	22.9%	Complex	A
Downham et al. (2012)	USA, New Jersey	Outpatient haemodialysis centre	Blood stream infections.	N	Y	N	N	14.6%	Complex	A
Marra et al. (2010)	Brazil	Hospital SDU	Hand hygiene compliance.	Y	Y	N	N	27.1%	Single	A
Marra et al. (2011)	Brazil	Hospital SDU	Hand hygiene compliance.	Y	Y	N	N	25.0%	Single	A

Author and year	Location	Healthcare setting	Problem or issue addressed	Stages addressed:* 1	2	3	4	Quality assessment score	Context *	Process used *
De MacEdo et al. (2012)	Brazil, Sao Paulo	Hospital SDU	Hand hygiene compliance.	N	Y	N	N	22.9%	Single	A
Marra et al. (2013)	Brazil and Thailand	Hospitals (1 ward, 8 intensive care units)	Hand hygiene compliance.	N	N	Y	N	31.3%	Single	A
Zaidi et al. (2012)	Pakistan	Medical school	Student achievement in preclinical written work often does not reflect achievement in clinical work.	Y	Y	Y	N	33.3%	Single	E
Awad et al. (2009)	USA, Houston	1 VAMC	Incidence of MRSA surgical site infections.	?	N	Y	Y	4.2%	Complex	F - a
Bonuel, Byers, and Gray-Becknell (2009)	USA, Houston	1 VAMC	Increased incidence MRSA infection and inconsistent application of prevention methods.	?	N	Y	N	2.1%	Complex	A
Ellingson et al. (2011)	USA, north east	1 VAMC	Antimicrobial (MRSA) resistance in US healthcare facilities.	Y	Y	N	N	8.3%	Complex	A
Evans et al. (2013)	USA, national	VAMCs (Spinal Cord Injury Units)	Patients with spinal cord injury are at higher risk of developing healthcare associated infections such as MRSA.	?	N	N	Y	4.2%	Complex	A
Forsha and Richmond (2007)	USA – VA Pittsburgh Health care System	Acute, long term and behavioural services	Reduction of healthcare associated s.aureus infections such as MRSA.	Y	?	N	?	8.3%	Complex	A
Jain et al. (2011)	USA, national	VAMCs (intensive care/non-intensive care units)	Reduction of MRSA infections in acute care facilities.	?	N	N	Y	4.2%	Complex	A
Regional / National level / other										
Awofeso, Irwin, and Forrest (2008)	Australia, New South Wales	Justice health services	Smoking cessation in prisoners.	Y	Y	N	Y	6.3%	Complex	F - b
Green, Fortin, Maclure, Macgregor, and Robinson (2006)	Canada, British Colombia	Vancouver Island Health Authority	Provision of recommended / evidence based care for patients with chronic conditions.	Y	Y	N	N	14.3%	Single	A
Klaiman et al. (2013)	USA, 9 states	Local Health Departments	Extensive local differences in the H1N1 vaccination campaign – focus on public clinics.	Y	Y	N	N	28.6%	Multiple	B

Author and year	Location	Healthcare setting	Problem or issue addressed	Stages addressed:* 1	2	3	4	Quality assessment score	Context *	Process used *
Klaiman et al. (2014)	USA, 9 states	Local Health Departments	Extensive local differences in the H1N1 vaccination campaign – focus on school based vaccination distribution.	Y	Y	N	N	30.6%	Multiple	B
Naimoli et al. (2008)	Sub Saharan Africa, 6 countries	National health departments	Substantial variation in immunisation coverage to reduce childhood mortality.	Y	Y	N	N	31.3%	Complex	A
Primary and secondary care										
Assefa et al. (2014)	Ethiopia, national	Tertiary/general hospitals and health centres	Patient retention in antiretroviral treatment programmes.	Y	N	N	N	37.5%	Single	A

Abbreviations: SDU = Step Down Unit; VA = Veterans Affairs; VAMC = Veterans Affairs Medical Centre

* Stages addressed - Stages from the Bradley et al. (2009) process for positive deviance: 1 = identifying positive deviants; 2 = generating hypotheses about how positive deviants succeed; 3 = testing hypotheses; 4 = disseminating positively deviant strategies; Y = yes – the stage was addressed; N = no – the stage was not addressed; ? = it was unclear whether stage had been addressed

* Context – context within which the positive deviance approach was applied: Single = positive deviance was the single method; Complex = positive deviance used within a complex intervention; Multiple = multiple methods were used.

* Process used – the positive deviance process that was used within the article: A = no process explicitly stated; B = Bradley et al. (2009); C = 5 Step PD cycle – not referenced; D = process discussed in Sternin and Choo (2000); E = 6Ds process references by Marsh et al. (2004); F = 4Ds Process referencing a) Sparks (2004) and b) Lapping et al. (2002).

2.4.1 Positive deviance definitions

Definitions of the positive deviance approach were thematically analysed to identify four key themes (Table 2.3). Positive deviants were defined as high performers that demonstrated different or uncommon behaviours. Community involvement was considered integral to the approach and positively deviant behaviours were thought to be sustainable and feasible within current resources.

Table 2.3 Key themes within healthcare definitions of positive deviance

Theme	Description and examples
Positively deviant groups or individuals are high performers.	Positive deviants succeed, find better solutions, and achieve better outcomes than others. *'This approach emphasizes in-depth qualitative study of organizations with exceptionally high performance to understand the factors that contribute to their excellence.' (Rose et al., 2012 p1542)* *'The positive deviance approach is a framework for identifying and learning from top performers in a system' (Klaiman et al., 2014 p64)*
Positively deviant groups or individuals do things differently.	Positive deviants follow uncommon or special practices and behaviours. Only a few studies explicitly define positively deviant behaviours as being 'deviant' or going against cultural norms (Downham et al., 2012; Lindberg et al., 2013; Lindberg & Schneider, 2013). *'Positive deviance inquiries focus on individuals who behave differently from the rest of the community and, in so doing, succeed where others fail.' (Kim et al., 2008 p1413)* *'The group that faces the problem determines the desired outcome; identifies the most effective behaviours, resources, and actions; and searches for the best solutions using unique strategies.' (De MacEdo et al., 2012 p946)*
The positive deviance approach is a 'bottom up' approach.	The positive deviance approach is driven by the community. Success is internally generated rather than externally imposed. *'The positive deviance process is grounded on several beliefs. First, much of the expertise and experience needed for change exist in the organization, and second, change efforts are best led from within the institution by people with first-hand knowledge of its work, history and norms, … Third, expertise within an organization is widely distributed, necessitating the engagement of staff from various services, levels and roles.' (Lindberg & Schneider, 2013 p234)* *'Since solutions originated from within, positive deviance is inherently a culturally appropriate development approach.' (Bonuel et al., 2009 p145)*
Positively deviant solutions are sustainable within current resources.	Positive deviants face similar challenges to others and succeed using existing resources. *'Positive deviance is a behavioural change approach that assumes the existence in any community of individuals who handle situations more effectively (positive deviants) than their peers, despite the similarities of problems and available resources. (De MacEdo et al., 2012 p946)* *'Positive deviance is an 'assets-based', four-stage approach that focuses on using the resources already available among communities to promote health.'(Awofeso et al., 2008 p72)*

2.4.2 Study design and methods

2.4.2.1 Stage 1 – Identifying positive deviants

Positively deviant organisations, teams, and/or individuals were not explicitly identified in two of the 22 distinct projects (Abrahamson et al., 2011a; Abrahamson et al., 2011b; Anzarut et al., 2011). Instead, these articles explored success without prior assessment or knowledge of performance levels, i.e. the applications appeared to start at stage 2 of the Bradley et al. (2009) process. One of the positive deviance projects, which was represented by six of the included articles, had been conducted within the US Veterans Health Administration system. For some of these studies it was unclear whether positive deviants had been identified or not (Awad et al., 2009; Bonuel et al., 2009; Evans et al., 2013; Jain et al., 2011). Furthermore, in contrast to all the other included articles, Lindberg and Schneider (2013) identified positively deviant behaviours rather than individuals or groups.

Positive deviants were identified using quantitative methods in 13 projects – see column 2 in Table 2.4 for details. To do this both single (Bradley et al., 2012a; Cherlin et al., 2013; Curry et al., 2011; Griffith et al., 2013; Kraschnewski et al., 2013; Ma & Magnus, 2012; Naimoli et al., 2008; Rose et al., 2012) and composite performance measures were used (Assefa et al., 2014; Gabbay et al., 2013; Green et al., 2006; Taliani et al., 2013; Zaidi et al., 2012). As suggested within the Bradley et al. (2009) process, eight of these projects used routinely collected data to identify their positive deviants, although, non-routine data such as case notes, nurse-patient consultations, and national awards were also used in some of the studies (Griffith et al., 2013; Kennedy et al., 1999; Kim et al., 2008; Zaidi et al., 2012). Positive deviants were also identified in some studies using qualitative methods such as peer recommendation, document analysis, observation, and mixed-method combinations of the above, however, this happened far less frequently (see Table 2.4 for details).

Although the limited amount of detail that was included in the articles hindered our assessment, positive deviants were most frequently identified as exceptionally performing organisations or individuals. For example, at an organisational level a number of studies identified high performing hospitals (Bradley et al., 2012a; Curry et al., 2011), while at an individual level Kraschnewski et al. (2013) identified positively deviant physicians and Kim et al. (2008) identified positively deviant nurses and patients. The study by Green et al. (2006) was the only one to explicitly identify a positively deviant team - a collaborative of primary care physicians.

Various characteristics were accounted for when identifying positive deviants. Some studies attended to the context within which the positive deviants succeeded, for example, by selecting positive deviants who succeeded in high risk or more challenging settings (Klaiman et al., 2013; Klaiman et al., 2014; Marsh et al., 2002).

This aligns with the premise of the approach – that positive deviants should succeed despite facing the same constraints as others (Marsh et al., 2004). Other studies ensured that positive deviants were selected to cover a number of relevant diverse characteristics and confounding variables (Cherlin et al., 2013; Curry et al., 2011; Gabbay et al., 2013; Ma & Magnus, 2012; Taliani et al., 2013), and some selected positive deviants based on the convenience with which they could be sampled (Assefa et al., 2014; Naimoli et al., 2008).

Many of the included articles provided limited or no detail about the criteria that were used to distinguish positive deviants from others in the community (see column 3, Table 2.4). Typically performances were ranked from best to worst and positive deviants were classified as those that demonstrated the highest performance or those that fell among the highest performers within a community (Bradley et al., 2012a; Cherlin et al., 2013; Curry et al., 2011; Gabbay et al., 2013; Griffith et al., 2013; Taliani et al., 2013). For example, Gabbay et al. (2013) classified the top quintile (n=5) of primary care medical homes as positive deviants while Rose et al. (2012) selected three out of the top ten performing anticoagulation clinics within the Veterans' Health Administration system. The qualitative criteria that were used to distinguish positive deviants included ambiguous descriptions of staff attitudes (Marra et al., 2010; Marra et al., 2011) and more thorough descriptions of health status and behaviours, for example, being a thriving new-born (Marsh et al., 2002). Although positive deviants were typically classified by their extremely high performance, Zaidi et al. (2012) identified 40% of their sample to be positively deviant. Nine of the included projects assessed the performance of community members over time - commonly between one and two years (Bradley et al., 2012a; Cherlin et al., 2013; Curry et al., 2011; Gabbay et al., 2013; Kennedy et al., 1999; Kim et al., 2008; Kraschnewski et al., 2013; Naimoli et al., 2008; Rose et al., 2012; Taliani et al., 2013; Zaidi et al., 2012). Therefore, for these studies a positively deviant performance was classified as a consistent rather than one off success (see column 4, Table 2.4).

Table 2.4 Study design and methods used to identify positive deviants and generate hypotheses about how they succeed – stages 1 and 2 of Bradley et al. (2009) process.

Included studies are organised by setting (primary care, secondary care and regional / national level provision). Rows represent included articles (n=37). Rows grouped by colour (grey or white) represent unique positive deviance projects (n = 22).

	Stage 1 – Identifying positive deviants			Stage 2 – Generating hypotheses	
Author and year	**Design and main methods**	**Key criteria for positive deviants**	**Time period positive deviants assessed for**	**Design and methods**	**Comparison group**
Primary Care					
Bradley et al. (2012a)	Quant – routine data (3 measures)	Consistently higher performance	9 months	Qual – 51 in depth interviews, 2 day site visits x 8 sites	Most improved and consistently lowest performers
Gabbay et al. (2013)	Quant – routine data (3 measures)	Highest quintile of ranked surgeries	Improvement over 18 months	Mixed methods – 2 surveys given to staff, 55 interviews	Lowest quintile of ranked surgeries
Taliani et al. (2013)	Quant – routine data (3 measures)	Highest tertile of ranked surgeries	Improvement over 18 months	Qual – 136 interviews	Everyone included but hypotheses were developed by comparing with low performers
Kim et al. (2008)	Quant coding of nurse-patient consultations	Nurses – top 10% on one measure; Patients – top 15% on two measures	Nurses – average over 12 consultations; Patients – single consultations	Mixed – 34 interviews, 6 focus groups, minimal quant analysis to compare PDs with peers who did not communicate as effectively.	In essence only PDs
Kraschnewski et al. (2013)	Quant – routine data	Higher levels of weight counselling. The group provided half of all weight counselling.	1 year	Quant – routine and patient data	Everyone included
Ma and Magnus (2012)	Quant – routine data	Unclear what data were used in the analysis	None stated	Quant – routine and patient data	Everyone included
Marsh et al. (2002)	Qual – local community meetings	Descriptions of health status and behaviours	None stated	Qual – 27 situational analysis inquiries, 23 interviews, 4 focus groups, 5 PD inquiries (unclear what these were)	Compared to results of a situational analysis

Author and year	Stage 1 – Identifying positive deviants			Stage 2 – Generating hypotheses	
	Design and main methods	Key criteria for positive deviants	Time period positive deviants assessed for	Design and methods	Comparison group
Rose et al. (2012)	Quant – unclear whether routine data	Selected 3 sites within the top 10	2 years	Qual – 55 interviews, observation 4 hours (x 6 sites), document analysis	Selected 3 sites within the bottom 10
Secondary Care					
Abrahamson et al. (2011a)	Stage not completed	-	-	Qual – 30 minute structured telephone interviews	PDs not identified
Abrahamson et al. (2011b)	Stage not completed	-	-	Qual – 30 minute structured telephone interviews	PDs not identified
Anzarut et al. (2011)	Stage not completed	-	-	Quant – Survey	PDs not identified
Curry et al. (2011)	Quant – routine data	Hospitals within top 5%	2 years	Qual – 1-2 day site visits x 11 sites, 158 interviews	Hospitals within bottom 5%
Cherlin et al. (2013)	Quant – routine data	Hospitals within top 5%	3 years	Qual – 1-2 day site visits x 11 sites, 158 interviews (57 interviews used for this analysis)	Hospitals within bottom 5%
Bradley et al. (2012b)	Stage done elsewhere	-	-	Stage done elsewhere	-
Landman et al. (2013)	Stage done elsewhere	-	-	Qual – 1-2 day site visits x 11 sites, 158 interviews (85 interviews used for this analysis)	Hospitals within bottom 5%
Griffith et al. (2013)	Quant – national award	Winners of an award	None stated	Qual – document analysis (50 pages x 9 organisations)	PDs only
Kennedy et al. (1999)	Quant – analysis of case notes	6 point eligibility criteria, many of which do not infer high performance	18 months	Quant – quantitative analysis of a case note review	PDs only
Lindberg and Schneider (2013)	Unclear if stage was completed	No criteria	None stated	Qual – orientation / PD training, DADs / meetings every week, site visits, document review	PDs not identified

Author and year	Stage 1 – Identifying positive deviants			Stage 2 – Generating hypotheses	
	Design and main methods	Key criteria for positive deviants	Time period positive deviants assessed for	Design and methods	Comparison group
Lindberg et al. (2013)	Qual – DADs	No criteria	None stated	Mixed methods – DADs (unclear how many), surveys, case study including observation, site visits and focus groups	Everyone included
Downham et al. (2012)	Stage done elsewhere	-	-	Qual – DADs, 'kick off' sessions	Everyone included
Marra et al. (2010)	Qual – peer recommendation	Description of healthcare workers attitudes	None stated	Mixed – surveys, monitoring, bimonthly DADs, PD training	Everyone included
Marra et al. (2011)	Qual – peer recommendation	Description of healthcare workers attitudes	None stated	Mixed – surveys, monitoring, bimonthly DADs, PD training	Everyone included
De MacEdo et al. (2012)	Stage done elsewhere	-	-	Mixed methods – surveys, monitoring, bi-monthly DADs	Everyone included
Marra et al. (2013)	Stage done elsewhere	-	-	Stage done elsewhere	-
Zaidi et al. (2012)	Quant – non-routine data (2 measures)	Those who ranked well in both measures	1.5 months	Qual – 20 interviews, 1 focus group	PDs only
Awad et al. (2009)	Mixed methods – unclear - infer data and observation / DADs	No criteria	None stated	Unclear but inferred – DADs, site visits	Everyone included
Bonuel et al. (2009)	Unclear if stage was completed	-	-	Unclear if stage was completed	-
Ellingson et al. (2011)	Unclear if stage was completed	-	-	Unclear if stage was completed	-
Evans et al. (2013)	Mixed methods – appear to use data and observation	Those making "exceptional progress"	None stated	Unclear but inferred – DADs, workshops, interviews with PD consultants	Everyone included
Forsha and Richmond (2007)	Unclear if stage was completed but inferred	-	-	Unclear if stage was completed	-
Jain et al. (2011)	Unclear if stage was completed	-	-	Unclear if stage was completed	-

Author and year	Stage 1 – Identifying positive deviants			Stage 2 – Generating hypotheses	
	Design and main methods	Key criteria for positive deviants	Time period positive deviants assessed for	Design and methods	Comparison group
Regional / National level / other					
Awofeso et al. (2008)	Quant and qual data – surveys, non-routine data, observation	No criteria	None stated	Unclear what methods used	PDs only
Green et al. (2006)	Quant – routine data (3 measures) but also aware of high performance through other methods e.g. winning an award	Unclear whether this was based on data improvements or winning the award	Unclear – possibly 1 year	Qual – interviews (quantified as 58000 words), 500 pages of document analysis, 100 hours of observation	PDs only
Klaiman et al. (2013)	Mixed methods–database review, self-select and peer recommendation	No criteria	Assume 1 year (length of the pandemic)	Qual – 20 in depth interviews (15 interviews used for this analysis)	PDs only
Klaiman et al. (2014)	Mixed methods–database review, self-select and peer recommendation	No criteria	Assume 1 year (length of the pandemic)	Qual – 20 in depth interviews (13 interviews used for this analysis)	PDs only
Naimoli et al. (2008)	Quant – routine data	Immunization coverage history, populations size, status of World Bank support and feasibility of data collection	6 years	Qual - Key informant interviews, document review, case narratives constructed with participant involvement – all took 5-7 days in each site x 6 sites	Additional performance levels - medium high, medium low, low, those with exceptional characteristics.
Primary and secondary care					
Assefa et al. (2014)	Quant – routine data (3 measures)	Higher performance compared to a reference	Unclear whether 1 or 2 years	Qual – 72 key informant interviews, 1 focus group	Facilities with lower and improved performance

Abbreviations: Quant = quantitative date; Qual = qualitative date, Mixed = mixed methods; PDs = positive deviants; DADs = Discovery and Action Dialogues

2.4.2.2 Stage 2 – Generating hypotheses about how positive deviants succeed

Stage 2 of the Bradley et al. (2009) process was addressed in 29 articles (Table 2.2). The majority of these studies used qualitative methods to explore how their positive deviants had succeeded (see detail in Table 2.4). All but four of them included individual interviews among their methods (Downham et al., 2012; Forsha & Richmond, 2007; Griffith et al., 2013; Lindberg & Schneider, 2013), and ten articles used focus groups or Discovery and Action Dialogues (DADs). These are facilitated group conversations where positively deviant practices are identified and their implementation is discussed (Lindberg & Schneider, 2013). Individual interviews and focus groups/DADs were often combined with observation, site visits, and document analysis.

Many of the studies included in this review used extensive resources to conduct their qualitative enquiries, for example, the application of positive deviance by Cherlin et al. (2013), Curry et al. (2011), and Landman et al. (2013) conducted 158 interviews with 11 site visits lasting one or two days each. Only five projects used single or comparably less intense qualitative methods (Abrahamson et al., 2011a; Abrahamson et al., 2011b; Downham et al., 2012; Griffith et al., 2013; Klaiman et al., 2013; Klaiman et al., 2014; Taliani et al., 2013). The positive deviance project reported by Klaiman et al. (2013) and Klaiman et al. (2014) was conducted using 20 in-depth interviews to explore successful implementation of vaccination clinics.

In contrast to most of the guidance on positive deviance, including the process by Bradley et al. (2009), four projects conducted Stage 2 of the approach using quantitative data e.g. routinely collected data and/or surveys (Anzarut et al., 2011; Kennedy et al., 1999; Kraschnewski et al., 2013; Ma & Magnus, 2012). Mixed methods were used in four additional projects typically by combining interviews, focus groups, or DADs with surveys and routinely collected data (De MacEdo et al., 2012; Gabbay et al., 2013; Kim et al., 2008; Lindberg et al., 2013; Marra et al., 2010; Marra et al., 2011).

In total, twelve projects sampled a comparison group to assess how positive deviants differed from others within the community (see detail in Table 2.4). The composition of these comparators varied greatly. A discrete comparison group was included in six of the projects. All of these projects included negative deviants – the worst performers within a community – and three of them also sampled additional comparators who displayed varying levels of performance. For example, Rose et al. (2012) selected three comparison sites that fell within the bottom ten performers (negative deviants only), while Assefa et al. (2014) sampled facilities that demonstrated low and improving levels of performance. Interestingly, of the twelve

projects that included some form of comparator group, six projects indiscriminately included everyone in their study regardless of performance level. In total, seven projects only sampled positive deviants during their qualitative inquires.

Whilst exploring how positive deviants succeed, six projects did not outline which factors had been qualitatively assessed or explored (Awofeso et al., 2008; De MacEdo et al., 2012; Ellingson et al., 2011; Forsha & Richmond, 2007; Kennedy et al., 1999; Kraschnewski et al., 2013; Marra et al., 2010; Marra et al., 2011; Zaidi et al., 2012). Furthermore, in order to classify the nature of positively deviant strategies within healthcare organisations, this review had intended to assess whether positively deviant success was associated with system, process or outcome level factors. To do this RB had hoped to classify the positively deviant behaviours/strategies that had been identified using the Systems Engineering Initiative for Patient Safety 2 model (Holden et al., 2013). However, the lack of detail in the included articles about how positive deviants achieved their success meant that it was not possible to do this.

2.4.2.3 Stage 3 – Testing positively deviant strategies

Stage 3 of the Bradley et al. (2009) process was conducted to a limited extent in five studies (see Table 2.5). Surveys or quantitative data collection following an intervention were the most commonly used methods, although Zaidi et al. (2012) combined this with focus groups. Bradley et al. (2012b) were the only authors to truly test positively deviant hypotheses within larger, more representative samples. They scaled up from 11 to 533 hospitals using a web-based survey. Half of the studies did not test hypotheses beyond the initial study site (Anzarut et al., 2011; Awad et al., 2009; Zaidi et al., 2012).

2.4.2.4 Stage 4 – Disseminating positively deviant strategies

Dissemination of positively deviant success strategies – stage 4 of the Bradley et al. (2009) process – was reported in six of the included articles (four unique positive deviance projects – see Table 2.5). However, they lacked detail about how interventions were designed and implemented (Awofeso et al., 2008; Lindberg & Schneider, 2013). The most comprehensive account by Marsh et al. (2002) reviewed the positively deviant findings at community meetings and created action plans to address their high infant mortality ratios. Three studies (reporting the same unique project) disseminated a MRSA prevention bundle but did not report how positive deviance was applied, or what results were gained (Awad et al., 2009; Evans et al., 2013; Jain et al., 2011). This was the only unique project within the review which had articles that covered all four stages of the positive deviant process. The other projects that disseminated findings (stage 4) did not conduct earlier stages of the process, for example Marsh et al. (2002) and Lindberg and Schneider (2013) did not test the positively deviant strategies in representative samples (stage 3).

Table 2.5 Study design and methods used to test positively deviant hypotheses and disseminate them to others – stages 3 and 4 of Bradley et al. (2009) process.

Included studies are organised by setting (primary care, secondary care and regional / national level provision). Rows represent included articles.

Rows grouped by colour (grey or white) represent unique positive deviance projects.

	Stage 3 – testing hypotheses		Stage 4 – disseminating hypotheses	
Author and year	**Design and main method**	**Sample**	**Design and main method**	**Intervention**
Primary Care				
Marsh et al. (2002)	-	-	Community feedback and action planning meetings.	Meetings to review PD concept, assess interest, review PD findings and planned next steps.
Secondary Care				
Anzarut et al. (2011)	Survey to assess whether intervention components were associated with improved satisfaction.	Same sample as stage 2.	-	-
Bradley et al. (2012b)	Cross-sectional, quantitative web based survey. Assessed PD strategies from stage 2.	Randomly selected sample of 590 eligible US hospitals.	-	-
Lindberg and Schneider (2013)	-	-	QI - 1 hospital. PD was part of a hospital wide drive to reduce antibiotic resistant bacteria.	Unclear.
Marra et al. (2013)	Evaluated a PD strategy for improving hand hygiene compliance in multiple hospitals.	Scaled up from 1 hospital (2 units in stage 2) to 7 hospitals (9 unit).	-	-
Zaidi et al. (2012)	Trial to assess effectiveness of using a positive deviance framework.	Intervention + control groups – same sample as stage 2.	-	-
Awad et al. (2009)	Quant assessment of a MRSA bundle which included cultural transformation through PD – no detail of what this included.	A single unit within a VA medical centre.	MRSA bundle from stage 3 was spread hospital wide (all units).	Same MRSA bundle as stage 3.
Bonuel et al. (2009)	As above – reports experiences of 1 hospital.	A single VA hospital.	-	-

Evans et al. (2013)	-	-	Reports a subgroup analysis from Jain et.al (2011) - spinal cord injury units.	See Jain et.al (2011) below.
Jain et al. (2011)	-	-	QI programme implemented in acute VA hospitals nationwide.	MRSA bundle including cultural transformation through PD – no detail of what this included.
Regional / National level / other				
Awofeso et al. (2008)	-	-	Unclear – spread within one prison.	Posters with PD statements. Talks by PDs. Social marketing techniques to 'sell' PD behaviours.

Abbreviations: PD = positive deviance; QI = Quality Improvement; Quant = quantitative, VA = veterans affairs

2.4.3 Involvement of healthcare staff and patients

Textual, qualitative descriptions of the studies were used to explore whether positive deviance projects were typically set up and conducted by staff and patients or by external research teams. Healthcare staff were involved solely as participants for interviews and focus groups, etc. in 18 of the included articles – for examples see Gabbay et al. (2013), Abrahamson et al. (2011a), and Klaiman et al. (2013). Beyond this, staff members were not integral to implementing the positive deviance approach within these applications. Staff were not involved in choosing the problem, identifying the positive deviants, or conducting the qualitative enquiries.

Some articles reported a small degree of staff involvement within their projects. This was facilitated through designing materials (Bradley et al., 2012b), identifying positive deviants (Cherlin et al., 2013; Landman et al., 2013; Marsh et al., 2002; Naimoli et al., 2008), and consulting them on the success strategies that had been identified (Anzarut et al., 2011; Zaidi et al., 2012). Frontline staff were integral throughout four unique projects (12 articles) which used DADs to explore success (Bonuel et al., 2009; De MacEdo et al., 2012; Downham et al., 2012; Ellingson et al., 2011; Evans et al., 2013; Forsha & Richmond, 2007; Jain et al., 2011; Lindberg et al., 2013; Lindberg & Schneider, 2013; Marra et al., 2010; Marra et al., 2011; Marra et al., 2013). However, these articles lacked detail about how the DADs had been conducted, and they tended to be of lower quality. This was particularly pertinent for the Veterans Affairs research where quality assessment scores ranged from 2.1% to 8.3% (Awad et al., 2009; Bonuel et al., 2009; Ellingson et al., 2011; Evans et al., 2013; Forsha & Richmond, 2007; Jain et al., 2011).

Patients were involved in two unique projects. One study identified and interviewed positively deviant patients (Kim et al., 2008), while the other engaged patients in identifying positively deviant solutions but did not explain how this was done (Ellingson et al., 2011; Forsha & Richmond, 2007).

2.4.4 Quality assessment

Overall, the study quality of included articles was low ranging from 2.1% to 50.0% with an average score of 23.3% (see Table 2.2). Some common concerns arose. Few studies justified their sample size, data collection tools or their methods for analysis. Detailed recruitment data were not provided, for example, studies using DADs did not report the number of positive deviants and/or staff that had been involved (Awad et al., 2009; Bonuel et al., 2009; De MacEdo et al., 2012; Downham et al., 2012; Ellingson et al., 2011; Evans et al., 2013; Forsha & Richmond, 2007; Jain et al., 2011; Lindberg et al., 2013; Lindberg & Schneider, 2013; Marra et al., 2010; Marra et al., 2011; Marra et

al., 2013). At times, limited detail made it difficult to identify which stage or stages of the positive deviance process had been conducted. This was especially pertinent for stages 3 and 4 of the Bradley et al. (2009) process, and is exemplified by the Veterans Affairs project. Here it was unclear how studies linked together, what methods had been used to implement the approach, whether a specific process had been followed, and, in most cases, what positively deviant strategies were identified (Awad et al., 2009; Bonuel et al., 2009; Ellingson et al., 2011; Evans et al., 2013; Forsha & Richmond, 2007; Jain et al., 2011).

Only a handful of studies used theory or frameworks to guide their qualitative inquiry (Griffith et al., 2013; Klaiman et al., 2013; Klaiman et al., 2014; Lindberg & Schneider, 2013), and the factors investigated through the interviews, focus groups etc. were rarely justified. Finally, data collection procedures were inadequately described in most articles which is concerning as limited guidance on the approach currently exists (Lawton et al., 2014).

2.5 Discussion

This systematic review synthesised the methods used within healthcare applications of the positive deviance approach. Although studies varied in their focus, setting, and location, the positive deviance approach is frequently applied within secondary care settings. This focus on acute care is common more widely within the quality improvement literature (Alexander & Hearld, 2009).

2.5.1 Applications lack quality and detail

Using a validated tool, studies applying the positive deviance approach within healthcare organisations were found to be low in quality; consideration and justification for study designs and methods were frequently missing, and key details were omitted. Interestingly, the previous systematic review by Bisits Bullen (2011) which assessed the effectiveness of positive deviance and hearth education session on reducing childhood malnutrition also highlighted the problem of incomplete reporting and poor quality literature.

The multi-method nature of the positive deviance approach precludes the use of Randomised Control Trials and purely quantitative designs which are typically coveted within healthcare (Evans, 2003). In addition, researchers are yet to agree on universal quality indicators and guidance for reporting qualitative methods (Garside, Pearson, & Moxham, 2010). This may have contributed to the poor quality and lack of detail that was observed within the included articles, although the problem is likely to have been

compounded by limited guidance that exists on how to implement the approach (Lawton et al., 2014). Consequently, we cannot conclude whether the limitations of the included studies are due to their poor quality design and methods, insufficient reporting, or inadequate guidance.

As seen more widely within the quality improvement literature (Alexander & Hearld, 2009), details were particularly lacking where the positive deviance approach had been applied within complex interventions. Although it is often difficult to disentangle the effects of multiple interventions, as a minimum, researchers should assess and report whether the positive deviance approach has been implemented appropriately.

2.5.2 Defining positive deviance

The definitions of the positive deviance approach that were used within healthcare applications shared similarities with each other and with those that have been used in other industries and settings (Pascale & Sternin, 2005; Schooley & Morales, 2007). Nevertheless, it is concerning the frequency with which limited or no definitions and/or information about the processes used were reported. Detailed definitions and explanations of how to implement the positive deviance approach are paramount due to its novelty within healthcare organisations. An exemplar definition would fully describe all aspects of the approach including its focus on exceptional performance, the importance of community involvement, and the ability to succeed through different or deviant behaviours while facing the same resource constraints as others. Information about the process that has been followed must also be provided, whether this be the Bradley et al. (2009) process or one that has been adapted from another field. Without this information, the ability to critically assess the literature and build on previous shortcomings is limited. If researchers wish to understand the effectiveness of improvement approaches, then precise definitions, categorisation, and operationalization is required (Alexander & Hearld, 2009).

Further exploration of how to define positively ‘deviant’ strategies and behaviours within healthcare organisations is warranted. Positive deviants - whether they be individuals, teams, or organisations - can be defined and identified in four different ways: statistically by those that differ from the average; based on their extreme conformity to norms, through others’ reactions to the behaviours of positive deviants, or by a departure from the norms (Spreitzer & Sonenshein, 2004). This final definition is considered most relevant to the positive deviance approach. However, within healthcare there may be implications to the definitions that are used. For example, despite an individual’s honourable intentions, deviating from the normal clinical guidelines could result in the loss of professional registration. Within this review, the limited amount of detail that was contained within the included articles hindered

assessments of whether positive deviants succeed through truly ‘deviant’ or different behaviours or whether they simply did better than others along a continuum of performance. If success is achieved through non-deviant means then one might question whether the positive deviance approach is truly being applied. Instead, we may just be learning from high performers (Nelson et al., 2001) or those who demonstrate high levels of resilience (Hollnagel, Braithwaite, et al., 2013b). In these circumstances the positive deviance approach might therefore be better served by a more appropriate title.

2.5.3 Study design and methods used

Healthcare applications of the approach focused on the first two stages of the positive deviance process and used quantitative and qualitative methods as suggested by Bradley et al. (2009). Despite this, various concerns arose from the study designs and methods that were chosen. Some studies did not clarify who the positive deviants were and how they had been identified, if indeed, they had been identified at all. The criteria used to distinguish positive deviants often appeared arbitrary and cut-off points were not justified, i.e. it was unclear which individuals, teams, or organisations were and were not classified as positively deviant. Vague definitions of the approach compound this problem, making it difficult to generate criteria and thus identify positive deviants. In addition, the lack of comparison group within included articles restricted assessments of whether the positively deviant success strategies were unique to positive deviants or in fact, common across everyone within the community.

Theory and/or frameworks were rarely used to guide and direct explorations of positively deviant behaviours. Consequently, we cannot conclude whether the factors influencing performance have been comprehensively assessed or whether success was achieved through unobserved or unmeasured behaviours (Michie & Prestwich, 2010). Theory can also help to structure literature and, in the future, would facilitate comparisons between studies of a similar nature (Michie & Prestwich, 2010).

The 3rd and 4th stages of the positive deviance process were rarely conducted, or even acknowledged as subsequent steps within included articles. The novelty of the literature field within healthcare organisations may mean that this research is ongoing and will subsequently be published. Alternatively, the resources required to ‘scale up’ projects may have reduced the feasibility of conducting these stages. Where stages 3 and 4 have been conducted, more rigorous designs and methods should have been used. Bradley et al. (2012b) report the most comprehensive test of positively deviant strategies (stage 3) – a cross-sectional survey was completed by 537 acute care hospitals in the United States to test their associations with risk-standardized mortality rates following acute myocardial infarction. Although this study was very robust, future

research should attempt to assess causal relationships between positively deviant strategies and the outcomes of interest, not just their correlations (Alexander & Hearld, 2011). More research addressing these stages is required to evaluate the effectiveness of the approach in improving patient outcomes. Research is also required to understand the mechanisms and/or theories of change which underpin improvements that are generated through the positive deviance approach.

2.5.4 The narrow focus of positive deviance applications

Findings from this review highlighted that many previous healthcare applications of the positive deviance approach have focused on narrow or specific outcomes and processes of care. Few of the included studies focused on broader outcomes of care, and none of those that had the broadest scopes were conducted within a western healthcare setting (Marsh et al. (2002) assessed household new-born care practices in Pakistan; Naimoli et al. (2008) explored immunisations programmes within six sub-Saharan African countries; and Bradley et al. (2012a) assessed the performance of primary healthcare units in Ethiopia).

The dearth of broad applications of the positive deviance approach within western healthcare settings represents a significant gap in the literature and a departure from the widely accepted ‘systems approach’ to safety management (Reason, 2000). In contrast to primarily focusing on the unsafe actions of individual clinicians (that are caused by factors such as inattention, carelessness, forgetfulness), the systems approach recognises that individuals are fallible and that errors occur even within teams and organisations that perform exceptionally well (Reason, 2000). This approach places greater focus on understanding how pre-existing, or latent factors within the system (e.g. the work place and organisation) can lead to active failures by clinicians on the frontline (Vincent, Taylor-Adams, & Stanhope, 1998). Reason’s (1995) Organisational Accident Model was developed to explain the cause of accidents within complex industrial systems and has been adapted to healthcare settings. Medical error results from a sequence of events that begin, not with an individual clinician, but rather with organisational or external processes and decisions (e.g. decisions made about policy, regulation, planning, and forecasting). These decisions manifest themselves within the local working conditions of a hospital ward or general practice and promote the occurrence of error (Reason, 1995).

A framework by Vincent et al. (1998), which was derived from the Organisational Accident Model (Reason, 1995), identifies some of the ‘upstream’ or latent factors that influence clinical practice and can contribute to error and harm. These factors relate to the task, the multidisciplinary team, the working environment, organisational and management factors, and even the institutional context e.g. regulation, payment and

professional training institutions (Shortell & Singer, 2008; Vincent et al., 1998). If one accepts this conventional thinking about safety, then the latent factors that contribute to patient falls (e.g. poor staffing and communication) may well be the same factors that contribute to pressure ulcers, infections, and other safety incidents.

It has been proposed that the limited success of previous patient safety initiatives may result from narrowly defined problems, solutions that only address specific circumstances (Shortell & Singer, 2008), and interventions that only target specific causes of error e.g. by delivering staff training or rewriting protocols (Vincent et al., 1998). Although it may be easier to address narrow and specific problems rather than to create widespread organisational change (Pronovost & Goeschel, 2010), solutions that are designed to address specific problems are likely to create different problems elsewhere (Shortell & Singer, 2008). As such, it may be necessary to take a broader approach to safety management which focuses on the upstream, latent factors that result in various different types of error. This review highlights that little is currently known about whether the positive deviance approach can be applied within a western healthcare setting to address broader issues of quality and safety. If we can identify positive deviants that succeed across broad outcomes of care, there are likely to be some underlying, latent factors that facilitate their success (Reason, 1995, 2000).

2.5.5 Community involvement

Top down, complex interventions are often reported to have short-lived, modest or negligible effects, and these are frequently attributed to differing contexts and inadequate community involvement (Hawe, 2015; Hawe, Shiell, & Riley, 2009). In principle, positive deviance provides a bottom up approach which involves healthcare staff throughout the process. It identifies context specific behaviours that have already been used to succeed. However, this review observed very little community involvement, a finding that was replicated within the previous systematic review on childhood malnutrition (Bisits Bullen, 2011). Engaging staff more broadly in quality improvement projects is known to be difficult (Dixon-Woods, McNicol, et al., 2012), therefore, applying the positive deviance approach within complex and demanding healthcare organisations is likely to present challenges that may not have been faced when applying the approach in other settings. Research must identify practical, yet robust methods to facilitate staff involvement and should explore the level of community involvement that is required to maximise outcomes.

2.5.6 Relationships between quality, methods, and involvement

Two polarised observations about how the positive deviance approach had been implemented in healthcare organisations emerged through this review. Studies that intensively involved healthcare staff commonly used word of mouth/observation and DADs to conduct stages 1 and 2 of the Bradley et al. (2009) process. Typically, these studies were of lower quality, predominantly due to a lack of detail reported in the published articles. In contrast, the higher quality studies were typically conducted by external research teams who used extensive methods and resources to implement the approach. There was minimal staff involvement in these studies - other than being included as participants.

Quality improvement approaches need to be practical enough for clinicians to implement on the frontline. If positive deviance is to become a useful approach for improving quality within healthcare organisations, it requires feasible and efficient methods which maintain rigour and quality whilst effectively involving staff and patients. Within the current literature this balance is yet to be struck.

2.5.7 Review limitations

The limitations of this review should be considered alongside its findings. Despite an inclusive search strategy, relevant articles may not have been identified. Articles that did not explicitly stated that the positive deviance approach had been applied will have been excluded from the review. Publication lags may also have biased the amount of research that was available for stages 3 and 4 of the Bradley et al. (2009) process. Excluding grey literature and non-peer reviewed articles may have overestimated the quality of the literature field. These factors however support our findings that the positive deviance approach is inadequately defined, and the quality of applications is low.

Poor and limited reporting of details within articles may have led to an unduly negative assessment of study quality. Future publications which report on applications of the positive deviance approach should provide sufficient detail to facilitate the replication and refinement of the methods used. Finally, this review was unable to assess the association between the study designs and methods that were used and the effectiveness of the approach in improving patient outcomes. Calculations of effect sizes are precluded by the limited number of applications, the focus on heterogeneous outcomes, and use of qualitative methods. These, however, are important directions for future research.

2.5.8 Implications and recommendations

The positive deviance approach has great potential to improve the quality of healthcare, as solutions are likely to be sustainable, acceptable to staff, and feasible within current resources (Marsh et al., 2004). Despite the 'bottom up' philosophy, most applications have been conducted by external research teams. The following recommendations are put forward to develop the positive deviance approach and to make it more accessible to frontline clinicians and the wider improvement community.

- Studies must clearly define the positive deviance approach and the specific process that has been followed.
- The methods and criteria that are used to identify positive deviants must always be stated regardless of whether they are exceptionally performing individuals, teams or organisations. Issues regarding the reliability and validity of the data analysed should also be discussed.
- The quality and reporting of positive deviance applications can be improved by using the relevant elements of existing research reporting guidelines such as CONSORT and SQUIRE (Ogrinc et al., 2008; Schulz, Altman, & Moher, 2010).
- Authors should clarify whether the positively deviant success strategies that have been identified are considered deviant, different, or just better than those that are used by others in a community.
- A theoretical approach should be taken to identify and define positively deviant success strategies in order to facilitate appropriate generalisations across healthcare problems and topics.

2.6 Conclusions

Various shortcomings are observed within healthcare applications of the positive deviance approach, not all of which are unique to this setting (Bisits Bullen, 2011). The quality of methods and reporting of studies needs to improve, theories and frameworks should be applied, and comparison groups must be used to ensure factors are comprehensively assessed and that hypotheses can be attributed solely to positive deviants. Additional research and discussion amongst academics and clinicians is required to find a balance between using practicable methods, maintaining quality, and involving healthcare staff throughout the positive deviance process. Finally, research targeting the latter stages of the process is required to assess and compare the effectiveness of positive deviance with alternative improvement approaches. Effectiveness reviews are rarely conducted within quality improvement research, but they are necessary to help organisations decide which approach to use and how best to invest their scarce resources (Alexander & Hearld, 2009).

Chapter 3

Can positively deviant elderly medical wards be identified using routinely collected safety data?

3.1 Chapter summary

Studies 2 and 3 report on an application of the positive deviance approach which was conducted within an acute NHS hospital setting. Study 2 (chapter 3) focuses on the first stage of the Bradley et al. (2009) process: identifying positive deviants who demonstrate exceptionally high performance. Study 3 (chapter 4) explores the second stage of this process: generating hypotheses about the positively deviant behaviours that facilitate success.

The study discussed in this chapter tests a method for identifying positively deviant elderly medical wards. It was conducted over three phases. Phase 1 explored sources of NHS safety data to assess their suitability for identifying positively deviant wards. Phase 2 tested a method for identifying these wards. Routinely collected NHS Safety Thermometer (ST) data were analysed to identify a) positively deviant elderly medical wards that demonstrated exceptional performance on a broad outcome of safety, and b) matched comparison wards with slightly above average safety performances. During phase 3, staff and patient perceptions of safety were collected using validated surveys on each of the participating wards. These data were assessed alongside the NHS ST data to examine the extent to which positively deviant ward selection was supported by other perspectives of safety. This chapter highlights the challenges associated with analysing routinely collected data and generates methodological guidance to support the identification of positively deviant wards within healthcare settings.

3.2 Background

The processes used to apply the positive deviance approach within different settings were discussed in chapter 1. Although an initial step always involves identifying positive deviants, each process offers slightly different guidance on how this should be done. For example, in addition to quantitative data the ‘4Ds process’ utilises

intrinsic knowledge about those who succeed (Sparks, 2004; The Positive Deviance Initiative, 2010), and childhood malnutrition studies engage community members and use situation analyses to identify positive deviants (CORE, 2002). The context and environment of an intervention are equally important as ‘what you do’ and ‘how you do it’ (Bate, Robert, Fulop, Øvretveit, & Dixon-Woods, 2014). Therefore, it could be argued that international public health applications of the positive deviance approach provide limited guidance for those who want to adopt it within the NHS and other complex healthcare systems.

There are two key aspects to identifying positive deviants: 1) a performance measure (data source) must be selected; and 2) data must be analysed and interpreted to identify outliers. The methods previously used to identify positive deviants within healthcare organisations were discussed in study 1 (chapter 2). Although most studies analysed quantitative, routinely collected data as suggested by Bradley et al. (2009), some studies selected locally derived measures which limits the ability to compare performances between healthcare providers. The systematic review did not identify any UK applications of the positive deviance approach, therefore, we currently do not know which sources of routinely collected NHS data can be used to identify positive deviants. Furthermore, as discussed in section 2.5.4 of chapter 2, few studies have identified positive deviants that succeed on broad outcomes of care despite a focus on broad rather than narrow solutions to problems being an important direction for patient safety research (Shortell & Singer, 2008; Vincent et al., 1998).

When analysing and interpreting performance data to identify positive deviants Bradley et al. (2009) suggest that data are ranked. However, there are problems associated with doing this which will be discussed in section 3.8.1 (Adab, Rouse, Mohammed, & Marshall, 2002; Jacobson, Mindell, & McKee, 2003). Furthermore, Bradley et al. (2009) provide no guidance on what constitutes positive deviance. Although the criteria, timescales, and analyses used to identify positive deviants will vary by application, some concrete guidance, which can be generalised across applications, may help researchers and clinicians to more accurately identify positive deviants within healthcare settings.

When positive deviants have been identified, it is vital that confidence is held in the fact that they truly demonstrate exceptional performance within their population. Erroneous identification will compromise the qualitative research and may lead to behaviours, processes, or structures being incorrectly labelled as positively deviant success strategies. To our knowledge, the validity and reliability of a method for identifying positively deviant healthcare teams is yet to be empirically tested. This can be assessed by exploring whether the identification of positively deviant teams through

routinely collected data is supported by other sources of safety information (e.g. validated measures of staff and patient perceptions of safety).

3.3 Study design, aims and objectives

The brief summary of the literature above highlights evidence gaps that are pertinent to stage 1 of the Bradley et al. (2009) process. The overarching aim of this study was to critically evaluate the process of identifying positively deviant multidisciplinary ward teams using a routinely collected, broad outcome measure of safety. An observational, quantitative study was conducted in three phases with the intention of generating additional guidance to support the identification of positive deviants within healthcare organisations.

Phase 1 of this study examined safety information within the NHS to select a broad measure of safety through which positively deviant multidisciplinary ward teams could be identified. While selecting a data source a study population was also decided upon. Phase 2 tested a robust method for identifying positively deviant multidisciplinary ward teams that demonstrated exceptional performance on a broad measure of safety. A group of matched comparison wards were also identified in preparation for phase 3 and subsequent stages of the positive deviance application. During phase 3, staff and patient perceptions of safety were assessed on the positively deviant and matched comparison wards to explore whether they supported the identification of positively deviant wards. The extent to which positively deviant wards retained their exceptional safety performances was also assessed. The objectives for this study were therefore to:

Phase 1: Select a routinely collected, broad measure of safety through which positively deviant, multidisciplinary ward teams can be identified within the UK's NHS.

Phase 2: Test a method for identifying positively deviant multidisciplinary ward teams who perform exceptionally well on a broad measure of safety.

Phase 3: Assess the extent to which the method used to identify positively deviant wards is supported by other perspectives of safety.

Explore whether positively deviant performance on a broad measure of safety can be sustained over prolonged periods of time.

Each phase of this study is presented below with its own introduction, method, results, and discussion. An overarching discussion amalgamates all of the study

findings, discusses the inherent challenges, and presents some recommendations to support the identification of positive deviants.

Phase 1: Selecting a routinely collected, broad measure of safety

3.4 Phase 1 Introduction

When identifying positive deviants three things must be considered: 1) which intractable problem will the approach address; 2) which population will the approach be conducted within; and 3) which data source will be used to identify positive deviants. Although this thesis applied the positive deviance approach within the field of patient safety, the study aimed to critically evaluate the *process* of identifying positive deviants rather than to *improve* an intractable problem per se. Consequently, the study was data led – the specific intractable problem and study population were chosen based on the availability of a routinely collected data source.

3.4.1 Measuring safety within the NHS to identify positive deviants

The ability to assess performance on a seemingly intractable problem is fundamental to identifying positive deviants and can be done using data from both outcome or process measures. Outcome measures, such as mortality statistics, are most pertinent to patients and healthcare providers/commissioners as clinical care aims to improve patient outcomes (Jha, 2006). However, the infrequency of some outcomes (e.g. never events) and the need for careful risk adjustment can create difficulties when measuring performance (Jha, 2006; Pronovost et al., 2004). Processes are measured when there is evidence to link them to an outcome of interest, for example, measuring the use of the surgical safety checklist which helps to reduce unavoidable deaths and surgical complications (National Patient Safety Agency, 2009). Processes occur more frequently than outcomes and tend to be more pertinent to frontline clinicians as they are arguably within their direct control (Jha, 2006; Pronovost et al., 2004).

Healthcare organisations use several approaches to measure safety outcomes and processes (Power, Stewart, & Brotherton, 2012; Zhan & Miller, 2003). Routinely collected administrative data, such as the Hospital Episode Statistics (HES - Health

and Social Care Information Centre, 2014a), are used to facilitate provider payments and compliance with reporting regulations (Zhan & Miller, 2003). Mandatory and voluntary incident reporting systems (e.g. Datix and Patient Advice and Liaison Services) gather information about adverse events. Case note reviews provide an in depth, retrospective assessment of harm (Power et al., 2012), and audits systematically assess clinical performance in line with agreed standards.

A vast amount of safety information is available within the NHS. Healthcare organisations maintain dashboards, collect incident reports and complaints, use risk management papers, and complete clinical audits (Vincent, Burnett, & Carthey, 2013). Safety information is also publicly available through the Care Quality Commission (2016), Dr Foster Intelligence (2016), and various websites such as NHS Choices (2016a) and the Health and Social Care Information Centre (2016).

When data are used to judge performance we are morally obligated to ensure that they truly reflect underlying differences in the quality and safety of care (Lilford, Mohammed, Spiegelhalter, & Thomson, 2004). Bradley et al. (2009) suggest that positive deviants should be identified using ‘concrete’ and ‘widely endorsed’ measures that incorporate performance variations. Healthcare data must therefore be valid and reliable to ensure that positive deviants truly outperform. Bradley et al. (2009) also suggest that data should be ‘accessible’. If the positive deviance approach is conducted across multiple NHS trusts, or if it is conducted by external teams, it can be difficult and time consuming to gain access to data held within a trust.

There are various challenges to measuring and monitoring safety within healthcare which are pertinent to the identification of positive deviants. Although NHS trusts measure similar outcomes and processes, data are not always collected consistently over the same timeframes, or available at the same level across clinical units. Therefore, in addition to the Bradley et al. (2009) guidance, when identifying positive deviants the ‘consistency’ of data should also be assessed to ensure that data are collected in the same way across the whole population. Most safety data are also backward facing – they measure past events and errors (Lawton et al., 2014). Compounding this, publication lags mean that data are already outdated at the point when they become available (Jacobson et al., 2003). The ‘recency’ of data is critical to judging current performance.

3.4.2 Identifying a homogenous population

The positive deviance approach is built on the premise that positive deviants succeed “against the odds” and despite facing the same constraints as others (Lapping et al., 2002; Marsh et al., 2004). A variety of factors can make it more or less

challenging to deliver safe patient care within healthcare settings. Among other things, these constraints relate to physical resources (e.g. staffing and equipment), patients' medical conditions or diagnoses, and pertinent external factors such as patient demographics and organisational characteristics. Therefore, when identifying positive deviants the homogeneity of a population should be maximised to ensure that, as far as possible, performance comparisons are fair and that positive deviants face the same constraints as others. However, Bradley et al. (2009) provide no guidance on how to ensure that a homogenous population is selected.

Homogeneity is also important when disseminating positively deviant strategies (stage 4 of the Bradley et al. (2009) process). The bottom-up, internally generated nature of positively deviant strategies ensures that they are acceptable to others, sustainable over time, and feasible within current resource (Marsh et al., 2004). If populations lack homogeneity and/or positive deviants experience fewer challenges than others, then success strategies are less likely to be adopted by the wider population. Others will not consider them to be pertinent to their circumstances (Dixon-Woods, McNicol, et al., 2012). For example, elective surgical wards and accident and emergency departments treat different patients, have different resources, and face different challenges when delivering safe patient care. The positively deviant strategies used on elective surgical wards may not be effective, acceptable, or feasible within emergency departments where teams work in a more varied and unpredictable environment.

Phase 1 of this study sought to explore existing NHS routinely collected measures of safety through which positively deviant teams could be identified. The underlying premise of this thesis was that if multidisciplinary teams can succeed on broad outcomes of care there are likely to be some underlying or latent factors that facilitate their success (see chapter 2 section 2.5.4 for further details). As such, this phase of the study particularly sought to identify a broad rather than narrow measure of safety. While doing this a homogenous study population of discrete multidisciplinary ward teams was also selected for subsequent phases of the study. Applying the approach to discrete multidisciplinary ward teams enabled positively deviant performances to be attributed to individual microsystems which have their own processes, outcomes, and cultures (Nelson et al., 2001).

3.5 Phase 1 Method

3.5.1 Design

Academic and grey literature were searched to identify broad measures of safety that are used within the NHS. Routine and non-routine data, that were either publicly available or internally held, were explored so as not to limit the potential data sources used to identify positive deviants. Potential study populations were also explored.

3.5.2 Procedure

Data were assessed against six criteria to identify a broad measure of safety that could be used to identify positively deviant multidisciplinary ward teams. Criteria 1 and 2 were taken directly from the Bradley et al. (2009) guidance. Criteria 3 and 4 were based on the literature presented above, and criteria 5 and 6 arose from our study aim to understand positive deviance at ward level for a broad measure of safety (rather than a specific measure e.g. wound infections).

Criterion 1: Data must be valid and reliable indicators of safety

Bradley et al. (2009) propose that positive deviants should be identified using widely endorsed, validated performance measures. Data therefore must be reliable and valid to ensure that positive deviants do actually achieve exceptional outcomes. Data must also be clearly associated with exceptional or poor performance. For example, incident reporting rates would not provide a useful measure for the identification of positive deviants as high rates of reporting may indicate poor care (a negative behaviour), but could equally indicate that staff are highly attuned to safety risks (a positive behaviour). There were three ways in which data were considered to be valid and reliable. First, data fulfilled this criterion if there was evidence to support the development of the measure and/or the testing of its validity and reliability (e.g. through publications or via information on websites). Second, data were included if they were routinely collected within the NHS and considered to be a national statistic or data source (e.g. they were available through NHS websites such as the Health and Social Care Information Centre or provider payments were associated with them). Third, performance on any measure which fulfilled either of these requirements had to clearly represent safe or unsafe care.

Criterion 2: Data must be accessible

Bradley et al. (2009) propose that performance measures should be accessible. Although rich, internally held data are collected through local improvement processes and audits, quality and safety data are increasingly published within the public domain (Vincent et al., 2013). When conducting the positive deviance approach within multiple NHS trusts, data should be easily accessible to reduce the requirements for lengthy NHS ethical approval processes. Data were considered to fulfil criterion 2 if they were publicly available and/or it was possible for the researcher to access them without having to gain NHS ethics and trust permissions for each individual organisation.

Criterion 3: Data must be collected consistently across a population

Fair performance comparisons require data to provide a consistent performance measure across all wards within a population. If data are not collected on certain wards, or if they are collected using different procedures, one cannot know how wards truly compare to each other. Data fulfilled this criterion if set procedures were available regarding how they should be collected. This was assessed through publications or information on websites, and assessment focused on whether data were (or should be) collected consistently in the main. Smaller deviations in consistency (i.e. coding differences for HES data, differing clinical judgements, and minimally different procedures for distributing surveys) were overlooked for the pragmatic purpose of this study.

Criterion 4: Data must represent recent performance

By their nature routinely collected data represent previous rather than current levels of performance. Stage 2 of the positive deviance process may be conducted when these data are months, or even years, out of date. As far as possible, the data used to identify positive deviants should provide an accurate, up to date picture of performance. Data represented recent performance if they were collected and published more frequently than annually.

Criterion 5: Data must be available at ward level

This study applies the positive deviance approach to multidisciplinary ward teams where the majority of clinical care is delivered (Nelson et al., 2001). The data used to identify positive deviants must assess performance at the ward level rather than inferring performance through organisational or individual level measures. Data fulfilled

this criterion if it was possible for the researcher to access ward level data without having to gain NHS ethics and trust permissions.

Criterion 6: Data should measure a broad outcome of safety

This study also differs from previous healthcare applications of the positive deviance approach by focusing on a broad measure of safety rather than narrow and specific outcomes or processes (Baxter, Taylor, Kellar, & Lawton, 2015). Data were considered to measure a broad outcome if they assessed latent, upstream factors that may impact on more than one safety outcome (e.g. safety culture), or if they assessed a number of different narrow safety outcomes or process of care (e.g. through a composite measure).

For all of the criteria above, the researcher (RB) liaised with the other researchers (RL, IK, and NT) when it was not clear whether a data source fulfilled a criterion or not. Decisions were made through discussion.

As previously discussed, this application of positive deviance is data led. While assessing NHS data sources against these criteria, potential study populations were also reviewed. A study population was iteratively selected by considering: its relevance to the chosen data source; the priority of the population within the NHS; the challenges faced in delivering safe patient care; the discreteness of the ward teams; and the ability to conduct both the later phases of this study and the subsequent stages of the positive deviance process.

3.6 Phase 1 Results

While designing this study 13 data sources were explored. Although it was not always possible to definitively assess the data sources, most were considered not to fulfil several of the criteria. Table 3.1 shows which criteria each of the data sources fulfilled. The NHS Safety Thermometer (ST) was the only source to meet all six criteria, therefore, these data were used to identify positively deviant wards.

ST data are routinely collected and publicly available via the Health and Social Care Information Centre (HSCIC - 2014b) at NHS trust, speciality, and ward level. On a single day every month, ST data are collected from all eligible patients across all acute wards within the NHS. The point prevalence survey assesses four common patient harms: falls, pressure ulcers (PUs), venous thromboembolism (VTEs), and urinary tract infections in catheterised patients (UTIs). These data are combined to create a

composite measure of ‘harm-free care’ which represents the proportion of patients who have not experienced any harm (Health and Social Care Information Centre, 2014b). High performance for harm-free care indicates an ability to perform exceptionally well across a number of different measures of safety.

While examining the data sources elderly wards were selected as the study population. The harms measured within the ST data are pertinent to an elderly population (falls, PUs, VTEs, and UTIs) and, compared to other clinical specialities (e.g. maternity), elderly wards displayed performance variations making it possible to identify positive deviants with exceptional performance. Elderly patients are particularly vulnerable to patient safety events (Sari, Cracknell, & Sheldon, 2008; Thomas & Brennan, 2000) making it especially challenging to deliver exceptionally safe patient care on these wards. Furthermore, the UK’s increasingly elderly population makes these services a high priority to the NHS (Oliver, Foot, & Humphries, 2014).

Elderly patients are often cared for on various different types of wards such as stroke, short-stay assessment, medical, and long-stay rehabilitation wards/units. Each type of ward faces different challenges in delivering safe patient care. Although NHS trusts configure their elderly care services differently, most contain ‘elderly medical wards’, and so to increase homogeneity while retaining a high volume of wards, our study population was limited to elderly medical wards.

Table 3.1 Sources of NHS safety data assessed against six criteria for identifying positive deviants

Data source	Criterion 1: valid and reliable	Criterion 2: accessible	Criterion 3: consistent	Criterion 4: recent	Criterion 5: ward level data	Criterion 6: broad measure
Hospital Episode Statistics	✓	✗	✓	✗	✗	✓
NHS Staff Survey	✓	✓	✓	✗	✗	✗
Indicators for Quality Improvement	✓	✓	✓	✗	✗	✗
NHS Safety Thermometer	✓	✓	✓	✓	✓	✓
National award bodies	✗	✗	✗	✗	✗	✓
National / local audit data	✓	✓ / ✗	✓ / ✗	✓ / ✗	✗	✗
Care Quality Commission	✓	✓	✗	✗	✗	✓
Dr Foster Intelligence	✓	✓ / ✗	✓ / ✗	✗	✗	✓
National Inpatient Survey	✓	✓	✓	✗	✗	✗
Never events	✓	✓	✗	✗	✗	✗
National Reporting & Learning System	✗	✓ / ✗	✗	✓	✗	✓
Patient Reported Outcome Measures	✓	✓	✓	✗	✗	✗
Consultant Surgeon outcome data	✓	✓	✓	✗	✗	✗

3.7 Phase 1 Discussion

During phase 1, the NHS ST data were selected as a broad measure of safety through which positively deviant elderly medical wards would be identified. Explorations highlighted the large number of NHS data sources that were not suitable for this purpose.

Some data sources were considered to fulfil the first criterion of being reliable and valid based on the evidence base used to develop and/or validate them e.g. Patient Reported Outcome Measures (PROMs - Black, 2013; Hahn et al., 2007). Others fulfilled this criterion as they are already used extensively within the NHS to make performance judgements e.g. the Care Quality Commission (2016). Despite this, the extent to which some of these measures are reliable and valid can be questioned. For example, the NHS Staff Survey is criticised for having low response rates which are not representative of all staff, especially when analysing data below an organisational level (Picker Institute Europe, 2015a; Powell, Dawson, Topakas, Durose, & Fewtrell, 2014).

Most data sources were publicly available in some form through websites (criterion 2). However, some did not provide a broad measure of safety (criterion 6 – e.g. 'never events' data relate to very specific adverse events such as wrong site surgery or misplaced nasogastric tubes), and many of the data sources were not publicly available at ward or even speciality level (criterion 5). For example, the My Hospital Guide published by Dr Foster Intelligence (2016) provides organisation level data on commissioning, weekend care, mortality, and the impact of drug and alcohol problems but these data are not publicly broken down to levels lower than the organisation.

The majority of the data sources were also considered to have consistent data collection (criterion 3), however, similar to criterion 1, the extent of this consistency is questionable which will ultimately affect the data's reliability and validity. For example, guidance for collecting PROMs data exists but surveys are implemented within each individual ward and organisation using local discretion (Health and Social Care Information Centre, 2015). Furthermore, the coding of diagnoses and consultant episodes within the HES will vary by trust, thus affecting the consistency of data collection (Jacobson et al., 2003).

Finally, these explorations highlighted the problems associated with collecting recent performance data (criterion 4). Many of the data sources are published annually e.g. the national inpatient and staff surveys (Care Quality Commission, 2014; Picker Institute Europe, 2015b), and several data sources (e.g. HES) are not published until

several months after they were originally collected. This makes it extremely difficult to make any real time assessments of performance.

The NHS ST data were the only routinely collected measure of safety that fulfilled all the criteria. Data were publicly available at ward level, and monthly publications ensured that they were relatively recent. However, there are various limitations to the NHS ST. Data does not represent all patient care as they are opportunistically collected at a single time point each month making them more susceptible to case mix and seasonal variations (Power et al., 2012)[1]. The data can only be used as an indication of ward level safety as many pertinent aspects of safety (e.g. medications) are not represented within the composite measure of harm-free care. Coding errors are a common concern for routinely collected data and may exist within the ST data (Buckley, Cooney, Sills, & Sullivan, 2014; Zhan & Miller, 2003). Coding errors can arise through gaming, therefore, it is important to note that the NHS ST is incentivised by a national payment scheme (Department of Health, 2014; Shaw, Taylor, & Dix, 2015; Vincent et al., 2013). Unintentional coding errors can also exist and are compounded by poorly defined measures (Vincent et al., 2013). Each harm contained within the NHS ST is defined but these are subject to interpretation (Buckley et al., 2014; Power et al., 2014). Finally, ST data were not designed to enable performance comparisons between providers (Power et al., 2014). The negative consequences associated with identifying performance outliers will be discussed later (section 3.15.1), however, some of these may be less pertinent when identifying positive rather than negative deviants (Lilford et al., 2004; Shahian & Normand, 2015).

In addition to these ST limitations, there are wider implications of using routine data to identify positive deviants. Performance variation can arise because measurement is conducted within a social context (Dixon-Woods, Leslie, Bion, & Tarrant, 2012; Vincent et al., 2013). When data are collected, frontline staff neither make decisions about the same things, nor decide things in the same way (Dixon-Woods, Leslie, et al., 2012). This is not problematic if data are coded consistently and are only used to compare performances of a single provider. However, the positive deviance approach seeks to compare the performances of several different providers and so different social contexts will affect data collection. Furthermore, healthcare organisations retrospectively measure the absence rather than presence of safety (Hollnagel, Leonhardt, Licu, & Shorrock, 2013). Harms are often well publicised (Appleby & Bell, 2000) and little attention is paid to the consistent delivery of safe care. When consistently safe care is recognised this is often done retrospectively (Lawton et al.,

[1] Attempts were made to limit these effects during phase 2 by extracting ST data for a homogenous population over a 12 month period (see section 3.9 for further details).

2014). Measurement and monitoring systems therefore say nothing about how safe care currently is, how safe it will be in the future, and whether organisations respond and learn to the data that are collected (Vincent et al., 2013). This poses a problem for the positive deviance approach which aims to prospectively identify exceptional performance.

Phase 2: Testing a method for identifying positively deviant elderly medical wards

3.8 Phase 2 Introduction

Once a data source has been selected, data need to be analysed and the results interpreted in order to identify positive deviants within a population. Outliers are commonly identified within healthcare systems, but due to the traditional 'find and fix' approach to improving quality and safety (Hollnagel, Leonhardt, et al., 2013), emphasis is placed on identifying negative outliers or poor performers. The positive deviance approach seeks to identify outliers at the opposite end of the performance spectrum – those who display exceptionally high performance. The introduction to phase 2 of this study will discuss the ways in which outliers and positive deviants have previously been identified within healthcare organisations. It will also consider who positive deviants should be compared to during subsequent stages of the Bradley et al. (2009) process.

3.8.1 How can safety data be analysed to identify positive deviants?

Three common approaches are used within the NHS to assess variation: standard setting, e.g. through clinical audits; hypothesis testing to assess statistical differences between providers; and league tables to rank performance from best to worst (Mohammed, Cheng, Rouse, & Marshall, 2001). League tables are commonly used to identify outliers, but there is little evidence to say that those at the top and bottom of a league table are the best and worst performers within a population (Austin et al., 2015; Healthcare Association of New York State, 2013; Rothberg, Morsi, Benjamin, Pekow, & Lindenauer, 2008). League tables are based on the assumption that providers use different systems to produce different performances (Adab et al., 2002). However, within healthcare settings, league tables compare different providers (e.g. hospitals) that operate within the *same system* (e.g. acute NHS trusts). Within any stable system

performance variations will always exist - some of which will arise through chance. Consequently, league tables do not always represent absolute differences in performance.

Statistical Process Control (SPC) provides a philosophy, strategy, and set of methods that are increasingly used to generate quality improvement (Thor et al., 2007). These methods include control charts, run charts, and funnel plots among others. SPC is based on Shewart's theory that variation will always exist within stable systems, and it is used to help healthcare organisations distinguish between 'signals' and 'noise' (Mohammed, 2004). SPC methods plot data against average performances and apply upper and lower control limits which are usually set at two and three standard deviations or 95% and 99.8% confidence levels (Mohammed et al., 2001). Data that exceed these control limits (signals) display special cause variation – performance has an assignable cause. Data that fall within control limits (noise) display common cause variation – they do not change more than would be expected through chance. League tables and statistical testing simply improve performance through rewards and sanctions, whereas Shewart suggests different action should be taken depending on the type of variation identified. Signals or 'special cause variation' should be learnt from or eliminated, but where noise or 'common cause variation' exists improvement will only be gained by changing the system or process (Mohammed, 2004; Mohammed et al., 2005).

Bradley et al. (2009) previously proposed that positive deviants should be identified by ranking performances, and study 1 (chapter 2) highlighted many previous healthcare applications have done this by classifying the top percentage or number of a ranked population as their positive deviants. SPC confers various advantages over ranking systems. SPC does not rank individual providers and so encourages a 'systems approach' to quality improvement (Adab et al., 2002). When identifying outliers through hypothesis testing a level of statistical certainty must be set but there is no accepted guidance on what level to use (Shahian & Normand, 2015). Increasing the specificity of an analysis reduces its sensitivity, and vice versa, leading to false identification and/or under detection of outliers (Pronovost et al., 2004; Shahian & Normand, 2015). SPC combines statistical rigour with an ability to sensitively measure performance variation (Benneyan, Lloyd, & Plsek, 2003). It facilitates temporal analysis allowing a system's stability to be assessed, which is important as performance changes occur over time (Pronovost et al., 2004). SPC is also less sensitive to small sample sizes and non-normally distributed data making it less costly than other methods. Finally, the way in which analyses are presented can influence decision making and outlier identification. Graphical information is interpreted more quickly and accurately than data within tables (Mayer, Bottle, Rao, Darzi, &

Athanasiou, 2009; Shahian & Normand, 2015), therefore the use of SPC in identifying outliers is considered more intuitive than traditional rating systems.

Regardless of method, the identification of outliers is extremely complex. It is compounded by a lack of reliable quality and safety data (Vincent et al., 2008), and a lack of accepted standards on how they should be collected and analysed (Shahian & Normand, 2015). The effect of confounding variables must also be considered. Providers who care for a more complex case mix will inherently face greater risks of adverse outcomes. Case mix adjustments help to prevent the false identification of outliers, however, they are complex and never fully account for all confounding factors (Shahian & Normand, 2015). Patient level data are required but are not always available, and there is no common agreement on the validity of risk adjustment strategies (Adab et al., 2002; Zhan & Miller, 2003).

3.8.2 Who should positive deviants be compared to?

The importance of including comparators within positive deviance applications has previously been discussed (chapter 2). They allow positively deviant strategies to be distinguished from those that are common across the population, as without a comparison, we cannot know whether a system, process, or behaviour is positively deviant or not. While identifying positive deviants a sample of comparators should also be selected in preparation for stage 2 of the Bradley et al. (2009) process[2]. Bradley et al. (2009) suggest that purposive sampling should be used to over represent positive deviants and that the sample should include those with diverse performances. The systematic review (study 1) highlighted that healthcare applications of the approach frequently exclude comparators of any kind, and where they are included, they commonly demonstrate exceptionally poor performance (negative deviants).

The stark performance differences between positive and negative deviants make success strategies easier to identify, however, they may not provide the most useful comparison. Fundamentally the determinants of success do not necessarily oppose the determinants of failure (Kennedy et al., 1999) and so the strategies that truly facilitate success - or the nuances of them - may not be identified or properly understood by comparing positive to negative deviants. Clinicians, policy makers, and researchers will always attend to poor performance (Hollnagel et al., 2015), but exploration of successful performance provides a different perspective and helps to improve the whole population's performance rather than just the failing few. The

[2] Note: for this application of the positive deviance approach comparators were also required for phase 3 of the study.

positive deviance approach also needs to empirically distinguish itself from other approaches that assess high performance. Positively deviant strategies should differ from those that simply facilitate average and high performance, but negatively deviant comparators do not allow this distinction.

Considering the challenges faced when identifying outliers and positive deviants, phase 2 of this study sought to test a method for identifying positively deviant elderly medical wards that built upon previous applications of the approach. Throughout this phase a comparison group was also identified that would enable positively deviant strategies to be distinguished from others used within the population.

3.9 Phase 2 Method

3.9.1 Design and setting

An observational study was conducted within the Yorkshire and Humber region of northern England. Routinely collected NHS ST data were extracted for all elderly medical wards within the region and analysed at ward and trust levels to identify positively deviant wards that displayed exceptional safety performance. Matched comparison wards with slightly above average safety performance were also identified in preparation for phase 3 of the study. NHS ethical approvals were not required for phase 2 of this study as the NHS ST data are publicly available at ward, speciality, and organisation level on the HSCIC website (Health and Social Care Information Centre, 2014b).

Throughout the study the research team (RB and her supervisors) were blinded to ST performances to ensure that primary data collection during phase 3 was not biased by prior knowledge of performance levels. LT[3] extracted ST data from the HSCIC and blinded it prior to analysis. Ward data were labelled numerically and trust data were labelled alphabetically. It was not possible to match the data sets.

3.9.2 Identifying elderly medical wards within the region

The region contained 13 acute NHS trusts. Definitions of ‘elderly medical ward’ varied therefore the inclusion criteria in Box 3.1 were generated with input from a Consultant Geriatrician. These criteria enabled the identification of a homogenous

[3] LT is a PhD research student at the University of Leeds and Bradford Institute for Health Research. She is not part of the research team and so was able to blind the data independently.

group of elderly medical wards. Clinical leads within each trust were contacted to identify all wards that fulfilled these criteria. Across the region 37 elderly medical wards were identified.

Box 3.1 Inclusion criteria for 'elderly medical' wards

- Dedicated care for patients over the age of 65 years
- Provision of 24 hour, acute, medical care
- Typical patient stay exceeds 48 hours (excluding assessment units)
- Dedicated medical care (excluding speciality wards, e.g. stroke or rehabilitation)
- Dedicated multi-disciplinary ward team

3.9.3 Data extraction

ST data were extracted from the HSCIC website over the most recent 12 month period (August 2013 to July 2014) for the following measures: harm-free care, new PUs, falls with harm, new VTEs, and new UTIs. The harm-free care measure is calculated using data from each of the individual harms and is expressed as a percentage. The individual harm measures represent the prevalence of each harm on the ward at the time of survey. Data were extracted at two different levels: ward level (for all patients) and trust level (applying a filter for patients over 70 years in acute care settings). Given that wards were the unit of analysis it was necessary to limit the extent to which organisational and speciality level factors facilitated safety. Greater confidence in the ward's positively deviant status is achieved if they perform exceptionally well across the region *and* in comparison to their trust. Trust level ST data provided the closest available comparison to ward level performance because hospital and speciality level data are not consistently coded or categorised within the HSCIC. The 'over 70 years and acute setting' filter applied to trust level data limited the effect of confounding variables. Data were extracted over 12 months to reduce the effect of seasonal variations and to ensure exceptional performance was retained over a relatively long period of time.

3.9.4 Analysis

ST data were extracted for 36 of the 37 wards and all acute NHS trusts within the region. Data for one ward were missing as the HSCIC combined two wards within the region into a single data set. Cross sectional and temporal analyses were conducted

to identify positively deviant elderly medical wards. Identification was based purely on the results of the analysis – a target number of positively deviant wards had not been preselected.

3.9.4.1 Cross sectional analysis

As discussed, researchers were blinded to performance levels throughout the study, but part of the cross sectional analysis required ward and trust level data to be linked together. An external statistician (VP) conducted this part of the analysis to preserve blinding. Statistical Analysis System software (SAS) was used to calculate average ward level performances for 'harm-free care' over the 12 month period. Wards were initially ranked to identify the 'best' within the region. Due to the problems associated with ranking data, three additional cross sectional analyses were conducted to provide greater confidence in the identification of positively deviant wards.

First, a scatterplot compared ward level data with their respective trust level data to identify those that outperformed their trust. This ensured that ward level success was not purely a function of their trust's exceptional safety record. Second, a funnel plot (an SPC method) assessed each wards' average harm-free care performance against their average sample size (a measure of the indicator's precision). When sample sizes are smaller more variability can be attributed to chance (Mayer et al., 2009), therefore, this analysis ensured that positive deviants were not identified simply because they had collected data from a small number of patients. Third, high performers on composite measures do not always perform well on the measure's individual components (Shwartz et al., 2011). Average ward level performances for each individual ST harm were therefore assessed to ensure wards performed well across all harms.

3.9.4.2 Temporal analysis

The cross-sectional analysis described above explored between-ward rather than within-ward variation (Perla, Provost, & Murray, 2011). The SPC method of run charts provide a temporal view of data to learn from trends, patterns, and variations (Anhoj & Olesen, 2014). They can be used to assess consistency of performance and are particularly useful when significance testing is redundant (Perla et al., 2011). In this study run charts were created for each ward using the statistics package 'R'. As positive deviants should outperform the whole region, run charts compared monthly harm-free care performance against the region's average monthly performance (rather than against the wards' own median performance level). Furthermore, the probability based rules for interpreting run charts – shifts, trends, and runs of data points (Perla et al., 2011) – were not entirely appropriate for identifying positively deviant wards. Therefore, attention was also paid to consistent outperformance of the region and/or

substantial improvements over time which may indicate positive deviance. Run charts were similarly created for each individual ST harm.

3.9.4.3 Identification of positive deviants and comparison wards

Potential positively deviant wards were identified from each of the analyses. They were compared against the criteria in Box 3.2 which defined positively deviant performances within this study. The final sample of positively deviant elderly medical wards fulfilled all criteria.

Box 3.2 Criteria to define positively deviant performances within the study

- Wards must rank high within the region on their average 'harm-free care' performance (cross-sectional analysis)
- Wards must outperform their respective trust on their average harm-free care performance (cross-sectional analysis)
- Over the 12 month period ward level 'harm-free care' performance must consistently outperform the regional average (temporal analysis)
- Check 1: Exceptional ward performance should not be the function of a small sample size (cross-sectional analysis)
- Check 2: In general, ward performances should be above average for each individual ST harm (cross-sectional and temporal analyses)

Once the positively deviant wards were identified, comparison wards were selected in preparation for phase 3 of the study. Comparison wards with slightly-above-average harm-free care performance were selected to help distinguish factors that enable good and exceptional performance. The comparison wards were also matched to the positively deviant wards using three variables: trust type – foundation, teaching, or district hospital trust; patient gender – male, female, or mixed gender wards; and a composite measure of socioeconomic deprivation as measured by the Index of Multiple Deprivation Overall Rank (IMD - Office of the Deputy Prime Minister, 2004)[4]. Matched controls are particularly useful when analysing routinely collected data as they retain cases with similar covariates thereby increasing the sample's homogeneity (Rose & Van der Laan, 2009; Zhan & Miller, 2003). They therefore limited the effect of

[4] Information about the type of trust is publicly available. Clinical leads provided patient gender information while identifying their wards. IMD Overall Rank data were extracted at speciality level from 2012/13 HES data (Health and Social Care Information Centre, 2014a). These data were most representative of the ward.

patient and trust level confounds. Wards could not be matched for average patient age as the data provided by clinical leads were unreliable and administrative data are not routinely published. Differences between positively deviant and comparison wards for average patient age were assessed during phase 3 to ensure positive deviance was not the result of caring for younger patients with less complex presentations (Thomas & Brennan, 2000) - see section 3.13.3.6 for further details.

3.10 Phase 2 Results

The final regional sample included 34 elderly medical wards and 13 acute NHS trusts. Two wards with more than 50% missing data were excluded. Missing Value Analyses (MVA) were undertaken on the ward and trust level harm-free care data sets (Tabachnick & Fidell, 2013). Little's MCAR tests were both non-significant (Little, 1988). The ward level data were missing at random (MAR - χ^2 (60) = 60.55, p=0.46) and trust level data were missing completely at random (MCAR - χ^2 (11) =7.71, p=0.74). Analyses were conducted using all available data as deletion and/or imputation of missing cases was not appropriate.

3.10.1 Cross sectional and temporal analyses

All wards were ranked from best to worst within the region based on their average harm-free care performances (see Appendix 4 for full rankings). Higher percentages on the harm-free care measure represent safer delivery of patient care. Wards ranged from 92.68% to 70.56% harm-free care with an average performance of 84.90%.

The scatterplot displayed in Figure 3.1 compares ward level average harm-free care performance with their respective trust's harm-free care performance (accounting for patients over 70 years old in acute settings). The five wards closest to the Y axis (wards 7, 4, 17, 31, and 36) and ward 29 outperformed their respective trusts on the delivery of harm-free care. This suggests that on these wards exceptional performance is achieved, despite rather than as a result of, organisational factors. The performance of all other wards was below that of their trust. These results were assessed alongside the ranked performances. The five wards that outperformed their trust were also those that ranked top within the region (as can also be seen by the downwards slope in Figure 3.1). Ward 29 was ranked eight within the region.

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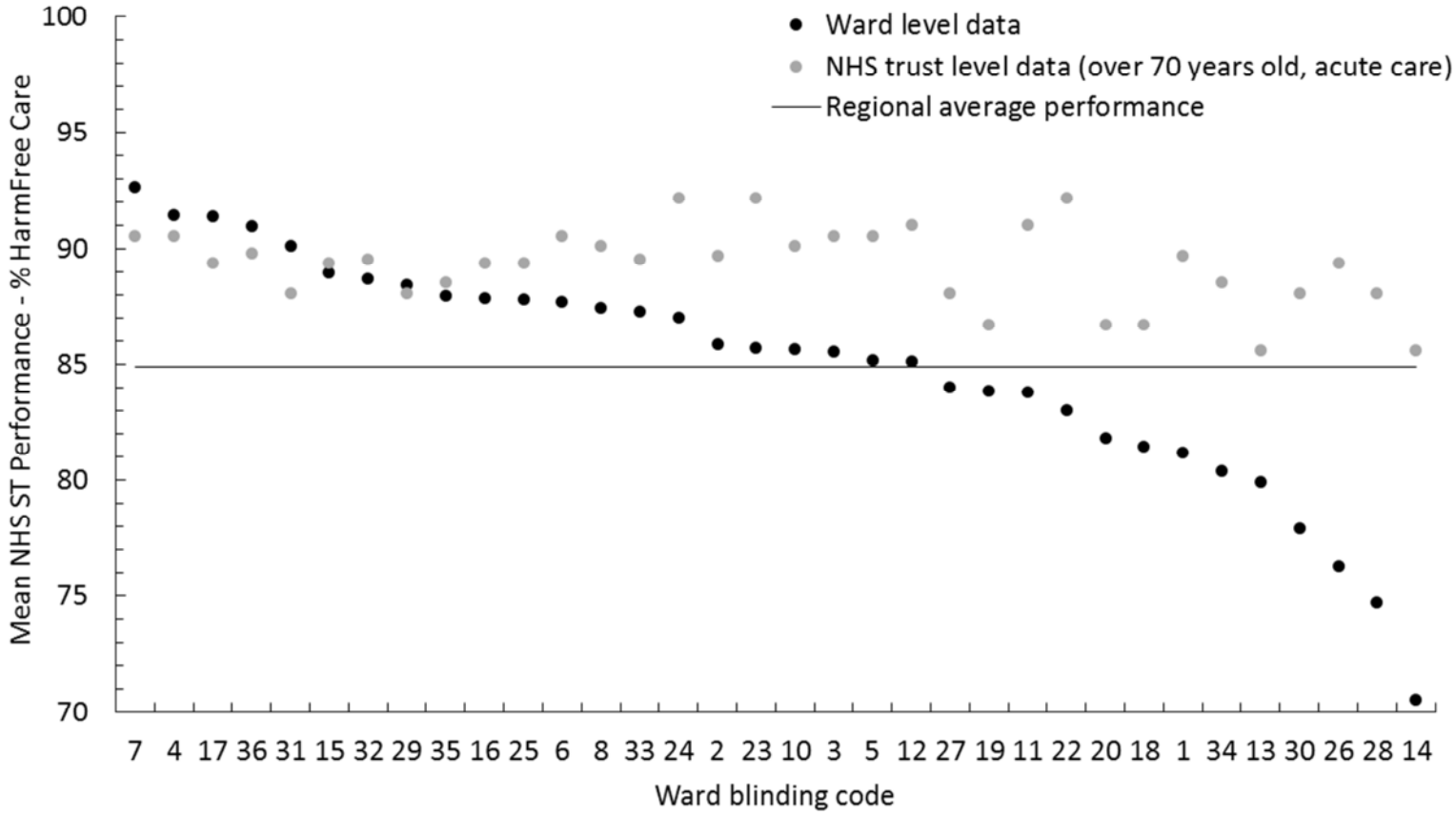

Figure 3.1. Scatterplot comparing average harm-free performances at ward and trust levels.

The run charts displayed in Figure 3.2 assess performance temporally over a 12 month period. Each run chart within the figure (characterised as a square) represents an individual ward within the region. The run charts compare a ward's monthly harm-free care performance (black data points) against the region's average monthly performance (red data points). Charts were visually assessed taking the aims of the analysis and rules for interpreting run charts into consideration. The six wards in Figure 3.2 that are highlighted by their ward numbers were considered to consistently outperform the regional average (wards 7, 17, 31, 36, 4, and 15). Greater confidence about exceptional and consistent outperformance was held for those wards listed first. Compared to others in the region, these wards appeared to more consistently outperform with a greater proportion of data points above the month by month regional average performance.

Each analysis identified six exceptional wards, five of which were common to both analyses. The funnel plot in Figure 3.3 compared harm-free care performance (adjusted to represent the average proportion of patient harm) with the average sample size. None of the elderly medical wards exceeded the upper control limit at three standard errors (SE)[1], however, the five wards identified through both analyses clustered together and exceeded the 2SE upper control limit. Wards 15 and 29, which were only identified via the run charts and scatterplots respectively, did not fall within this cluster of wards. They were further away from the 2SE upper control limit and their performance appeared to be more consistent with the rest of the population.

[1] Better performance was represented by a lower proportion of patient harm therefore the upper control limits are in the lower portion of the figure

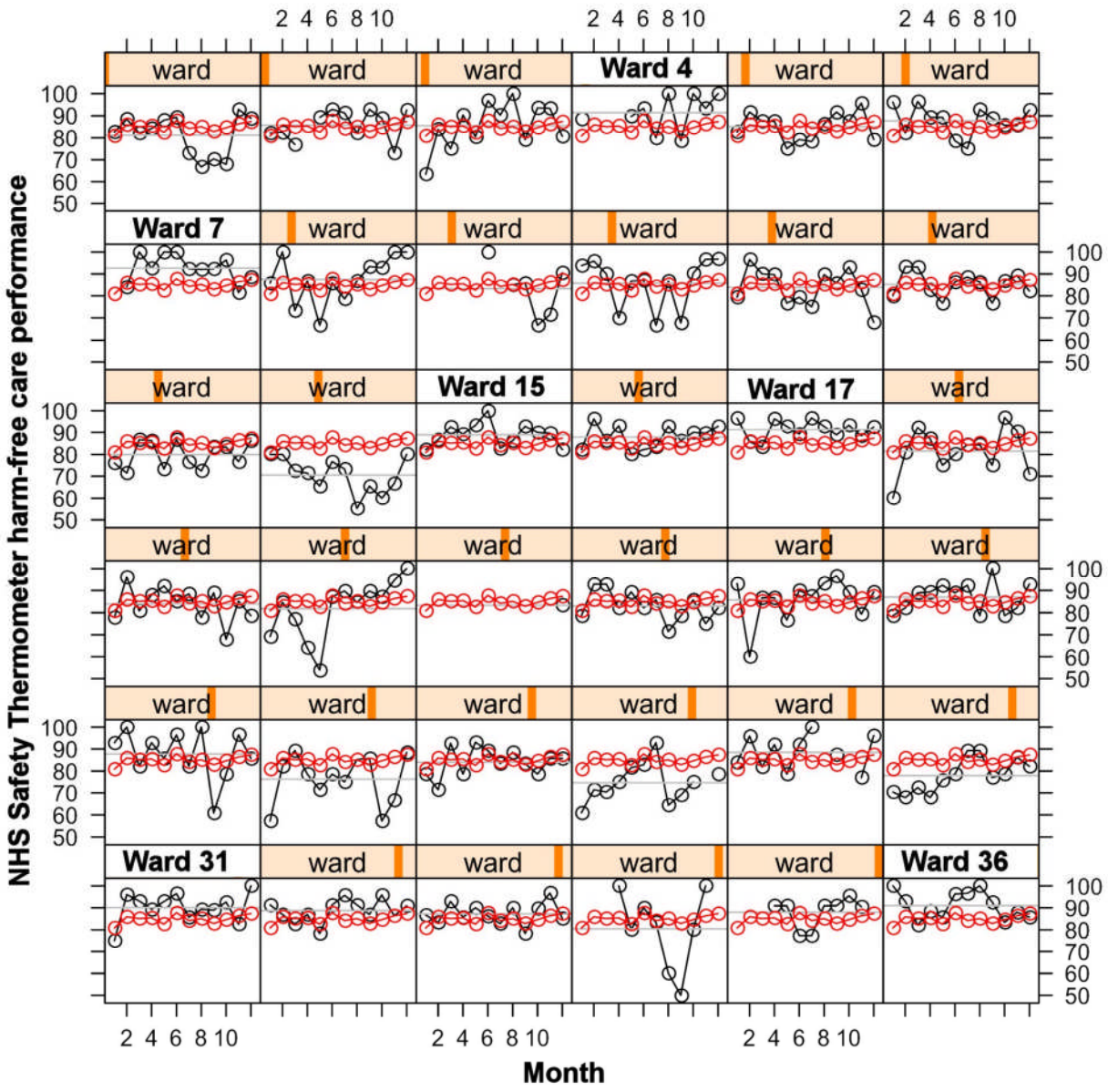

Figure 3.2. Run charts comparing ward and regional level monthly harm-free care performance across a 12 month period.

Each square represents an individual ward within the region.

Black data points represent a ward's monthly harm-free care performance. Red data points represent the region's average monthly performance.

Wards are numbered consecutively (from top left to bottom right across the rows). All ward blinding codes correspond to those that were used in Figure 3.1. Ward numbers are only presented for those that were considered to be positively deviant.

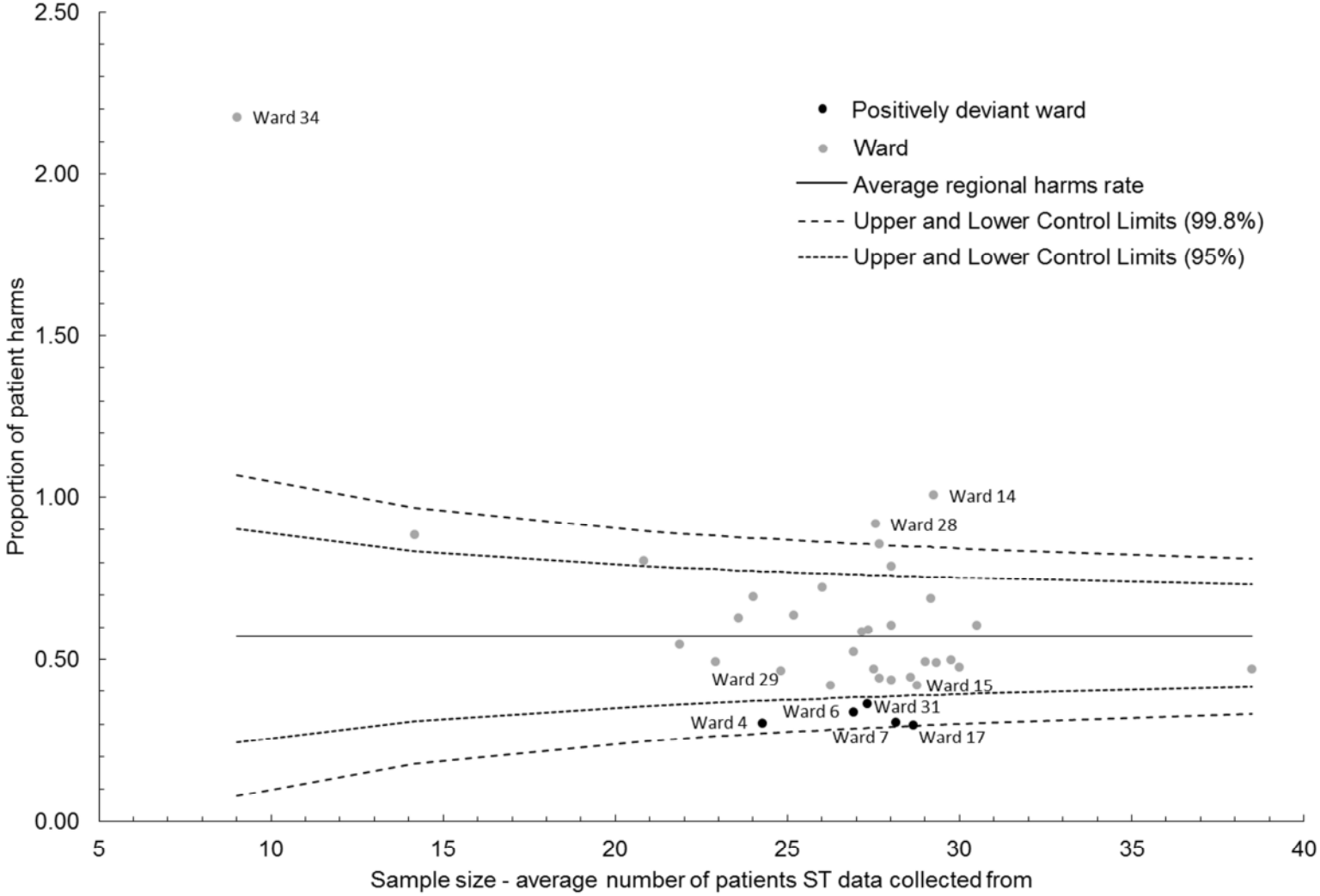

Figure 3.3 Funnel plot of average harm-free care performance and average sample size.

Data were also analysed to assess whether wards generally performed well (around or above average) for each individual ST harm. The five wards identified by both analyses are displayed in Table 3.2 alongside their performances on each of the individual ST harms. Appendix 4 provides this data for all wards and highlights those that were ranked within the top five for each individual harm. Those wards that ranked top for average harm-free care performance were frequently within the top five, or at least around or above average, on each of the individual harms. Similarly, run charts showed that these wards also performed well on each individual harm.

Table 3.2 The top five ranked wards within the region and their performances for each individual Safety Thermometer harm

Ward blinding code	Regional ranking	Safety Thermometer Performance				
		Harm-free care	New PUs*	Falls	New UTI*	New VTE*
4	1	92.68	1.01	0.36	0.00	1.36
7	2	91.48	0.00	0.74	0.40	0.74
17	3	91.40	0.58	0.60	0.29	0.60
36	4	90.97	2.55	0.32	0.30	0.00
31	5	90.14	2.09	1.53	0.31	0.30
Regional average		84.90	2.03	1.52	1.08	1.21

* PUs = pressure ulcers; UTI = urinary tract infections, VTE = venous thromboembolism

3.10.2 Identification of the final sample

The results of the analyses were compared and assessed against the study's five criteria for positively deviant performance (Box 3.2, section 3.9.4.3). Five wards fulfilled all criteria. Ward 15 and 29 only fulfilled two key criteria and so were not considered to be positively deviant. A comparison group of wards, with slightly-above-average harm-free care performance, were selected and matched to positive deviants on a) the type of NHS trust that the wards belonged; b) Index of Multiple Deprivation (IMD) data extracted at speciality level; and c) the gender of patients on the ward[1].

[1] One positively deviant ward had to be matched to a comparison ward that cared for patients of the opposite gender. Wards 15 and 29 were not included as matched comparators because they shared some similarities with the positively deviant wards and there were specific requirements for matching the wards.

Matching was conducted by VP to preserve blinding for phase 3. An independent samples t-test showed that positively deviant wards (M=91.33, SD=0.92) significantly differed from comparison wards (M=87.46, SD=1.31) on average harm-free care performance (t(8)=5.42, p=0.001). This suggests positively deviant wards deliver significantly safer care than matched comparators wards with slightly above average performance within the region. A statistically significant difference was also found between the positively deviant wards (M=91.33, SD=0.92) and all other wards (M=83.85, SD=4.57) within the region (t(32)=3.61, p=0.01). Each ward was given a pseudonym relating to the trust and ward it belonged to (e.g. trust 1 and ward 2 within the study was labelled T1W2). Key characteristics of all wards are outlined in Table 3.3.

Table 3.3 Key characteristics of the positively deviant and comparison wards

	Ward	Harm-free care (%)	Trust number / type	Patient gender	Index of Multiple Deprivation [a]
Positively deviant wards	**T1W1**	90.14	Trust 1 / Teaching & Foundation	Mixed	More deprived 40-50%
	T2W3	92.68	Trust 2 / Teaching	Female	More deprived 30-40%
	T2W6	91.48	Trust 2 / Teaching	Female	More deprived 30-40%
	T3W7	91.40	Trust 3 / Teaching & Foundation	Mixed	Less deprived 30-40%
	T5W10	90.97	Trust 5 / Foundation	Mixed	More deprived 30-40%
Comparison wards	**T1W2**	88.48	Trust 1 / Teaching & Foundation	Mixed	More deprived 40-50%
	T2W4	87.72	Trust 2 /Teaching	Female	More deprived 30-40%
	T2W5	85.17	Trust 2 / Teaching	Male	More deprived 30-40%
	T3W8	87.90	Trust 3 / Teaching & Foundation	Mixed	Less deprived 30-40%
	T4W9	88.01	Trust 4 / Foundation	Mixed	More deprived 30-40%

[a] IMD overall rank data (extracted from the 2012/13 HES data) are categorised into deciles. Geographic areas are ranked and then described as falling within the most or least deprived % of England. Categories change in increments of 10% up to the more/least deprived 40-50% of England.

3.11 Phase 2 Discussion

Phase 2 of this study aimed to test a method for identifying positively deviant elderly medical wards that delivered exceptionally safe patient care. SPC and other graphical methods were used, in addition to performance rankings, to successfully identify five wards that fulfilled the study criteria for positively deviant performances. In addition, a sample of matched comparison wards with slightly-above-average harm-free care performance were identified in anticipation of phase 3 of this study and subsequent stages of the Bradley et al. (2009) process.

The analyses conducted were more rigorous than those used in comparable healthcare applications of the approach (Baxter et al., 2015). SPC methods are increasingly promoted but currently under used within the NHS for assessing performance variations that are attributable to more than chance alone (Mountford & Wakefield, 2016; Schmidtke et al., 2016). Performance was assessed using the composite as well as individual harm data and steps were taken to ensure that positive deviance was facilitated by factors within the clinical microsystem (ward) rather than the wider macro-system (organisation). Together, this provided greater assurance that positively deviant wards had been correctly identified.

All of the positively deviant wards that were identified through this analysis were ranked top within the region. This suggests that ranking data alone may provide a simple and equally effective method for identifying positive deviants. However, simply ranking the data does not provide a ‘cut off’ point where those above/below are classified as positively deviant or not. Some previous healthcare applications of the approach have identified a predetermined number of positive deviants (e.g. top 10%), presumably to ration resources (Baxter et al., 2015; Naimoli et al., 2008). Although resources may limit qualitative enquiries during stage 2 of the Bradley et al. (2009) process, they should not be a barrier to identifying positive deviants especially when using routinely collected data. The additional analyses conducted in this study therefore provided valuable information, not only by assessing temporal performance (run charts), but also by enabling the triangulation of a number of analyses to definitively identify a positively deviant group from the rest of the population. Using specific criteria to define positively deviant performances reduced subjectivity, ensured that positive deviants were identified through analysis results only, and increased the sensitivity and specificity of the method. Despite these advances there are two key limitations for this phase which must be considered further: the ability to control for confounding variables and the extent to which SPC was applied.

3.11.1 Controlling for confounding variables

The NHS ST does not contain patient level data and so confounding variables such as demographics, comorbidities, and diagnoses could not be controlled for. To minimise their effects, a homogenous population was identified and comparison wards were matched to positive deviants. Furthermore, post-hoc assessment of the confounding effect of patient age (see section 3.13.3.6) indicated that positively deviant wards do not simply care for younger patients with less complex presentations (Thomas & Brennan, 2000). Case mix adjustments are notoriously difficult (Shahian & Normand, 2015), and so, despite these measures, confounding effects on safety performance will not have been eliminated.

To provide greater control of confounding variables multilevel modelling analyses was explored. However, data on confounding variables were not available and the small sample size limited analytic power (n=34 wards). Multilevel modelling may be appropriate if these problems can be overcome (e.g. if using HES data to identify positively deviant organisations nationally), but these complex analyses require specialist knowledge (Duncan, Jones, & Moon, 1998), and so may not be feasible for use on the front line of healthcare organisations.

3.11.2 The extent to which SPC was applied

A key limitation of this analysis was that none of the wards exceeded the 99.8% (3SE) confidence levels. However, it is important to recognise the conservative and arbitrary nature of control limits which can be made more or less stringent dependent on the situation (Perla et al., 2011). All the positively deviant wards exceeded the 95% (2SE) control limit and clustered separately from the rest of the population. Larger study populations increase opportunities to identify special cause variation and so, had the study been conducted nationally or across the north of England, positive deviants may have exceeded the more stringent control limit.

Run charts traditionally explore variation within single rather than multiple systems and so compare systems against their own average/median performance (Anhoj & Olesen, 2014; Perla et al., 2011). As this study aimed to identify exceptional performers within a region, wards were compared against the regional rather than their own average performances. In addition, probability-based rules are traditionally used to identify special cause variation (Perla et al., 2011); however, rule fulfilment can indicate poor and/or improving performance as well as exceptional and consistent performance. The importance of assessing data's visual display is acknowledged within SPC (Perla et al., 2011). Consequently these rules were only used as a guide

and, despite several wards fulfilling at least one rule, they were not classed as positive deviants.

Although this analysis highlights some of the challenges to analysing data to identify positive deviants, SPC does provide a relatively accessible method for identifying outliers using summative and temporal performance data. Using several different analyses increased the robustness of the method and enabled criteria for positive deviance to be generated. This reduced subjectivity and increased assurances that those wards identified did actually differ from others in the population.

Phase 3: Do other perspectives of safety support the identification of positively deviant wards?

3.12 Phase 3 Introduction

During Phase 1, the NHS ST data were selected as a broad measure of safety that could be used to identify positive deviants. They fulfilled all the relevant criteria (see section 3.5.2) and have prominence within the NHS as demonstrated by their use across various clinical settings and their links to financial payments (Department of Health, 2014). During phase 2, a method was tested to identify positively deviant elderly medical wards that demonstrated consistent, exceptional performance on the ST's harm-free care measure. The next step is to assess the extent to which ward selection was supported by other perspectives of safety. If support is demonstrated then greater assurance can be held that the correct wards were identified.

Staff and patients can provide two different perspectives about patient safety on hospital wards. 'Safety culture' refers to the shared values, beliefs, norms, and attitudes that guide how staff behave in order to maintain safety (Sorra & Dyer, 2010). A positive safety culture is linked to organisations which are able to maintain safety despite facing high risks (Halligan & Zecevic, 2011), and it is increasingly considered necessary for the delivery of safe patient care (Pronovost & Sexton, 2005). Validated measures of safety culture exist and can be used at ward and organisational levels (Scott, Mannion, Davies, & Marshall, 2003). Evidence also increasingly suggests that patients can be involved in maintaining their own safety. Patients are able to identify adverse events and they provide a unique perspective on the safety of care (Giles, Lawton, Din, & McEachan, 2013; Ocloo & Matthews, 2016; Weingart et al., 2005; Weissman et al., 2008).

In addition to this, the extent to which positive deviants retain their exceptional performance is not known. During phase 2, performance was assessed over a 12 month period and analyses indicated that positively deviant performances could be identified over this relatively long period of time. However, healthcare applications of positive deviance which transcend a number of NHS organisations will require ethical and trust permissions before starting stage 2 of the Bradley et al. (2009) process. As these processes can take time, qualitative data collection may not start until several months after positive deviants are identified. Therefore, the aims for this phase of this study were to:

- Assess the extent to which the identification of positively deviant wards is supported by staff and patient perceptions of safety
- Explore whether positively deviant performances on the ST's harm-free care measure can be sustained over prolonged periods of time.

3.13 Phase 3 Methods

3.13.1 Design and setting

An observational, quantitative study was conducted within the positively deviant and matched comparison elderly medical wards that were identified during phase 2. Staff and patient perceptions of safety were assessed on each ward using validated surveys. Data were analysed alongside the ST data to assess whether they supported the identification of positively deviant elderly medical wards. ST data were also extracted from the HSCIC up to the end of the phase 3 data collection period to assess harm-free care performance over a prolonged period (24 months). Performances were assessed alongside the ST data used during phase 2 to ascertain whether positively deviant wards retained their exceptional performances.

Researchers and all staff on the participating wards remained blinded as to whether wards were classed as positively deviant or comparators throughout phase 3. The study was registered on the UK Clinical Research Network Study Portfolio (reference – 18050) and the following ethical permissions were obtained:

- NHS Ethical approval – granted by the South East Scotland Research Ethics Committee 01 (reference: 14/SS/1085)
- NHS Permissions were granted by all five NHS trusts involved

3.13.2 Participants and recruitment

All of the wards identified during phase 2 were invited to participate in the study. Clinical leads within each of the relevant NHS trusts were contacted and meetings were arranged with the ward leadership teams to discuss participation (typically with the ward manager, consultant, matron, and a representative from Research and Development). All but one of the wards agreed to participate (positively deviant wards n=4; comparison wards n=5)[2]. T3W7 was unable to participate due to prior involvement in a large patient safety research study. Patients and staff on participating wards were recruited between February and August 2015.

3.13.2.1 Patient participants

Patients who had capacity and were physically well enough were invited to complete a patient survey. Participating patients had to be over the age of 65 years and to have received care on the included ward for more than four hours. Patient eligibility was determined by the ward sisters and/or nurses. Opportunity sampling was used to recruit up to 20 patients per ward. The sample size was determined by research on the main patient measure used within the survey (Lawton et al., 2015; Sheard et al., 2014). A sample size beyond 20 participants only minimally narrows the confidence intervals for the main measure.

3.13.2.2 Staff participants

Staff within each multidisciplinary ward team were invited to complete a staff survey. Staff could hold any job role and be of any professional grade. A 30-50% response rate for the main staff measure has previously been reported (Sorra & Nieva, 2004), therefore, this study aimed to recruit a minimum of 50% of the multidisciplinary team on each ward using opportunity sampling. Staff were informed about the study via a letter and posters were displayed in staff areas.

3.13.3 Measures

The patient survey contained three measures: 1) the Patient Measure of Safety (Giles et al., 2013); 2) the Friends and Family Test (NHS England, 2014a); and 3) questions previously included under Commissioning for Quality and Innovation (CQUIN) payments (Department of Health, 2011). The staff survey contained two measures: 1) the Patient Safety Grade (Sorra & Nieva, 2004); and 2) questions

[2] Note: Researchers and the ward teams did not know that the non-participating ward was positively deviant until blinding was removed.

assessing the Yorkshire Contributory Factors Framework[3] (Lawton et al., 2012). The surveys are presented in Appendix 5 and Appendix 6. Two sources of secondary data were collected from each ward: average patient age data and the most recent NHS Safety Thermometer data.

3.13.3.1 Patient Measure of Safety

The main measure within the patient survey was the Patient Measure of Safety (PMOS). The PMOS gathers feedback from hospitalised patients about the safety of their care and assesses perceptions about factors contributing to safety (Giles et al., 2013). The survey includes 44 items measuring nine domains: communication and team working; organisation and care planning; access to resources; ward type and layout; information flow; staff roles and responsibilities; staff training; equipment (design and functioning); and delays. A stand-alone item measures dignity and respect. The survey includes positive and negatively worded items, and patients respond using 5-point Likert scales ranging from 'strongly disagree' to 'strongly agree'. 'Not applicable' and 'prefer not to answer' options are available and comments can be added to provide context (McEachan et al., 2014). The PMOS is valid, reliable and acceptable to patients (Giles et al., 2013; McEachan et al., 2014).

3.13.3.2 The Friends and Family Test

The Friends and Family Test (FFT) is a single item survey used nationally in the UK to assess patient experience (NHS England, 2014a). Patients are asked 'how likely are you to recommend this ward to your friends and family if they need similar care or treatment?'. The question is usually administered on, or shortly after, discharge but for this study it was completed during the patient stay. Patients respond using a 5-point Likert scale ranging from 'extremely likely' to 'extremely unlikely'.

3.13.3.3 CQUIN questions

CQUINs are a payment framework to encourage quality improvement within the NHS. Until 2013 a national CQUIN entitled 'responsiveness to the personal needs of patients' was assessed using five patient experience questions (Department of Health, 2010). From 2014 these questions were included in the National Inpatient Survey (Care Quality Commission, 2014). The three questions that are relevant to a current hospital episode were included within the patient survey. These were:

1. Were you involved as much as you wanted to be in decisions about your care and treatment?

[3] The Yorkshire Contributory Factors Framework data are not described or used within the study reported in this chapter. Further explanation will be given in chapter 4.

2. Did you find someone on the hospital staff to talk to about your worries and fears?
3. Were you given enough privacy when discussing your condition or treatment?

Questions are answered using 3-point Likert scales ranging from 'yes definitely/always' to 'no'. Although they assess patient experience rather than safety, both domains contribute to the overarching concept of quality (NHS England, 2016d). This study identified positive deviants using a broad safety outcome and so it is reasonable to assume that the cultural and system factors that facilitate exceptionally safe care will also facilitate excellence across other domains of quality. Furthermore, the CQUIN questions were already embedded within the patient survey and so these data were collected for convenience.

3.13.3.4 Patient Safety Grade

The Patient Safety Grade (PSG) is one of four outcomes within the Hospital Survey on Patient Safety Culture (HSOPSC - Sorra & Nieva, 2004). Staff grade their ward on overall patient safety using a 5-point Likert scale ranging from 'excellent' to 'failing'. The HSOPSC has been extensively validated and guidance suggests that outcomes which are not required can be removed (Sarac, Flin, Mearns, & Jackson, 2011; Sorra & Dyer, 2010; Sorra & Nieva, 2004). In a recent study the PMOS and HSOPSC were strongly associated with the ST's harm-free care measure (Lawton et al., 2015), and of all HSOPSC outcomes the PSG correlated most strongly. Selecting a single outcome measure reduced the time required for staff to participate which is known to increase response rates (Edwards et al., 2002).

3.13.3.5 NHS Safety Thermometer

Due to the time taken to gain NHS ethical approvals and trust permissions, primary data collection started between five to seven and a half months after the wards were identified. To explore whether wards retained their positively deviant or slightly-above-average performance levels during this time, ST harm-free care data were extracted for the participating wards from the point of identification to the end of the primary data collection period (August 2014 – July 2015 inclusive[4]). This enabled the performance of positively deviant wards to be assessed over a 24 month period.

3.13.3.6 Average patient age data

Accurate average patient age data were not available during phase 2. To exclude the possibility that positively deviant wards provide safer care because they treat a comparatively younger group of patients, average patient age data for the period of 1st

[4] Only one patient was recruited during August 2015 therefore ST data were not extracted for this month.

August 2013 to 31st July 2014 were collected from the participating wards. This time period corresponds to when the wards were initially identified. Data were typically requested from a central informatics team within each trust.

3.13.4 Procedure

The majority of data collection was undertaken by RB. Two researchers (CR and AH) supported recruitment in one NHS trust[5].

3.13.4.1 Patient survey

During each ward visit researchers spoke to the ward manager and/or nurses on shift to identify eligible patients to participate in the survey. Depending on local agreements the researcher either approached eligible patients independently or was introduced to them by ward staff. The study was discussed verbally, patients were provided with a written information sheet, and they were given time to consider the information and ask questions. Patients provided written informed consent. Where this was not feasible a witnessed consent form was completed.

Patients chose whether to complete the survey with the researcher's support or independently. Where support was requested researchers read the questions and recorded patient's answers. Surveys were predominantly completed electronically on a laptop computer although paper versions were available. Surveys took approximately 20 minutes, and a 'thank you' card was given on completion.

3.13.4.2 Staff survey

At the start of recruitment on each ward multidisciplinary staff received a letter informing them about the study. Letters were predominantly distributed by ward managers at convenient times such as handovers and team meetings. While on the wards RB also helped to distribute letters. The letter enclosed the staff survey, an information sheet, and return envelope. Participants placed completed surveys into a 'drop box' which was stored securely on the ward. The survey took approximately ten minutes to complete and they were incentivised by a prize draw to win a £20 gift voucher on each ward.

3.13.5 Analysis

All blinding was removed[6] prior to quantitative analysis which was conducted using IBM SPSS (Statistical Package for the Social Sciences). Data were cleaned and

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[5] In total, CR and AH recruited 15% of the patient participants (across the whole study)

descriptive statistics were used to summarise the data and to assess the assumptions of parametric tests. MVA was conducted to explore patterns within missing data. Overall PMOS and CQUIN scores were calculated for every patient by averaging the data from all items. An overall PMOS score was only calculated if the participant had more than 80% complete data.

Individual level data were aggregated to ward level for further analyses. Average ward level scores for the PMOS, FFT, CQUIN, and PSG were calculated. To explore whether staff and patient perceptions of safety supported the identification of positive deviants using the ST data, ward level performances were initially ranked for each measure. Z-scores were also calculated for each measure and visualised in a scatterplot. Independent samples t-tests explored whether the positively deviant and comparison wards differed on average patient age during phase 2 of the study.

To assess whether positively deviant wards retained their exceptional performance levels over a more prolonged period, ST harm-free care performance for the two performance groups were plotted on a line chart over the 24 month study period (beginning of phase 2 to end of phase 3). ST harm-free care performances between the two groups were compared during phase 3 and the overall study period (24 months) using independent samples t-tests.

3.14 Phase 3 Results

3.14.1 Data screening

All data were screened for errors. Where applicable negatively worded survey items were recoded so that high values represented safer perceptions of care across all measures. ‘Not applicable’ and ‘prefer not to answer’ responses within the PMOS survey were coded as missing data. MVA was conducted to highlight patterns of missing data within patient and staff surveys (Tabachnick & Fidell, 2013). Little’s MCAR tests were not significant indicating that all data were MCAR – patient survey data χ^2 (6141) = 6297.35, p=0.80; staff survey data χ^2 (164) = 140.57, p=0.91. The imputation of missing values was not considered appropriate as patient perceptions of safety are not uniform across different PMOS domains and most missing data were due to items not being relevant to a patient’s stay.

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[6] Phase 3 of this study and stage 2 of the Bradley et al. (2009) process (chapter 4) were conducted concurrently. Blinding was retained while collecting the qualitative data and during the initial stages of the qualitative analysis (see Chapter 4, section 4.3.1 for further detail).

Data were assessed for normality at an individual level. Histograms and skewness and kurtosis values indicated that the PMOS and CQUIN measures were normally distributed (see Appendix 7). The FFT and PSG were negatively skewed towards better perceptions of safety with slightly flat distributions. Favourable perceptions of care are common within patient satisfaction surveys such as the FFT (Jenkinson, Coulter, Bruster, Richards, & Chandola, 2002), especially when surveying patients of an older generation (Hall & Doran, 1990). Furthermore, skew was expected due to the slightly above average and exceptional performance levels of participating wards.

3.14.2 Descriptive statistics

Data were collected from 188 patients and 161 multidisciplinary staff, clustered within nine elderly medical wards. This represented an overall response rate of 55% of patients and 45% of the multidisciplinary teams. Recruitment data are displayed in Table 3.4. Targets were met on all but one ward (T1W2).

Table 3.4 Staff and patient recruitment data by ward

		Patient response rate n (% of those approached)[a]	**Staff response rate** n (approx. % of the MDT)
Positively deviant wards	**T1W1**	21 (51)	22 (44)
	T2W3	22 (61)	14 (40)
	T2W6	21 (47)	11 (31)
	T5W10	20 (51)	30 (67)
Comparison wards	**T1W2**	17 (53)	18 (45)
	T2W4	23 (48)	14 (40)
	T2W5	20 (49)	19 (54)
	T3W8	20 (69)	16 (46)
	T4W9	24 (83)	17 (35)
All wards		188 (55)	161 (45)

[a] The response rate includes patients who explicitly refused to participate. It does not include: those whom nurses reported to be eligible but were subsequently considered unsuitable (see section 3.15.2); those whom, after providing time to consider participation, could not be followed up.

Patient characteristics are displayed in Table 3.5. The average age of patient participants was 84.53 years (SD=5.45) ranging from 70-97 years old. At the time of participation patients had spent an average of 14.75 days in hospital. Just under half of the patients received ongoing hospital treatment prior to their admission (41%), with an average of 2.5 hospital admissions within the previous five years.

The staff survey was completed by 67 nurses, 41 support workers, 23 allied health professionals, 6 doctors and 24 others (including administrators, domestics, matrons and 12 participants of unknown profession). The breakdown of staff participants by professional group is displayed in Table 3.6. A greater proportion of medical and qualified nursing staff completed the survey on positively deviant than comparison wards.

Table 3.5 Characteristics of patient participants

	Patient age mean years (SD)	**Ongoing hospital treatment** % yes	**Time in hospital** mean days (SD)	**Inpatient frequency** mean (SD)
Positively deviant wards	84.49 (5.60)	33%	13.6 (12.87)	2.27 (2.46)
Comparison wards	84.56 (5.36)	46% (3 missing)	15.71 (19.64)	2.71 (3.32)
All wards	84.53 (5.45)	41%	14.75 (16.91)	2.51 (2.97)

Table 3.6 Professional roles of staff participants

	Nursing %	**Healthcare Assistants** %	**Allied Health Profs** %	**Doctors** %	**Other** %
Positively deviant wards	46.8	19.5	15.6	6.5	11.7
Comparison wards	36.9	31.0	13.1	1.2	17.8
All wards	41.6	25.5	14.3	3.7	15.0

3.14.3 Do other perceptions of safety support the identification of positively deviant wards?

All individual level data were aggregated to ward level for analysis. The descriptive statistics for all measures are presented in Table 3.7. Scatterplots were analysed to assess assumptions of linearity and homoscedasticity (Appendix 8). The associations between harm-free care performance and staff and patient perceptions of safety could not be statistically assessed due to the small sample size and limited range of performance levels that were sampled. Therefore, ward level performance for each measure was ranked and visualised in Figure 3.4.

On average, the positively deviant wards (highlighted in Figure 3.4) performed better than the comparator wards across all four measures. However, the differences between the two groups were small, as shown in Table 3.7, and there were three notable exceptions. One of the positively deviant wards, T2W6, was the lowest performer on the PMOS and FFT measures. Furthermore, two comparator wards outperformed the positively deviant group average on some of the patient measures (T3W8 – PMOS and FFT; T4W9 – PMOS only).

Table 3.7 Ward level descriptive statistics for all survey measures

		PMOS Mean (SD) [a]	FFT Mean (SD) [a]	CQUIN Mean (SD) [b]	PSG Mean (SD) [a]
Positively deviant wards	**T1W1**	4.33 (.45)	4.71 (.56)	2.48 (.45)	4.29 (.56)
	T2W3	4.21 (.34)	4.55 (.67)	2.58 (.47)	4.21 (.70)
	T2W6	3.94 (.37)	4.14 (1.15)	2.45 (.32)	4.09 (.54)
	T5W10	4.52 (.26)	4.65 (.49)	2.53 (.48)	4.13 (.78)
	Average	4.24 (.41)	4.51 (.78)	2.51 (.43)	4.18 (.67)
Comparison wards	**T1W2**	4.11 (.53)	4.26 (.75)	2.25 (.50)	3.50 (1.15)
	T2W4	4.09 (.39)	4.26 (1.00)	2.43 (.45)	4.07 (.48)
	T2W5	3.96 (.39)	4.15 (1.23)	2.18 (.58)	4.05 (.52)
	T3W8	4.51 (.27)	4.75 (.44)	2.48 (.33)	3.69 (.79)
	T4W9	4.30 (.36)	4.46 (.88)	2.50 (.36)	3.29 (1.16)
	Average	4.20 (.43)	4.38 (.92)	2.38 (.46)	3.71 (.91)

[a] Measured on a 0-5 Likert scale; [b] Measured on a 0-3 Likert scale. Higher scores represent safer perceptions of patient care on all measures.

Rank	ST Harm-free care (phase 2)	Patient Measure of Safety	Friends & Family Test	CQUIN	Patient Safety Grade
1 (Highest)	T2W3	T5W10	T3W8	T2W3	T1W1
2	T2W6	T3W8	T1W1	T5W10	T2W3
3	T5W10	T1W1	T5W10	T4W9	T5W10
4	T1W1	T4W9	T2W3	T1W1 and T3W8	T2W6
5	T1W2	T2W3	T4W9		T2W4
6	T4W9	T1W2	T2W4 and T1W2	T2W6	T2W5
7	T3W8	T2W4		T2W4	T3W8
8	T2W4	T2W5	T2W5	T1W2	T1W2
9 (Lowest)	T2W5	T2W6	T2W6	T2W5	T4W9

Figure 3.4 Visual representation of ward level performance across all patient safety measures

Each positively deviant ward that participated in the study is represented by a different colour in the figure. Comparison wards are not highlighted by colour.

All measures were assessed using different scales, therefore, z-scores were calculated and plotted in Figure 3.5 so that performances from different normal distributions could be compared. Positively deviant wards, on the whole, performed above the mean and, as a group, they generally performed better than the group of comparator wards for all measures of patient safety. These data suggest that staff and patient perceptions of safety were generally higher where wards displayed better ST outcomes and so they support the identification of positively deviant elderly medical wards using routinely collected ST data.

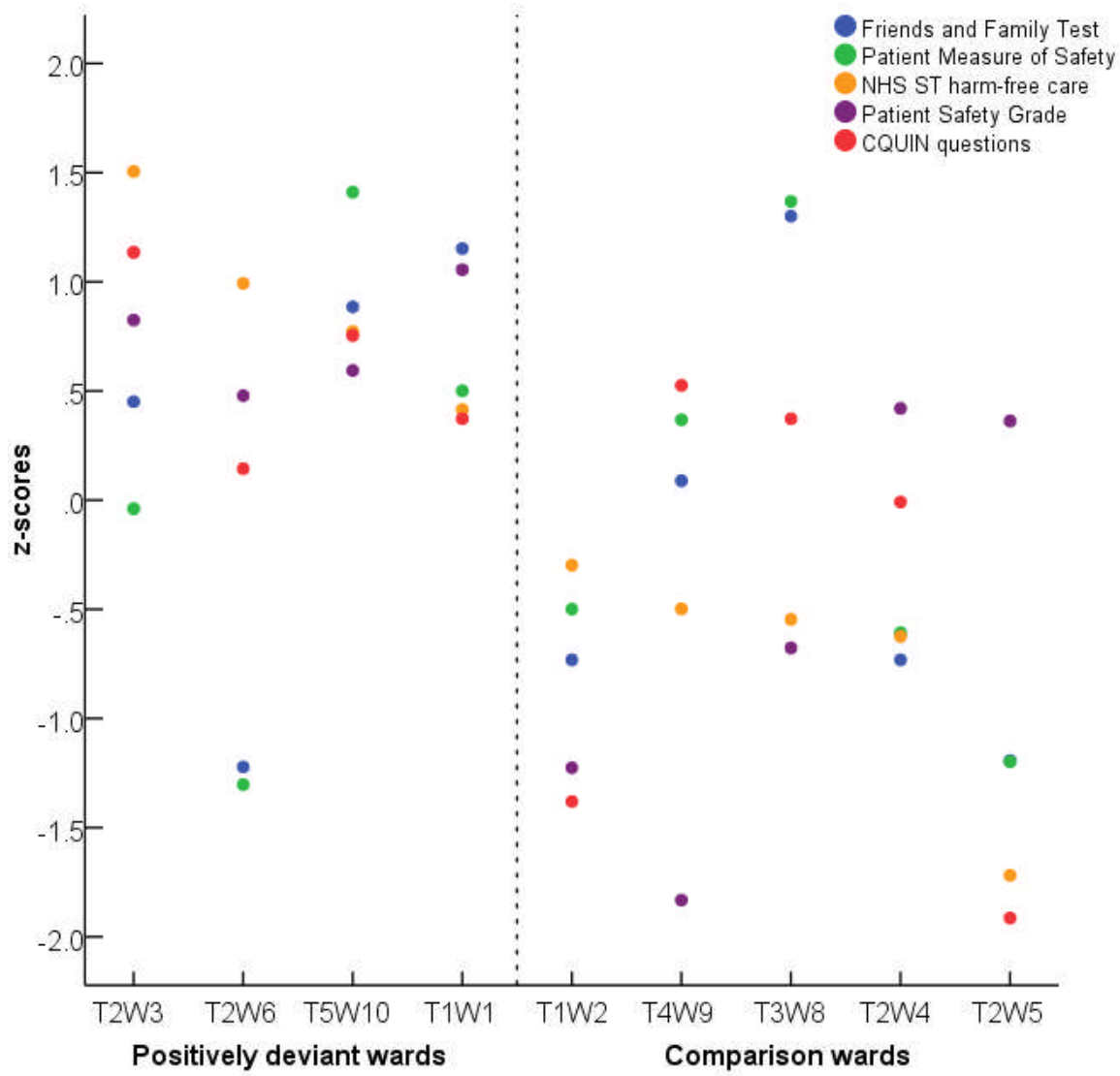

Figure 3.5 Scatterplot of z-scores to assess whether patient and staff perceptions of safety support the identification of positive deviants using the ST data.

To assess whether patient age has a confounding effect on the identification of positively deviant wards, administrative average patient age data for the phase 2 data collection period were analysed using an independent samples t-test[7]. During phase 2, average patient age did not significantly differ between positively deviant and comparison wards ($t(7)=0.15$, $p = 0.88$) suggesting that positively deviant wards do not simply succeed because they care for younger and potentially more healthy patients.

[7] These administrative data are different to those displayed in Table 3.5.

3.14.4 Can positively deviant wards retain their exceptional performances over prolonged periods of time?

The final analysis assessed whether positive deviants retained their exceptional performance during phase 3 of the study. ST harm-free care data for phase 2 (August 2013-July 2014) and phase 3 (August 2014-July 2015) of the study are visualised in Figure 3.6 for the two performance groups. During phase 2, positively deviant wards performed significantly better on the harm-free care measure than their comparators (see section 3.10.2 for analysis). However, Figure 3.6 suggests that this difference diminished during phase 3 of the study.

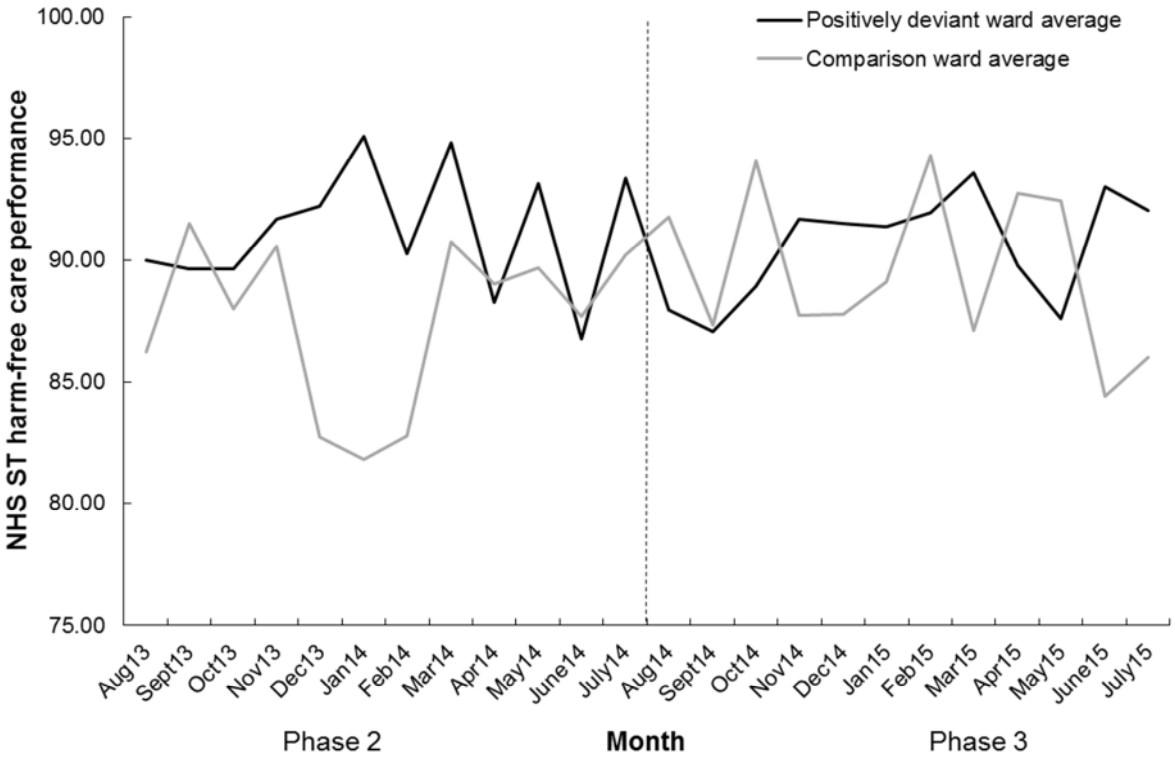

Figure 3.6 Positively deviant and comparison wards' average monthly performance over phase 2 and 3 of the study

To explore this further average performance data for each study phase are presented in Table 3.8 at ward and group level[8]. During phase 3 and the overall study period (24 months), positively deviant wards on average performed better than the matched comparison wards. Although a significant difference between the two

[8] As NHS ST harm-free care data are publicly available details are also included for T3W7 (the ward which was unable to participate in phase 3 of the study).

performance groups was retained across the overall study period (positively deviant wards: mean=90.93, SD=1.58; comparison wards: mean=88.55, SD=1.15; t(8)=2.72, p = 0.03), there was no significant difference during phase 3 (positively deviant wards: mean=90.53, SD=3.00; comparison wards: mean=89.56, SD=1.22; t(8)=0.67, p = 0.52). Three positively deviant wards were outperformed by their matched comparison wards during phase 3 (T2W3 – T2W4, T3W7 – T3W8, and T1W1 – T1W2).

Table 3.8 Harm-free care performances during phase 2 (identifying wards) and phase 3 (primary data collection)

		Average ST harm-free care performance %		
		Phase 2 (12 months)	**Phase 3 (12 months)**	**Overall (24 months)**
Positively deviant wards	**T1W1**	90.14	88.55	89.34
	T2W3	92.68	90.21	91.39
	T2W6	91.48	91.92	91.73
	T3W7	91.40	87.13	89.27
	T5W10	90.97	94.83	92.90
	Average	91.33	90.53	90.93
Comparison wards	**T1W2**	88.48	88.71	88.59
	T2W4	87.72	91.00	89.36
	T2W5	85.17	87.95	86.56
	T3W8	87.90	90.12	89.01
	T4W9	88.01	90.02	89.22
	Average	87.46	89.56	88.55

3.15 Phase 3 Discussion

In general, staff and patients perceptions of safety corroborated the ST harm-free care performances, providing support for the method used to identify positively deviant elderly medical wards. Furthermore, the significant difference in harm-free care performance between the positively deviant and comparator groups over the overall study period indicated that, to some extent, positively deviant wards can retain their exceptional safety performances over prolonged periods of time (24 months). Our

results though were not entirely conclusive and so the extent to which positively deviant elderly medical wards have been identified can be questioned.

Staff on positively deviant wards uniformly perceived care to be safer than those on comparison wards, however, this was not the case for patients. One positively deviant and two comparison wards performed more consistently with their opposite performance groups for some of the patient measures. One explanation for this may be that these wards have a different focus on how they achieve exceptional safety. Some wards may emphasise the importance of guideline compliance whereas others may emphasise patient centred care. Although guideline compliance may produce exceptional clinical outcomes, this may not be reflected in exceptionally positive patient perceptions of safety. In contrast, delivering patient centred care - where healthcare professionals and patients work collaboratively to deliver care that addresses individual needs and preferences - may have created more positive patient perceptions of safety via the PMOS measure.

The FFT and CQUIN measures were also not uniformly supportive of the ST data. These provide measures of patient experience rather than safety and, although consistent and positive associations exist between these two domains of quality, they are distinct (Doyle, Lennox, & Bell, 2013). This may have contributed to the lack of agreement with the ST data. However, these two measures were more corroborative than the PMOS data. Both measures were either financially incentivised and/or published publicly (Care Quality Commission, 2014; Department of Health, 2010; NHS England, 2014a), and these two strategies are known to drive quality improvement (Shaw et al., 2015). This may explain the slightly higher association between them and the ST data. Fundamentally though, had positive deviants been identified using a different outcome measure of patient safety, a different set of elderly medical wards may well have been sampled within this study.

During phase 2 we demonstrated that, to a large extent, positively deviant wards can be reliably identified over reasonably long periods of time (up to 12 months). However, the results of phase 3 suggest that this may be less feasible across longer time frames. The high priority of safety within healthcare organisations and, more specifically, the focus placed on safety as a result of participating in the study may have incentivised comparison wards to improve their ST performance. These wards had greater scope for improvement than the positive deviants. There is also limited consensus on how sustained safe patient care should be defined (Benn et al., 2009) and so consistent outperformance for harm-free care over 24 months may have been an unrealistic expectation.

Healthcare organisations change rapidly and new systems, processes and quality improvement initiatives are regularly implemented (Pronovost et al., 2004). Changes to

ward leadership, staffing levels, and environments were all observed during the study and may have contributed to the lack of reliability during phase 3. With regards to identifying positive deviants, it is also not clear how well changes to a ward's location (and thus name) are represented with the HSCIC and so, when using the ST data, local knowledge is needed to accurately extract data.

The findings are also problematic for the subsequent stages of the Bradley et al. (2009) process. The qualitative inquiries of stage 2 are assumed to occur within the top performers but this study suggests that may not be the case. Backward facing measurement, publication time lags of routinely collected data, and requirements for ethical approval postpone the qualitative data collection, thus increasing the likelihood that positively deviant performances will have changed. Researchers therefore need to assess whether success strategies existed at the time when positive deviants were identified. If the hypothesised strategies were implemented after they were identified they could not have contributed to the exceptional performance that the positive deviants were identified for.

3.15.1 How confident must we be that positive deviants have been correctly identified?

There are consequences associated with making performance judgements. Incorrectly naming poor performers can damage reputations, mislead patients, cause undue attention, and lead to sanctions and the misallocation of scarce resources (Lilford et al., 2004; Shahian & Normand, 2015). In many healthcare systems blame is also apportioned to those individuals who are closest to a failure (Reason, 1997). When applying the positive deviance approach many of these concerns are alleviated by its asset based nature, however, unintended consequences may still arise from incorrect identification. Misplaced perceptions of exceptional performance may create staff complacency (Hudson, 2003) and cause services to be overlooked for improvement activity and additional support or resources. The wider community may also adopt second-rate practises from incorrectly identified positive deviants, where more effective learning could be gained from those who truly outperform. Confidence must therefore be held in the positive deviants identified but two key factors affect this.

First, this study applied the approach within a geographic region, but positive deviants could equally have been identified within the North of England or even nationally. Larger populations increase the opportunity of identifying positive deviants but also alter the benchmark against which performances are compared. For example, what appears to be exceptional performance within a poorly performing region may actually be below the national average. Using national benchmarks to identify positive deviants would reduce this problem, but this was not feasible in this study as these

data were not readily available - local knowledge was required to identify elderly medical wards within the HSCIC.

Second, statistical significance is only as valid as the assumptions that underlie the tests (Rethman & Numm, 1999). Health researchers often identify clinical as well as statistical differences within data. Clinical significance refers to the meaning and utility of findings (Oberst, 1982), for example whether a treatment has a real effect on a patient's outcome. Statistically significant differences may be so small that no overall clinical benefit is gained, and biased or erroneous conclusions can be drawn by acting upon statistical rather than clinically significant results (Zhan & Miller, 2003). In this study, the actual decrease on the ST harm-free care measure between positively deviant and the 'next best' ward was minimal (1.17%). Combined with the arbitrary nature of significance testing and the effect of confounding variables, the positively deviant wards may not have provided any safer care than the other high performing wards. Although the identification of statistically different positive deviants was a marked improvement from previous healthcare applications, future studies may also want to consider the extent to which clinical differences can be identified and whether the routinely collected data being used facilitates this.

3.15.2 Study limitations

There are a number of notable limitations to this phase of the study. First, one of the positively deviant wards was unable to participate due to prior involvement in another patient safety study and so it is not known whether staff and patient perceptions of safety would have supported the identification of this particular ward. Furthermore, participation in this other study may have improved levels of safety on the ward and therefore impacted their identification as a positive deviant. Second, the researcher faced a number of challenges when collecting the patient survey data. Although the PMOS is validated and has been used in different clinical settings, the patient population in this study was exceptionally elderly. Cognitive impairment and illness severity limited the number of eligible participants, and diagnoses that were unrelated to the admission and/or undiagnosed conditions may have influenced accurate survey completion. Similar challenges associated with recruiting older adults are well documented in previous research (Hancock, Chenoweth, & Chang, 2003; Harris & Dyson, 2001). Many patients struggled with the survey's length, the frequency of negatively worded items, and the use of double negatives. Due to patient frailty, researchers supported survey completion by reading the questions and recording answers, however, this may have introduced bias. Patients may also have perceived researchers to be members of ward staff reducing their disclosure of negative experiences. In combination these factors may have contributed to the less uniform

patient perceptions of safety. In recognition of these challenges, the PMOS measure has recently been adapted for a more elderly and vulnerable population (Taylor et al., 2016), and two shorter versions of the PMOS survey are currently being validated (G.Louch, personal communication, Jan 2016).

Third, patient perceptions of safety on each of the wards may have been positively skewed. Patients who lacked capacity or were too unwell were not eligible to participate for ethical reasons, however, these patients are likely to have been more vulnerable to safety incidents. Reduced variation within the measures will have affected the ability to identify exceptional performance and may have been due to elderly patients' tendency to show greater satisfaction with medical care than their younger counterparts (Hall & Doran, 1990). Anecdotally the researcher noted that relatives often prompted patients' recall of safety incidents and/or poor care which suggests that some elderly patients may not have mentioned all relevant safety concerns. Patients are also known to identify different types of safety events to those that are reported through staff led mechanisms (Weingart et al., 2005; Weissman et al., 2008). A patient's unique position may have led them to identify different aspects of safety which are not adequately captured within the ST data or the staff survey (McEachan et al., 2014). Fourth, due to limited resources the sample size for phase 3 was small and so the relationships between the ST data and staff and patient perceptions of safety could not be assessed statistically. However, the researcher ensured that the initial identification of positively deviant wards was not limited by this.

3.16 Overarching discussion

The study presented in this chapter aimed to a) identify a routinely collected broad measure of safety within the NHS that could be used to identify positively deviant ward teams; b) test a method for identifying positively deviant elderly medical wards; c) assess whether staff and patient perceptions of safety supported this identification; and d) assess whether positive deviants retain their exceptional performance over prolonged periods of time.

During phase 1, the NHS ST was identified as the only data source suitable for ward level assessment of positively deviant performances. Explorations highlighted the challenges and limitations faced when measuring and monitoring safety within the NHS and trying to identify exceptionally safe rather than unsafe performance.

During phase 2, NHS ST data were analysed to identify five positively deviant elderly medical wards that ranked top within their region, outperformed their trust, and performed consistently over 12 months. Findings indicated that a more robust method,

which used a number of different analyses including SPC, facilitated the effective identification of positively deviant elderly medical wards. These analyses however also highlighted the challenges faced in controlling for confounding variables - especially when identifying positive deviants on a broad outcome measure.

During phase 3, staff and patient perceptions of safety were assessed on nine positively deviant and matched comparison wards. In general, these perceptions supported the identification of positively deviant wards and so indicated that they can be identified in this way. However, the findings were not unanimous, especially among patients, and so the possibility that a different analysis on a different data source could have identified different positively deviant wards must also be considered. Furthermore, although phase 2 indicated that positively deviant performances can reliably be identified over 12 months, this appeared to be less feasible over a more prolonged time period (24 months).

Results from each study phase have already been discussed but there are some overarching challenges facing the approach. These are discussed below with the aim of developing robust guidance for future healthcare applications of the positive deviance approach.

3.16.1 The challenge of identifying a homogenous population

The positive deviance approach assumes that certain individuals, teams, or organisations succeed despite facing the same constraints as others (Marsh et al., 2004). The importance of identifying a homogenous population was previously discussed (section 3.4.2), and several steps were taken in this study to maximise this (peer identification, criteria to define ‘elderly medical’ wards, and the use of matched comparison wards).

Assessing homogeneity within complex healthcare organisations and on a broad outcome of safety is likely to be especially challenging. A wide range of factors are known to contribute to patient safety incidents within hospital settings and these operate at an individual, ward, organisation, and external policy level (Lawton et al., 2012). Each of these factors will affect the homogeneity of a population. As NHS trusts are structured, commissioned, and run differently it is difficult for external researchers or clinicians to understand these nuances, especially at ward level, where there is a limited amount of publicly available information.

When assessing a population’s homogeneity and exploring whether wards face different constraints and/or have access to different resources, it is important to distinguish between differences that give a ward an unfair advantage and those that indicate positive deviance (e.g. where wards have used the same resources differently

to overcome challenges). Engaging frontline clinicians who have intricate knowledge about their organisations makes it easier to assess homogeneity, but these individuals are unlikely to know how resources are used within other wards or trusts.

3.16.2 The challenge of involving frontline staff and patients

Positive deviance is a bottom up approach where solutions to problems are sought from within (Marsh et al., 2004). Members of the community are considered integral to the process with some public health processes emphasising the importance of involving the community prior to identifying positive deviants (CORE, 2002; The Positive Deviance Initiative, 2010). There is limited opportunity within the Bradley et al. (2009) process to involve staff and/or patients in identifying positive deviants within healthcare. Although clinical opinions about an intractable problem and the validity and/or usefulness of a data source can be sought, it is difficult to do this systematically across multiple organisations. More generally this may be compounded by difficulties faced in trying to engage frontline staff in improvement work (Dixon-Woods, McNicol, et al., 2012). NHS trusts operate as individual organisations which means staff are less likely to know how similar wards in different trusts perform. Geographic and organisational barriers make involving the community in identifying positive deviants more challenging than within a traditional public health setting.

3.16.3 Implications and recommendations for identifying positively deviant wards

This study has highlighted several implications for future healthcare applications of the positive deviance approach. Although the difficulties of measuring safe (Safety-II) rather than unsafe (Safety-I) patient care within healthcare organisations is well documented (Hollnagel, Braithwaite, et al., 2013b; Vincent et al., 2013), this study provides an indication that ST data can be used to identify positively deviant elderly medical wards and thus facilitate an asset based approach to safety improvement.

NHS ST data are not relevant to all clinical microsystems, however, they do provide an accessible and frequent source of safety information. Since designing this study additional ST tools have been developed to assess safety within medications, maternity care, mental health services, children's and young people services (NHS Quality Observatory, 2016). If these tools can also be used to identify positive deviants accurately then the method used in this study could have great impact across the NHS. The following recommendations and considerations are proposed to complement the Bradley et al. (2009) guidance and to increase the rigour in which positive deviants are identified within healthcare organisations.

- Involve frontline clinicians where possible when identifying positive deviants, e.g. when choosing a pertinent problem and selecting a suitable data source.
- Maximise the homogeneity of the study population to ensure positive deviants succeed despite facing the same constraints as others
- Consider what type of comparison group to select - average performers or a range of performance levels? Are confounding factors (which are not controlled for) adequately represented in the two performance groups?
- Consider which data will be used to identify positive deviants (where relevant the criteria used in phase 1 are referenced in brackets):
    - Are data routinely collected, valid, and reliable? (criterion 1) Is it possible to triangulate several data sources?
    - Are data consistently collected and accessible across the relevant population e.g. multiple wards / NHS Trusts? (criteria 2 and 3)
    - Do data represent recent performance? Are they published at an appropriate rate / frequency? (criterion 4)
    - Are data available at the appropriate unit of analyses, e.g. individual, ward, or organisation level? (criterion 5)
    - Are data available across a relevant time period to assess consistent outperformance?
    - Consider the impact of: confounding variables; the sample size for the data source; and rate of incidence.
- Select appropriate analyses:
    - What is the performance benchmark? Should positive deviants outperform others within their local or national population?
    - Can any confounding variables be controlled for? (including participation in large scale patient safety initiatives or research studies)
    - Can data be analysed temporally?
    - Is the interpretation of the analyses relatively intuitive or does it require expert/specialist skills?
    - Over what time period should positive deviants display exceptional performance?
    - Is it possible to assess for clinical as well as statistical differences?

3.16.4 Conclusions

This study provides an indication that positively deviant elderly medical wards which deliver exceptionally safe patient care can be identified over 12 months using NHS ST harm-free care data - a routinely collected, broad outcome measure of safety. A rigorous method for identifying positive deviants was successfully applied and staff

and patient perceptions of safety generally supported the identification of exceptional performers. The method provides a relatively practical and intuitive approach for identifying positive deviants, however, quite complex statistical software was required to create the run charts (R) and advice was sought from a statistician. Frontline healthcare professionals are unlikely to have the time or the skills required to complete these analyses themselves, however, quality improvement/data analysis teams within NHS trusts or regional organisations such as CCGs may have staff who possess the necessary expertise. Furthermore, training in SPC is increasingly being offered to healthcare teams (e.g. by the Yorkshire and Humber Improvement Academy) to support the development of these skills. The study has also highlighted a number of challenges associated with identifying positive deviants within healthcare, and has generated some considerations and recommendations for future applications of the approach.

Identifying positive deviants is only the first of four stages within the Bradley et al. (2009) process. Most regulatory systems (e.g. the Care Quality Commission) recognise that the assessment of quality and safety cannot rely on quantitative data alone and so they also include qualitative data collection e.g. via inspections (Bardsley, 2016). The effectiveness of the methods used are therefore likely to become more apparent as subsequent stages of the positive deviance process are conducted. For example, the qualitative enquiries of stage 2 (chapter 4) will uncover whether positively deviant wards actually do anything differently from the rest of the population to facilitate their success. This may highlight whether the approach truly identifies positive deviants or whether these wards just perform exceptionally well on a continuum of performance.

Chapter 4

An exploration of how positively deviant elderly medical wards deliver exceptionally safe patient care.

4.1 Chapter summary

This chapter progresses the positive deviance application that was reported in chapter 3. It focuses on the second stage of the Bradley et al. (2009) process: generating hypotheses about the positively deviant strategies that are used to succeed. A multi-method but predominantly qualitative study was conducted on elderly medical wards that displayed exceptional (positively deviant) and slightly above average (comparison) performance on the NHS Safety Thermometer data. A pragmatic and theoretically underpinned method was used to explore staff perceptions of how multidisciplinary ward teams deliver safe patient care. Hypotheses about the positively deviant strategies that facilitated exceptionally safe patient care are presented alongside a discussion of the methods used during this stage of the positive deviance approach.

4.2 Introduction

The assessment of high performance within healthcare has largely focused on the statistical relationships between hospital characteristics and various performance measures (Brand et al., 2012). Understanding these relationships is important, however, studies predominantly explore a limited number of variables and use cross-sectional, correlation analyses that fail to account for their complex and wide ranging nature (Taylor et al., 2015). Studies like this do little to improve our understanding of the underlying factors that explain how exceptional performance is achieved (Taylor et al., 2015). This is especially problematic when assessing broad outcome measures (e.g. overall safety) as there are likely to be a myriad of factors that influence both high performance and positive deviance (exceptionally high performance).

4.2.1 How should positively deviant success be explored?

The second stage of the Bradley et al. (2009) process aims to generate hypotheses about the positively deviant strategies used to achieve exceptionally high performance. It seeks to understand how positive deviants function in relation to an outcome of interest by assessing the specific strategies and the wider organisational context within which they are implemented. To generate a detailed picture about how healthcare organisations succeed, Bradley et al. (2009) propose that this second stage should be conducted using qualitative methods such as observation, interviews, focus groups, document analyses, and/or a combination of these.

As found in the systematic review (chapter 2), healthcare applications of this stage have predominantly used multiple methods, extensive resources, and have lacked meaningful staff and/or patient involvement. For example Taliani et al. (2013) conducted 136 interviews within US primary care medical homes, and Curry et al. (2011) conducted 158 interviews alongside one to two day site visits in 11 different hospitals. Many of the studies included within this review appear to have been led by external research teams and so are likely to have benefited from additional resources (e.g. funding, training, and time) which are not commonly available to clinicians working on the frontline. However, one of the objectives of this thesis was to critically appraise the positive deviance approach as a quality improvement method rather than a research process. Therefore, it was important to assess whether a pragmatic method could be used to conduct stage 2 of the positive deviance approach. This method must be feasible for clinicians and healthcare organisations to implement independently of external academics, i.e. it must be accessible to the skill mix of frontline clinicians and not require too many resources such as staff time.

The systematic review (chapter 2) also highlighted the arbitrary nature of the qualitative inquiries and the limited use of frameworks, theories, or even explanations as to why certain factors were explored (Baxter et al., 2015). To ensure that positively deviant strategies are not overlooked, it is important to comprehensively assess all factors that could contribute to exceptional performance during stage 2 of the positive deviance approach.

It is commonly accepted that there is no ‘silver bullet’ for improving patient safety (Goldsack, Cunningham, & Mascioli, 2014; Nieva & Sorra, 2003). Interventions have previously targeted specific errors, harms, and processes of care in order to improve the safety of elderly patients (Hefner, McAlearney, Mansfield, Knupp, & Moffatt-Bruce, 2015; Midlov et al., 2008; Yeung, Tam, & Wong, 2011). Despite the apparent success of discrete improvement projects, many interventions face unintended and sometimes negative consequences, are unable to sustain their improvements after interventions have ‘finished’, and their findings do not translate into different contexts or

environments (Dixon-Woods, McNicol, et al., 2012). In recognition of this, O'Brien et al. (1995) proposed that quality improvement within healthcare can be characterised by the strategic, technical, structural, and cultural dimensions of an organisation. The strategic dimension represents the conditions and/or processes that offer the greatest opportunity for improvement. The technical dimension consists of education and information systems. The structural dimension refers to the presence or absence of mechanisms to learn and share best practice, and the cultural dimension represents underlying beliefs, values, norms and behaviours. Interventions which solely target the structural and/or technical dimensions of quality improvement are unlikely to achieve the desired results. Furthermore, if the cultural dimension is not addressed results will only ever be small, temporary, and have limited impact (Shortell, Bennett, & Byck, 1998). The World Health Organisation's surgical checklists provide an example of this – despite the safety improvements gained through their implementation, their effectiveness requires a cultural change (Walker, Reshamwalla, & Wilson, 2012).

Healthcare reforms have commonly focused on structural changes, but over recent years there has been an increased call for cultural transformation (Scott, Mannion, Davies, et al., 2003). A number of prominent UK reports, such as those by Francis (2013), Keogh (2013), and Berwick (2013) have linked high profile failings within the healthcare system to poor organisational cultures. The need to improve culture as a means to increasing patient safety is prominent within policy recommendations (Department of Health, 2000a, 2002; Institute of Medicine, 2001), and in the US a healthcare organisation's accreditation is dependent upon conducting regular cultural assessments (Joint Commission for Accreditation of Healthcare Organisations, 2016).

4.2.2 Organisational culture

The prominence of organisational cultures developed during the 1980s as a means for emphasising the social rather than structural and process factors that facilitate high performance (Vincent, 2010). Organisational culture broadly refers to 'the way things are done around here' and draws upon various disciplines including organisational and social psychology and social anthropology (Carroll & Quijada, 2004; Scott, Mannion, Davies, et al., 2003). Although there is little agreement over its definition, Edgar Schein – one of the most influential researchers within the field – considered organisational culture to be:

"a pattern of shared basic assumptions – invented, discovered or developed by a given group as it learns to cope with its problems of external adaptation and internal integration – that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." (Schein, 2004 p.17)

Cultures exist not only between different organisations but also within different sections or groups of an organisation (Schein, 2004). Smaller sub-cultures form within hospitals or clinical units such as wards and teams, and they exist between different professional groups such as nurses and doctors (Vincent, 2010). Schein (2004) also highlighted the layered nature of organisational culture and proposed one of the most widely recognised frameworks for analysis (Scott, Mannion, Marshall, & Davies, 2003). His three levels of culture include: 1) 'artifacts' or the most visible manifestations of a culture; 2) 'espoused values and beliefs' which are consciously used to justify behaviour and choose between different courses of action; and 3) 'underlying assumptions' – the most important level of culture – which represent the unspoken and/or unconscious beliefs, values, and expectations that guide behaviour (Schein, 2004).

Although it is extremely difficult to conduct research on organisational culture (in part due to its layered and abstract nature, methodological challenges, and the lack of a common definition) there is evidence to support a relationship between organisational culture and performance (Scott, Mannion, Marshall, et al., 2003; Vincent, 2010). For example, Mannion, Davies, and Marshall (2005) assessed cultural characteristics of high and low performing acute NHS trusts. Each trust had their own unique culture but noteworthy patterns between the high and low performers suggested that divergent cultures existed in four broad ways. The leadership and management of high performing trusts was integrated and transactional with a strong corporate vision and explicit performance objectives. Information systems were highly developed with clear performance targets and lines of upward accountability. Compared to the low performing trusts, human resource policies were prioritised and they recruited, developed, and trained staff to pursue a broader corporate agenda rather than a narrow professional one. They also adopted a whole systems approach by developing relationships with key external stakeholders to proactively influence the local health economy (Mannion et al., 2005). Various approaches have been used to try and understand how organisational culture facilitates high quality, safe patient care including research into high-reliability organisations and safety culture.

4.2.2.1 High-Reliability Organisations

The influence of organisational culture and practices on performance has been studied within high-reliability organisations (HROs) such as nuclear power stations and air traffic control. HROs consistently deliver exceptionally high levels of safety over prolonged periods of time despite facing overwhelming risks and potential for error (Chassin & Loeb, 2011; Weick & Sutcliffe, 2007). Weick and Sutcliffe (2007) propose that HROs have a dominant culture of 'collective mindfulness' where staff look for, and

report, safety concerns before they pose significant risks. They also describe five principles that enable HROs to maintain exceptional levels of safety:

1. A preoccupation with failure
2. A resistance to oversimplification so that complex and subtle safety threats are identified quickly
3. A sensitivity to operations allowing small performance deviations to be identified and raised
4. A commitment to resilience so that errors are quickly recognised and contained
5. A deference to expertise when making decisions rather than looking to those at the top of a hierarchy

These principles are rarely observed within healthcare organisations and so Chassin and Loeb (2011, 2013) developed a conceptual framework to highlight three major changes that healthcare organisations should make when progressing towards higher reliability: leadership must commit to achieving zero harm; organisations must incorporate the principles and practices of a ‘safety culture’; and effective process improvement tools and methods (namely lean, six sigma, and change management) should be adopted. These three changes were broken down into components and described using four levels of maturity to support the establishment of a highly reliable organisation (Chassin & Loeb, 2013).

Although the HRO literature successfully describes the characteristics of high reliability within healthcare organisations, there is a lack of empirical evidence about its associations with safety and/or exceptional clinical outcomes, how HROs develop, and the key drivers behind high reliability (The Health Foundation, 2011a; Vincent, 2010). Furthermore, healthcare organisations appear to be moving towards high reliability through standardising protocols and using tools such as safety huddles. However, the majority of these only address specific safety concerns and do not create an overall culture of safety (Sutcliffe et al., 2016). As such, HROs provide guidance on what reliability within healthcare organisations should look like but the literature offers little practical guidance on how this can be achieved (Chassin & Loeb, 2013). This culture of safety, which is central to high reliability theory, is known to vary considerably not only at organisational levels but also at ward level (Davies & Mannion, 2013; Pronovost & Sexton, 2005). However, HRO research typically focuses on characteristics at an organisational rather than ward level (The Health Foundation, 2011a), and the extent to which cultural change can filter from the top of an organisation to the bottom is overestimated (Cooke, 2009).

4.2.2.2 Safety culture and safety climate

As described above, a positive safety culture is considered to be a key factor in achieving high reliability (Chassin & Loeb, 2013), and more broadly, safety culture is increasingly thought to be a necessary precursor, as well as an important strategy, for improving safety within healthcare (Pronovost & Sexton, 2005). Safety culture is considered to be one aspect of an organisation's wider culture (Vincent, 2010). It represents the underlying and shared values, beliefs, norms, procedures, and patterns of behaviour that provide clues about the priority of safety information in comparison to other competing demands e.g. efficiency (Flin, 2007; Weaver et al., 2013). A positive safety culture influences staff motivation to conduct safe behaviours and to report, discuss, and prevent adverse events (Øvretveit, 2009b; Weaver et al., 2013).

Within healthcare, safety culture and the related concept of safety climate are often referred to interchangeably (Guldenmund, 2000; Weaver et al., 2013). Safety climate is generally considered to be the surface manifestation of an underlying safety culture (Flin, 2007; Schein, 2004; Vincent, 2010), and the two concepts are often distinguished by the methods used to study them. The underlying nature of safety culture is typically explored using qualitative methods, whereas safety climate is measured predominantly through quantitative surveys. These surveys assess the surface manifestations of culture – the artifacts and espoused beliefs and values (Schein, 1990; Scott, Mannion, Marshall, et al., 2003). They provide a snapshot of staff perceptions and attitudes towards management, risk taking, safety policies and practices, and social aspects such as trust, openness, discipline, and support (Cox & Flin, 1998).

There is little consensus regarding the dimensions of safety culture (Pronovost & Sexton, 2005), but they are commonly thought to include: leadership commitment to safety; open communication founded on trust; organisational learning; non-punitive incident reporting and analysis; teamwork; and shared perception of the importance of safety (Halligan & Zecevic, 2011). Safety culture research has focused on developing safety climate surveys and assessing their associations with patient outcomes (Flin, 2007; Pronovost & Sexton, 2005; Pumar-Mendez, Attree, & Wakefield, 2014). Positive safety cultures have been linked to various patient safety outcomes including the Agency for Healthcare Research and Quality's Patient Safety Indicators (Mardon, Khanna, Sorra, Dyer, & Famolaro, 2010), lower readmission rates (Hansen, Williams, & Singer, 2011), and reduced medication errors and urinary tract infections (Hofmann & Mark, 2006). Although a recent review identified nine safety climate surveys for use in hospital settings (Pumar-Mendez et al., 2014), they each assess different domains of safety culture and often have limited reliability and validity (Flin, 2007; Pronovost & Sexton, 2005). Few have any theoretical underpinning and they are only able to

develop our knowledge of associations – they do not develop our understanding of the underlying nature of safety cultures, explain how safety cultures influence outcomes, or explain how safety cultures can be improved (Chassin & Loeb, 2013; Halligan & Zecevic, 2011).

The Manchester Patient Safety Framework (MaPSaF) is one of the few qualitative and theoretically underpinned tools for assessing safety culture. It was designed within and for the NHS to help understand and improve safety culture (Parker, 2009). The tool is theoretically underpinned by Westrum's Model of Organisational Development which distinguishes between three types of organisation through the way in which information is processed (Parker, Lawrie, Carthey, & Coultous, 2008; Westrum, 2004). Based on empirical evidence, two further types of organisation were added to Westrum's model and it was adapted specifically to assess safety culture (Hearts and Minds, 2016; Parker, 2009). The resulting five levels – pathological, reactive, bureaucratic, proactive, and generative – represent distinct progressions in the maturity of safety culture within an organisation. Pathological organisations or teams consider patient safety to be a 'waste of time' whereas generative organisations or teams, at the other end of the maturity spectrum, ensure risk management is integral to everything that they do (Parker et al., 2008). Within acute settings, the MaPSaF identifies ten dimensions of safety culture: commitment to overall continuous improvement; priority given to safety; system errors and individual responsibility; recording incidents and best practice; evaluating incidents and best practice; learning and effecting change; communication about safety issues; personnel management and safety issues; staff education and training; and team working. Each of these are described at all five levels of maturity (National Patient Safety Agency, 2006). Due to its qualitative nature and theoretical underpinnings, this safety culture assessment tool was chosen as the basis for the qualitative inquiry in this study.

4.2.3 Study aims and objectives

This chapter builds on the work conducted in chapter 3, whereby the NHS Safety Thermometer's (ST) 'harm-free care' measure was used to identify five positively deviant elderly medical wards that consistently demonstrated exceptionally high patient safety over a period of 12 months. Although many of the clinical outcomes and processes that are relevant to patient safety are not contained within the ST's harm-free care measure[1], the NHS ST data provide a 'temperature check on safety' (Power

[1] The ST harm-free care measure is calculated using data on four commonly occurring individual harms - falls, pressure ulcers, VTEs and UTIs (Health and Social Care Information Centre, 2014b)

et al., 2014) and so were used as an indicator for overall safety within this application of positive deviance.

Throughout this chapter, the second stage of the Bradley et al. (2009) process for positive deviance was applied. A pragmatic method, considered feasible for use on the front line of healthcare organisations, was used to help staff identify the ways in which their multidisciplinary team succeed. Although the physical tools and strategies that wards use to deliver safe care were of interest, they alone were unlikely to facilitate the exceptional performance on the broad outcome of safety that the positively deviant wards were identified for. Consequently, the researchers also aimed to uncover the underlying behaviours, cultures, and team dynamics that supported the multidisciplinary teams to succeed. To this end the MaPSaF was used to guide the qualitative inquiries.

The primary research questions addressed within this study were:

1. How do behaviours, cultures, and dynamics within elderly medical ward teams facilitate the delivery of exceptionally safe patient care?
2. What practical tools and strategies do multi-disciplinary teams use to deliver exceptionally safe patient care on elderly medical wards?
3. Is it possible to identify what underpins success with limited time and resources?

The following secondary research question was also addressed:

4. To what extent do organisational, situational and individual factors help or hinder the delivery of safe patient care on elderly medical wards with exceptional and average safety performances?

4.3 Methods

4.3.1 Study design, setting and ethical approvals

An observational, multi-method study was conducted to apply stage 2 of the Bradley et al. (2009) process. The study was conducted on the nine elderly medical wards identified during stage 1 of the positive deviance process (chapter 3). Four positively deviant wards and five matched comparison wards were clustered in five NHS trusts within the Yorkshire and Humber region. The study setting and all ethical approvals were fully described in chapter 3, section 3.9.1.

The study aimed to explore whether it was possible to uncover positively deviant success strategies using brief, pragmatic qualitative methods that required few resources. Focus groups captured staff perceptions about the concrete strategies and

abstract behaviours, team dynamics, and cultures that facilitated the delivery of safe patient care. Brief researcher field notes were also made after focus groups and ward visits[2]. As described in chapter 3 section 3.13.3, quantitative data were also collected via a staff survey to assess how organisational, situational, and individual level factors of the Yorkshire Contributory Factors Framework (Lawton et al., 2012) influence the delivery of safe patient care. Following analysis, findings were presented back to staff to assess the face validity, acceptability, and sustainability of the positively deviant strategies identified.

Researchers and ward staff were blinded[3] to the exceptional (positively deviant) and slightly above average (comparator) performance levels throughout this study. Blinding was only removed in order to complete the final stage of the qualitative data analysis (section 4.3.5 describes the stages of this analysis). This study and the quantitative study reported in phase 3 of chapter 3 were conducted concurrently and so blinding was primarily used to reduce bias when assessing staff and patient perceptions of safety on each ward (phase 3 surveys). Although blinding is uncommon within qualitative research, it helped to reduce bias and increase objectivity while collecting and analysing the focus group data – an advantage to both this study and stage 2 of the positive deviance process. The researcher (RB) and ward teams may have behaved differently during the focus groups had they known which performance group they belonged to. Furthermore, it would have been difficult to avoid prior knowledge of performance levels influencing the data analysis and consequently the identification of positively deviant strategies. Blinding ensured that strategies or behaviours were not labelled as being positively deviant simply because they were discussed by staff from the positively deviant ward teams.

4.3.2 Participants

Multidisciplinary ward staff from all roles and professional grades were invited to participate in a staff focus group held on each ward. The multidisciplinary teams typically comprised healthcare assistants, nurses, ward managers/sisters, doctors, physiotherapists, occupational therapists, pharmacist, domestics, and administrative staff. Focus groups containing six to eight people are thought to facilitate in depth enquiries into specific behaviours and perceptions (Krueger, 1994), therefore,

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[2] Ward visits were conducted during phase 3 of chapter 3 in order to collect quantitative data about staff and patient perceptions of safety.

[3] The blinding procedure was discussed in section 3.9.1 of chapter 3. Blinding was retained from the quantitative study into this qualitative one.

opportunity and purposive sampling was used to recruit approximately eight staff members on each ward.

Staff were invited to attend focus groups via a letter (the distribution of which was discussed in chapter 3, section 3.13.4.2). Staff could contact the researcher directly to express interest in participating, and ward sisters supported recruitment by advertising the focus group at ward meetings and by approaching staff who were not based on the ward full time.

4.3.3 Data collection tools

4.3.3.1 Manchester Patient Safety Framework

Simply asking staff to identify and discuss the ways in which they deliver 'safe patient care' may not have prompted in-depth conversations or uncovered positively deviant strategies. Therefore, an adapted version of the MaPSaF was used to structure focus group discussions. This study aimed to test a resource-light, pragmatic method, however, the MaPSaF guidance suggests that approximately 70 minutes should be taken for individuals and the group to assess their performance. As the tool was purely being used to stimulate conversation, these timescales were not considered feasible. A meeting was held with the tool's developer, Professor Dianne Parker, to explore how the MaPSaF could be adapted and shortened for this study. Following advice, three domains (personnel management and safety issues; staff education and training; and system errors and individual responsibility) were omitted as they represented system and organisational level factors rather than those that were relevant to, and within the control of, individual ward teams. It was considered more advantageous to retain the full detail of a smaller number of domains rather than remove detail in order to retain all ten domains. The final adapted tool (Appendix 9), which was approved by Dianne Parker, contained five dimensions of safety culture: commitment to overall continuous improvement; priority given to safety; communication about safety issues; team-working; and recording, evaluating and learning from incidents and best practice (which merged three domains into one – recording incidents and best practice, evaluating incidents and best practice, and learning and effecting change). This nationally recognised, theoretically underpinned tool helped staff identify the aspects of safety culture at which their ward performed exceptionally well.

4.3.3.2 Field note guidance

Although this study aimed to test a pragmatic method, staff may not always be consciously aware of the facilitating factors and/or the things that their team do differently when considering abstract concepts such as team behaviours and culture

(Schein, 2004). Observation and field notes are often used to help overcome discrepancies between what people say and do, and to uncover behaviours of which participants themselves are not aware (Mays & Pope, 1995). Although field notes represent researcher rather than participant perceptions and traditionally derive from intensive observations, they were used briefly and pragmatically within this study to uncover higher-order factors that facilitated the delivery of exceptionally safe patient care.

Field note guidance was used to help promote consistent observations across wards (Appendix 10). This guidance was derived from the Observational Teamwork Assessment for Surgery (OTAS - Sevdalis et al., 2009) and previous field note guidance that had been developed for a large multicentre randomised control trial to assess patient perceptions of safety (Sheard et al., 2014). The OTAS is a practical, valid, and reliable tool used to comprehensively assess the quality of teamwork within an operating room (Sevdalis et al., 2009; Undre, Healey, Darzi, & Vincent, 2006). It includes the assessment of two parts – team work related tasks and teamwork related behaviours – the latter of which were relevant to this study. The OTAS was derived from a conceptual framework for measuring teamwork (Dickinson & McIntyre, 1997) and includes five recognised behavioural constructs of team performance: communication, coordination, cooperation and backup, leadership, and monitoring and situational awareness (Sevdalis et al., 2009). Traditionally, the five behavioural constructs are assessed quantitatively in situ, however, this study used them as a framework to comprehensively generate qualitative field notes about team dynamics that occurred predominantly during the focus groups. Although the OTAS was developed for use in surgical settings, it has also been used to assess teamwork within multidisciplinary cancer team meetings (Lamb, Wong, Vincent, Green, & Sevdalis, 2011), and inter/multidisciplinary rounds on medical units (O'Leary, Boudreau, Creden, Slade, & Williams, 2012).

The field note guidance used within this study also drew upon the guidance used within a recent patient safety randomised control trial (Sheard et al., 2014) and included observations about staff and patient interactions, staffing levels and workload, patient case mix, and ward engagement with the research.

4.3.3.3 The Yorkshire Contributory Factors Framework

The empirically based Yorkshire Contributory Factors framework (YCF) contains 19 organisational, situational, and individual factors which contribute to patient safety incidents (Lawton et al., 2012). The survey that was used during phase 3 of Chapter 3 to assess staff perceptions of safety also included items to assess each of these contributory factors (see Appendix 6). Staff rated the extent to which each factor

helped or hindered the delivery of safe patient care on their ward. Items were scored using 5-point Likert scales ranging from ‘extremely helps’ to ‘extremely hinders’.

4.3.4 Procedure

4.3.4.1 Staff focus groups

Focus groups generate data by capitalising on communication between participants – this process of interaction is integral to the method (Kitzinger, 1995). In addition to providing a pragmatic and efficient method for gathering data from multiple participants, focus groups provided the ward team with an opportunity to explore and identify the ways in which they perceived themselves to succeed, thereby facilitating a bottom up approach.

One focus group, lasting up to 60 minutes, was conducted on each ward. Due to blinding, staff did not know whether their ward was a positive deviant or comparator. Suitable times and locations were arranged with ward sisters, and written and verbal explanations of the study were given to staff. Following an opportunity to ask questions, written informed consent was gained. All focus groups were facilitated by the researcher (RB). The adapted MaPSaF was introduced and staff were given approximately ten minutes to read the framework and rate their ward on each safety culture domain. As a group, they then identified domains which they thought their ward particularly excelled in. These domains were the focus of all subsequent discussions. Discussion was predominantly led by the participants but a semi-structured discussion guide based on the MaPSaF domains (see Appendix 11) was used to help staff identify specific strategies and behaviours that facilitate the successful delivery of safe patient care. All focus groups were audio recorded. Participation was incentivised using refreshments and a £30 gift voucher per person (each ward decided whether vouchers were given to the individual or the ward).

4.3.4.2 Researcher field notes

Field notes were completed by the researcher using the field note guidance described in section 4.3.3.2. They were primarily completed following each of the focus groups. Some pertinent notes were also taken following ward visits to collect the staff and patient survey data described in Chapter 3. In line with the study aims, reliance on field notes were kept to a minimum in order to reduce the amount of resources required and thus maintain a pragmatic method.

The secondary purpose of the field notes was to assess whether researcher perceptions of safety on each ward aligned with the ST data used to identify positively deviant and comparison wards (Chapter 3). On completion of all data collection, and

while still blinded to performance levels, the researcher (RB) ranked each of the wards and made predictions as to whether the wards were positively deviant or not.

4.3.4.3 The Yorkshire Contributory Factors framework

Questions assessing the YCF framework were included in the staff survey, the full procedure for which was outlined in Chapter 3 (section 3.13.4.2). These questions are not validated but were included opportunistically to address the secondary research question.

4.3.4.4 Feedback meetings

On completion of all analyses (see section 4.3.5)[4], informal feedback meetings were arranged on each ward for staff members who were interested in the findings. They provided an opportunity for member checking whereby the qualitative findings were discussed and the researcher gained feedback from staff about the face validity, acceptability, and sustainability of the positively deviant strategies identified. The researcher made detailed notes following each meeting to capture all the relevant feedback. Staff verbally consented to the anonymous use of their views within the study.

4.3.5 Data analysis

Audio recordings from the focus groups were transcribed verbatim and anonymised. The overarching aim of the analysis was to generate hypotheses about the positively deviant strategies that multidisciplinary ward teams use to deliver exceptionally safe patient care. However, the comparison wards also demonstrated above average safety performances and so the researcher did not want to disregard important information and learning about how good levels of safety are facilitated within elderly medical wards. Consequently, the qualitative data were analysed thematically in two stages: firstly to generate a thematic framework of factors that facilitate high performance (across all wards); and secondly to identify which of these factors were positively deviant strategies.

4.3.5.1 Stage 1: A thematic framework of factors facilitating high performance

During stage one of the analysis, researchers remained blinded to whether wards were classed as positively deviant or comparators in order to ensure that factors facilitating high (above average) performance on comparison wards were not overlooked. Thematic analysis was used to collectively analyse data from all focus

[4] Including completion of the quantitative analysis described in phase 3, chapter 3.

groups and to facilitate the identification, analysis and reporting of patterns or themes within a data set. Thematic analysis is not linked to a particular theoretical or epistemological position (Braun & Clarke, 2006). An iterative, six phase process proposed by Braun and Clarke (2006) was followed (see Table 4.1) in order to generate a thematic framework which consisted of themes (broader units of analysis) and subthemes (meaningful groupings of data). After transcribing the focus groups the researcher familiarised themselves with the data making note of emerging patterns within them (phase 1). The transcripts were systematically and iteratively coded into meaningful groups of data – subthemes – using coloured pens and by extracting data manually into Microsoft Excel documents (phase 2). Once all data were coded, subthemes were collated together into broader themes (phase 3). The themes and subthemes were continually reviewed to ensure that the coded data were consistent with their meanings. A thematic framework of factors facilitating high performance was created (phase 4). The themes and subthemes were iteratively refined and then named (phase 5), and the analysis was written up for this chapter (phase 6). The methods used to maintain rigour during this stage of the analysis are reported in section 4.3.6.

Table 4.1 An iterative six stage process for thematic analysis - adapted from Braun and Clarke (2006).

Phase		Description
1	Familiarisation	Data were transcribed, read and re-read. Initial thoughts about potential subthemes were noted.
2	Generating initial subthemes	Interesting features of the data were coded systematically across the whole data set. An initial list of subthemes was generated.
3	Searching for themes	Subthemes were collated into potential themes (broader units of analysis).
4	Reviewing themes	Themes were checked to ensure consistency with the coded extracts and the entire data set. A thematic framework was generated.
5	Defining and naming themes	Themes were refined and clearly defined to generate an overall story.
6	Producing the written analysis	A written analysis was produced for this chapter and vivid and compelling extracts were selected.

The resulting thematic framework represented all of the abstract behaviours, cultures and team dynamics that staff perceived to facilitate safe patient care (i.e. high performance rather than exceptionally high, positively deviant performance). Alongside this thematic framework, data were also coded to identify the practical, concrete strategies and tools that staff considered helpful in the delivery of safe patient care.

In order to retain a bottom up approach to generating hypotheses about positively deviant success strategies, the analysis predominantly focused on the data that had been generated through staff focus groups i.e. represented staff perceptions of how they succeed. However, while still blinded, the researcher field notes were also analysed to a) deductively uncover supportive and/or contradictory evidence for the factors identified and b) inductively generate high-order factors that facilitated safety on the wards. These high-order factors represented things that were not explicitly present within the focus group transcripts (i.e. had not been overtly discussed by the ward staff) but which had been observed and noted down by the researcher.

4.3.5.2 Stage 2: Positively deviant success strategies

Blinding was removed before conducting the second stage of the qualitative analysis during which the positively deviant strategies were identified. The aim was to identify subthemes within the thematic framework (the behaviours, cultures, team dynamics etc.) which were unique to the positively deviant ward teams. Positively deviant strategies were identified by exploring the transcript extracts that had been coded within each subtheme of the thematic framework (including the behavioural and cultural factors, the high-order factors and the concrete strategies and tools). In turn, transcript extracts were analysed for each individual subtheme to explore whether differences existed between the positively deviant and comparison wards. Subthemes were only considered to be positively deviant strategies if there were explicit differences between the transcript extracts for each of the two performance groups. While analysing the data and identifying the positively deviant strategies, RB consulted with the other researchers in order to maintain rigour. They discussed the differences between each of the coded transcript extracts and resolved queries about whether a subtheme should be considered to be a positively deviant strategy or not.

Prior to collecting the qualitative data the researcher had intended to use qualitative thematic content analysis (Graneheim & Lundman, 2004; Vaismoradi, Turunen, & Bondas, 2013). However, following familiarisation with the data, a purely thematic analysis was considered more appropriate as there were few data suitable for content analysis (the extent to which staff discussed specific concrete strategies and tools was less than originally anticipated). Furthermore, to answer secondary research question 4 researchers had intended to undertake statistical comparisons using the YCF survey data. However, the researcher noted a potential response bias (limited or no variation across some participant answers) and recalled a couple of conversations with frontline staff about the difficulties they had answering the items due to confusing and complex terminology. As the validity and reliability of the YCF survey items has not been assessed and the data lacked statistical power due to it being a secondary research question, they were excluded from the analysis to save resources and time.

4.3.6 Rigour

Rigour refers to how researchers demonstrate the integrity of their findings. Although this topic is well debated (Tobin & Begley, 2004), four criteria to maintaining rigour are commonly proposed: credibility, dependability, transferability, and conformability (Lincoln & Guba, 1985). Credibility refers to how faithfully researchers interpret and represent participants' views. During the analysis one quarter of the transcripts (n=2) were independently second coded by NT and RL to assess inter-coder reliability and identify areas of disagreement within the thematic framework. Second coders were blinded to RB's original coding. RB met regularly with supervisors to discuss and resolve coding problems. On completion of the analysis, feedback meetings were held as way of member checking the positively deviant success strategies identified. Credibility is also demonstrated through the use of illustrative quotes. Dependability assesses the degree to which a research process is logical, traceable, and well documented. A reflexive diary was maintained throughout the study, and an audit trail documented analytic progression. The transferability of findings to other settings or groups was enhanced by sampling diverse wards (NHS trust types, patient genders, and levels of deprivation). This ensured that different types of elderly medical wards were represented within a more widely homogeneous population. Transferability was further assessed through member checking at the feedback meetings. Finally, confirmability assesses the extent to which research findings clearly derive from the data. It is usually established when all other criteria for rigour are achieved and can be demonstrated using illustrative quotes.

4.4 Findings

Focus groups were conducted on eight participating wards - four were positively deviant and four were comparator wards. Three separate attempts were made to conduct a focus group on the ninth ward (T2W4).

All focus groups were scheduled for an hour and were attended by various members of the multidisciplinary team. Target recruitment numbers (n=8) were met on five of the wards, with all of them meeting what is considered to be the minimum for focus group research (n=4) (Kitzinger, 1995). After gaining written consent and completing the MaPSaF activity, staff discussions lasted an average of 39 minutes. Recruitment information for each ward is detailed in Table 4.2.

Table 4.2 Focus group recruitment information

	Ward	Number staff (n)	Staff job roles	Discussion length (min[a])
Positively deviant wards	T1W1	6	2 OTs, therapy assistant, nurse, junior doctor, registrar.	42
	T2W3	9	Deputy ward manager, nurse, 2 HCAs (1 apprentice), 2 physios, OT, 2 housekeepers	40
	T2W6	13	2 junior doctors, consultant, 2 OTs, ward manager, nurse, 2 HCAs, pharmacist, ward clerk (1 junior doctor and 1 nurse joined part way)	41
	T5W10	8	Deputy and ward managers, 2 nurses, HCA, physio, student nurse, junior doctor.	37
Comparison wards	T1W2	5	OT, ward clerk, nurse, deputy and ward managers	36
	T2W5	9	OT, physio, ward manager, 2 student nurses, HCA, ward clerk, domestic supervisor, registrar	37
	T3W8	7	Physio, 2 nurses, ward manager, consultant, ward clerk, HCA.	46
	T4W9	13	Consultant, ward manager, therapy assistant, housekeeper, 7 HCAs, 2 nurses.	35

[a] Rounded to the nearest minute. Excludes time spent introducing the focus group, gaining consent and completing the MaPSaF activity.

Abbreviations: OT = Occupational Therapist, HCA = Healthcare Assistant, Physio = Physiotherapist

During stage 1 of the analysis, while still blinded, a thematic framework was generated to represent the factors that facilitated high performance – good levels of patient safety. This framework included 12 themes, 65 subthemes, and six high-order factors which characterised team behaviours, cultures and dynamics, and also 14 concrete strategies and tools that staff used to deliver safe patient care.

Once blinding was removed explicit differences between the positively deviant and comparison wards were found in 14 of the behavioural subthemes. These were hypothesised to be positively deviant strategies. Interesting patterns between the two performance groups were also identified in six subthemes. Figure 4.1 provides an overview of the findings.

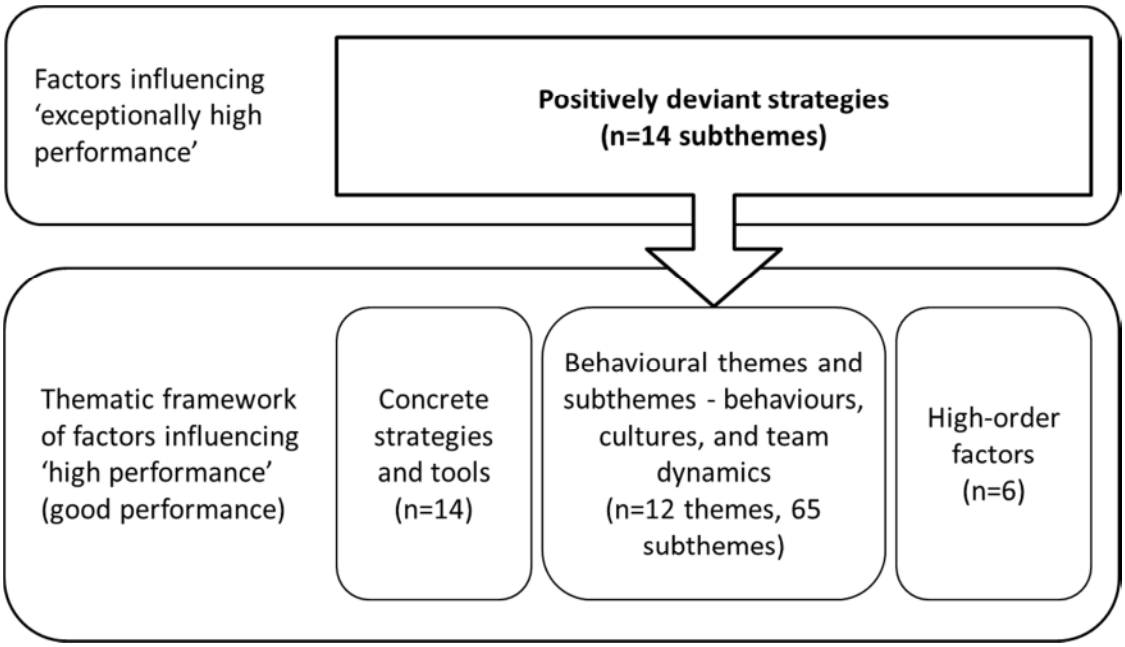

Figure 4.1 Overview of study findings

4.4.1 The thematic framework of factors facilitating high performance

Across all wards, staff perceptions of the team behaviours, cultures, and dynamics that facilitated safe elderly medical care were combined into 12 overarching themes. They represented the ways in which multidisciplinary ward teams achieve high performance or good levels of safety. Themes were generated from a total of 65 behavioural subthemes. As this thesis focuses on the positive deviance approach, it is beyond the scope of this chapter to discuss each high-performance theme and subtheme in detail. Instead, the themes (presented in bold) are briefly outlined below and the subthemes are discussed in Appendix 12 alongside illustrative quotes.

The two most prominent themes were **staff relationships** and **integrated teams**. Staff discussed the nature of their relationships with other team members, and the beneficial effects they had on the team and the delivery of patient care. They emphasised the importance of taking a multidisciplinary approach and identified ways in which this had been achieved. The **approachability** of team members across professional roles and grades and under a number of different scenarios was also considered important to delivering safe patient care, and staff reported various ways in which they **supported one another** to get tasks done. They described a calm, relaxed, and open **ward atmosphere** and the various ways in which their teams had **improved performance** and **enabled communication** between staff members. Staff referred to, but were less articulate about, the importance of **leadership on the ward** and how this facilitated patient safety, and they highlighted the ways in which they had overcome challenges with **staffing**. Teams delivered **patient centred care**, and staff

emphasised the importance of **delivering care** in a proactive and timely manner. The final theme within the framework, **organisational influences**, reflected the extent to which staff and structures that were external to the ward team supported the delivery of safe patient care.

The themes and subthemes detailed above were predominantly generated from staff perceptions gathered during the focus groups. Researcher field notes and a deeper interpretation of the focus group data generated six additional high-order factors: the use of **shared mental models** between team members; the different **perceptions of safety** held within teams; the extent to which staff had a **positive outlook**; **pride**; evidence of **cohesion between team members**; and examples of **leadership** within the team. These are also detailed within Appendix 12.

Prior to the removal of blinding the researcher (RB) recorded which wards they considered to be positively deviant based on their time spent on the wards collecting data (for this study and the one discussed in Chapter 3). Table 4.3 ranks all of the wards[5] based on their safety performance and the researcher's perceptions. Wards highlighted blue are positively deviant based on ST data (column 1) and researcher perceptions (column 3). The researcher correctly identified three of the four positively deviant wards and four of the five comparison wards. The wards that were incorrectly identified were those where the researcher was least confident about their performance group.

[5] Including the wards that did not complete a focus group within this study and did not take part the research discussed in chapter 3

Table 4.3 Comparison between Safety Thermometer data and researcher's perceptions of ward level performances

Rank – based on Safety Thermometer data [a]	Ward	Rank – based on researcher's perceptions [b]
1	T2W3	3
2	T2W6	5
3	-	*Did not take part in study*
4	T5W10	1
5	T1W1	2
6	T1W2	9
7	T4W9	8
8	T3W8	4
9	T2W4	7
10	T2W5	6 *(no focus group)*

[a] Based on the Safety Thermometer performances assessed in Chapter 3, those wards highlighted blue are the positive deviants and those wards highlighted green are the matched comparison group.

[b] Based on the researcher's perceptions, the wards highlighted blue are those which they perceived to be positively deviant and the wards highlighted green are those which they perceived to be matched comparators.

4.4.2 Positively deviant success strategies

Explicit differences between the positively deviant and comparison wards were identified in 14 subthemes. These were hypothesised to be positively deviant strategies and they manifested themselves in two key ways. For some subthemes, staff on the positively deviant wards were the only ones to mention a certain behaviour or culture (subtheme within the thematic framework). Staff on comparison wards did not discuss these subthemes as something that their teams did or as something that facilitated safety on their wards. Consequently these subthemes were considered to be explicit and unique to the positively deviant wards and so were classed as positively deviant strategies. The second manifestation of positively deviant strategies was where staff from both positively deviant and comparison wards discussed a subtheme, but where there was an explicit difference in the content of the coded extracts between the two performance groups, i.e. staff on the positively deviant wards discussed the subtheme in a substantially different way to staff on the comparison

wards.[6] Due to these explicit differences, these subthemes were also considered to be positively deviant strategies.

The extent to which each positively deviant ward displayed the positively deviant strategies is outlined in Table 4.4. The table also shows which comparison wards discussed each of the subthemes that were considered to be positively deviant – although these wards did so in a substantially different way to the staff on positively deviant wards. In three cases (acquiring additional staff, directorate support, and keeping patients and relatives informed) explicit differences between the two performance groups were identified based on the absence rather than presence of a behaviour.

[6] The findings and supporting transcript extracts that are presented over the following pages will highlight the differences between positively deviant and comparison wards for each of the positively deviant strategies.

Table 4.4 The positively deviant success strategies and extent to which they were displayed on each ward.

Positively deviant success strategy	Theme within thematic framework	Spread of strategies across wards							
		Positively deviant wards				Comparison wards			
		T1W1	T2W3	T2W6	T5W10	T1W2	T2W5	T3W8	T4W9
Knowing each other	Staff relationships	✓	✓	✓	✓	✓	✓		
Trust	Staff relationships	✓		✓					
A multidisciplinary approach	Integrated teams	✓	✓	✓	✓	✓	✓	✓	✓
Integrating ward based AHPs	Integrated teams	✓	✓	✓	✓		✓		
Working together	Integrated teams	✓	✓	✓	✓		✓		
Feeling able to ask questions or for help	Approachability	✓	✓	✓	✓			✓	
Setting expectations	Ward leadership	✓	✓	✓	✓	✓	✓		
It's a pleasure to come to work	Ward atmosphere	✓	✓	✓	✓				
Learning from incidents	Imp. performance		✓	✓		✓		✓	
Acquiring additional staff	Staffing				✓		✓	✓	✓
Stable and static teams	Staffing	✓	✓	✓	✓				
Focus on discharge	Delivering care	✓	✓	✓	✓				
Directorate support	Org. influences					✓	✓		✓
Keeping patients and relatives informed	Patient centred care		✓		✓		✓	✓	✓

Staff on positively deviant wards were passionate about the importance of team members **knowing each other** as this influenced their ability to work and support each other as a team to deliver safe patient care. Some staff highlighted this specifically with regards to their doctors and the effect it had on reducing professional hierarchies and increasing approachability. Staff on the two comparison wards were more superficial in their descriptions of 'knowing each other' referring to the benefits of simply knowing someone's name rather than having any deeper form of relationship.

> *[1] T2W3: positively deviant ward – when comparing themselves to other wards that don't perform so well*
>
> *Physiotherapist 1: […] And all of a sudden all of the things that probably make a very safe ward are lost because you don't know who the ward, like you know the name of the staff nurse but you don't know who she is and, and where she is in her career and what her passions and things are and, […]*

> *T1W1: positively deviant ward*
>
> *Staff Nurse: It's, it is [Registrar], it's amazing having done 20 years with a consultant that never knew my name, to somebody who says good morning to you when you walk on the ward. And it just gives you that…. It's broke down that first initial barrier that then you can start having a therapeutic relationship for your patient.*

> *T2W5: comparison ward*
>
> *Registrar: And that helps us now having, a, an OT in the team, here all the time and you hear the OTs name. Rather than, 'oh I'll go phone the OT' …*
>
> *Ward Manager: Yep, yep.*

One positively deviant ward considered staff knowing each other to be fundamental to their success and so took steps to encourage it. They invited junior doctors to their monthly team meetings, and incorporated 'formal introductions' whenever someone new attended their safety briefing.

> *T2W6: positively deviant ward*
>
> *Ward Manager: What you've got is you've got fundamentally you've got a big part of the team that all know each other, they stay together all the time, so they've been together for a long period of time so then when people come in just to dip in and out, like junior doctors and physios and OT's and things, because they see that relationship between the team that's already there, they then feel it's easy to become part of that team. Does that make sense?*
>
> *Consultant: But I think we deliberately encouraged that as well [Ward Manager] haven't we.*
>
> *Ward Manager: Yeah, yeah we do encourage it yeah.*

---

[1] To maintain anonymity across all focus group extracts the local terminology used for staff roles have been generalised e.g. ward sisters, senior sisters, charge nurses are all referred to as ward managers.

Although little emphasis was placed on it, **trust** between team members was also considered to help the delivery of safe patient care. With regards to having an integrated team, taking a **multidisciplinary approach** and working collaboratively with staff from all professions was discussed extensively across all wards as a strategy for delivering safe patient care. However, the positively deviant wards were more emphatic about its importance and exemplified how they involved the multidisciplinary team, kept them informed of things, and discussed the benefits that this provided in terms of knowing about patient care plans and risks. Positively deviant wards also accentuated the involvement of non-professional staff in the day to day ward activities such as meetings/briefings, quality improvement projects, and documentation. The comparison wards described their multidisciplinary approach in more generic and abstract terms.

> *T2W5: comparison ward*
> *Registrar: It does feel quite MDT doesn't it.*
> *Physiotherapist: Yeah I was going to say team working.*
> *Registrar: People talk to each other and are like respectful of each other.*
> *Occupational Therapist: Yeah.*

> *T1W2: comparison ward*
> *Deputy Ward Manager: It's not particularly just aimed at safety. But we have a board round that involves everybody. You know doctors, consultants, the therapists, nursing staff.*

> *T2W6: positively deviant ward*
> *Ward Manager: […] But fundamentally, like I say, like I said at the beginning, it's all about an MDT approach and that's what it, because everybody's involved, everybody feels like they've got responsibility for every bit of the safety on the ward regardless of who it's about or who it is. And that gets continued 24/7 because they know about it they think about it and then the information's passed on and disseminated throughout the MDT, so everybody has a responsibility to look after the patients and make sure it's a safe environment; which is fundamentally what we've been trying to do for the past 18 months.*

> *T2W3: positively deviant ward [Deputy Ward Manager described a scenario where their housekeeper had raised a concern she had about a patient to the consultant during a safety briefing]*
> *Deputy Ward Manager: So [the consultant] then explored all her other symptoms and consequently you know went off for a liver ultrasound and found something wrong with her. So it, it just, it just goes to show that, I'm sure that would have been found anyway, but it probably nowhere near be as prompt. And that just shows exactly why it is important that everybody is there.*
> *Physiotherapist 1: And I do wonder on other wards where is it just qualified people that attend the safety briefing and I don't think it works as well. Or safety briefing doesn't happen.*

Deputy Ward Manager: Umm.

Having ward based allied health professionals (AHPs – predominantly physiotherapists and/or occupational therapists) who worked on the ward rather than across several different wards was identified as a concrete strategy for success within the wider analysis. Staff considered this resource to benefit the safe delivery of patient care in two ways: by building staff relationships and by facilitating the integration of team members. The latter of these – **the integration of ward based AHPs** – was considered to be a positively deviant success strategy. Staff on the positively deviant wards described how their ward based AHPs were truly integrated within the wider team. This enabled them to be fully involved in all aspects of the patients care, to contribute to discussions, to work more closely with other staff, and to feel like an important part of the team. The only comparison ward to mention this subtheme described the more practical benefits associated with having an additional member of staff on the ward and greater access to the allied health professions.

T1W1: positively deviant ward

Occupational Therapist: I think that's one of the big things, I mean, when we moved over here, very quickly we decided that we wanted to be on the ward rather than in an office round the back. So we actually took the table from [the day room] and moved it along [into the corridor] and it's great because it's right opposite the main nurses' station so you hear phone calls coming in and as [Staff Nurse] says we can say 'can you speak to Mrs So and So's family' and that really helps.

T2W3: positively deviant ward

Occupational Therapist: I think that the same, like as an OT or as someone that is not usually based on a ward like, I am now based on a ward, but I feel like I've been really well accepted, you know to the team and I think it's just, or everyone feeling like they're equal you know and playing an equal part in patients' care and I think that's a huge thing. Coz if you feel valued you step up to the mark you know. And obviously we all want to do our best but I think when you feel like you are part of something that is really good and really strong like it, just it works so well.

T2W5: comparison ward

Ward Manager: I think, I can think already clearly the impact of you actually being based here and patients. Err I think, it, it is clearly evident, clearly evident. There referrals are going through much quicker, they are being acted upon much quicker, hence quicker discharges, hence the other knock on effects, so no definitely. […]

Two positively deviant wards took direct action to increase AHP integration. T1W1 created a dedicated space directly opposite the main nursing station for therapists to work from (described above), and T2W6 made the following changes:

T2W6: positively deviant ward

Consultant: Yeah, cos when we were on ward [number] there was very much like the ward and then there was a doctors' room at the end and I know this room is at the end but we've never called it the doctors' room and when we made this room it was very much a MDT room and we set it up like that didn't we, so that's maybe made a difference.

Junior Doctor: I found this room quite useful because we're always here, as junior doctors we're surrounded by errm occupational therapists, physiotherapists, pharmacists are just next to us and all the nurses come in and out so it makes it easier whenever we have any questions regarding patients or any family discussion needed, it's just very approachable; you can actually approach them easily.

T2W6: positively deviant ward

Consultant: […] the pharmacist came later in the day originally but then when we started the safety briefings - it would have been [names given] who arranged it so that pharmacist could be here in a morning rather than an afternoon - which again brought the pharmacist more into the, more into the team and more into the safety briefings and opened the discussions again instead of the pharmacist just being….

Pharmacist: Coming on, writing in notes and disappearing.

Consultant: Yeah, yeah exactly, that the pharmacist really became part of the ward team a lot more so then we're using the pharmacist a lot more because they are there and it's much more of a dialogue than a "I told you to do that and I'm now going to do it" and. It's just more of a conversation.

Positively deviant wards described an extremely integrated way of **working together** which involved staff from all different professional groups, levels of experience, and across all stages of the patients' care. The only comparison ward to discuss this subtheme simply referred to the interactions between senior nursing and medical staff.

T5W10: positively deviant ward

Junior Doctor: Team working is really strong on this ward. I think umm. It is very suited to the whole practice of geriatric medicine. You know there genuinely is a kind of. .. Everyone is involved in the care of the patient, works together you know. Whether that's through kind of from the MDTs. The full day starts in the morning with therapists, nurses, doctors there all. You know even on the ward rounds we always do them together. You know, doctors will always go round with nurses which is really useful because, you know, a lot of patients that we look after can't communicate how they are in lots of ways. So actually that's really valuable. Arrhm. And we often have discussions with you know, the therapists will come around and we discuss how the patients are, and we all write in the same set of notes which is helpful in terms of that.

Positively deviant wards exclusively discussed the importance of having **stable and static staffing**, and – potentially linked to this – staff considered it to be a **pleasure to come to work**. They considered their well established, longstanding teams with low turnover and absence rates to be a facilitating factor in the delivery of safe patient

care. These positively deviant success strategies were not discussed by staff from any of the comparator wards.

> *T2W3: positively deviant ward*
>
> *Physiotherapist 1: […] And certainly the best part of our career is spent rotating between the wards. And so from my experience this ward has quite a static and stable staffing level and I think that enables staff to have that good team working effort. I know it's different looking from an AHP to a nursing viewpoint but it doesn't seem that you have a particularly high level of sickness, you don't have a particularly high staff turnover. And I think there is a lot of stability on the ward.*

> *T5W10: positively deviant ward*
>
> *Deputy Ward Manager: There was a line of staff at, at her door asking to come and work on here. [laughs]. Yeah*
>
> *All: [agreement and laughter]*
>
> *Ward Manager: Yeah we have staff knocking on the door.*

> *T1W1: positively deviant ward*
>
> *Staff Nurse: I wouldn't have stayed if it hadn't been fabulous, I've been known to leave jobs because of patient safety. My last, my last post I worked there for three months but they wouldn't listen to me so I handed my notice in because I just couldn't, I couldn't put my name to, I didn't want to put my name to the unit. I'd built a reputation of trying to be the best nurse I could be and they just weren't listening so I just thought I've got to go and I've been here six years; this is the longest job I've ever had as a nurse.*

Regarding staffing, attitudes toward **acquiring additional staff** to alleviate temporary shortages (e.g. agency/temporary staff) also differed between the two performance groups. Although the researcher noted that many participating wards used agency staff, the positively deviant wards did not identify this as a facilitating factor in the delivery of exceptionally safe patient care.

> *T2W5: comparison ward*
>
> *Ward Manager: I think we have reduced our falls by 60%, 50-60% just by bringing in roundings, having specials. So if you look at that for, from the case of the expenditure in harm, i.e. falls, fractured hips, surgery, extensive stays in hospital derr derr derr, to what it's costing to doing our cohorting – bringing in our specials – you know, the, it's just enormity is, is what we are saving, not just in financial but also in patient safety.*

> *T5W10: positively deviant ward*
>
> *Staff Nurse 2: It were one of the first, one of the first things that I said to you when I come down here weren't it. Nobody's being one to oned.*
>
> *Ward Manager: Yeah coz other wards repeatedly ask for one to ones for their patients. 'We need a one to one'. I don't think we, we wouldn't even ask for one, would we.*
>
> *Deputy Ward Manager: [laughs] No.*

All: [agreement]

In a similar way, staff on comparison wards were the only ones to mention the **support given by directorate colleagues** as a facilitating factor in the delivery of safe patient care. Staff on positively deviant wards did not mention this factor at all.

T1W2: comparison ward

Deputy Ward Manager: […] But I do think we are better now with smaller directorate. It was too big being in [previous directorate].

All:[agreement]

Researcher: So does that lead, does that level of leadership, have you found that's made =

Ward Manager: = It's better yeah. You work closely with your matron, you work closely with your nurse director. The [previous directorate] nurse director, I knew her coz she interviewed me but she never helped me investigate any [Serious Untoward Incidents] or 'owt like that because obviously she'd probably got too many to get involved in. But the nurse director for [current directorate] comes and helps me investigate them, and comes and looks at them, and walks round wards and things.

Deputy Ward Manager: She's very good in't she.

Ward Manager: She's really good [Nurse Director]. I like her.

The benefits of leaders **setting expectations** about how care should be delivered were made explicit by all of the positively deviant wards. Clear expectations ensured that staff knew exactly what to do, how to do it, and they were considered to raise the team's performance to a higher level. Two comparison wards only referred to expectations indirectly.

T2W3: positively deviant ward

Physiotherapist 1: […] And the Ward Manager on the ward has very high expectations and there is no excuses are there. =

All: = [laughs and agreement]

Physiotherapist 1: And when, when that is set, when those expectations are there and set and everyone is doing their bit you almost have to rise to them so almost the more that is expected of you the better you, you are. […]

T1W2: comparison ward

Deputy Ward Manager: I think a lot of it [team working] was instilled when we became this cohort ward for C-Diff.

Researcher: Right.

Deputy Ward Manager: Because everything changed. It's much more cleaning etc. And our motto is 'if you use it you clean it'.

Staff on positively deviant wards **felt able to ask questions or for help**. They emphasised the emotional aspect of this with regards to feeling comfortable to approach other staff members without being concerned about asking questions or for

help from anybody. This was apparent across different staff grades and professional groups and ensured that information was passed on without delay. A single comparison ward mentioned this subtheme but described it through more practical and task orientated scenarios.

> *T1W1: positively deviant ward*
> *Junior Doctor: I think starting as a new doctor I was quite worried about meeting all these new patients, that I didn't know a huge amount about elderly medicine and how it all worked out. But actually the consultants and registrars that we've had on the ward have all been really supportive and I wouldn't have any qualms at all about calling [consultant] on the phone this afternoon and saying 'I've just got this quick question what do you think we should do about this'. So we're bringing up things all the time, answering questions, getting on with things, not delaying things until the next day, […]*

'**Learning from incidents**' was generally considered to be difficult with only four wards discussing this subtheme, most of whom voiced frustrations about the lack of feedback they get after completing incident forms. The two positively deviant wards to mention this subtheme, though, also discussed the ways in which they overcome this. Learning is shared at team meetings, board rounds/safety briefings, through individual conversations, by feeding back the outcomes of root cause analyses, printing and displaying information, and by continually emphasising a problem and actions needed to improve.

Positively deviant wards explicitly **'focused on discharge'**. They discussed the ways in which patient discharge was engrained within the teams' day to day activities, and identified the benefits that had on patient safety (improving patient flow and reducing risks of infections and fall etc.). Staff described a number of different strategies that supported the timely discharge of patients including the use of the Discharge to Assess model (NHS England, 2014b), a discharge nurse, a social worker attending board rounds, and holding lunchtime MDT meetings.

> *T5W10: positively deviant ward [discussing their rotating role of 'discharge nurse']*
> *Staff Nurse 2: I like that, I mean I don't, I don't know how long you've been doing the discharge nurse, err thing but I think that's a really good thing as well. Because there is just one person, promo, err coordinating the discharges so that they know exactly what's been done. Not everyone from each, doing their little bits. There is a chance that something, something gets missed out whereas if that one person is solely in charge of that then it's, it's safer. It think that's a really good, good idea.*
> *Researcher: So you've got a dedicated discharge nurse?*
> *Ward Manager: They all rotate. All the band 5 staff nurses have a month*
> *Researcher: Ohh right.*

Ward Manager: Where they just do discharging for a month. So it's just like one person that like ties it all together really.

Junior Doctor: And it's helpful for us because we know there is just one person, one point of contact to talk about who needs letters, who is going when. You know. Because it is complicated to organise a discharge with elderly people isn't it. With care needs and this jazz so it's just very efficient because we just talk to that one person. We know, we can set out, who needs letters today, tomorrow, next week say.

The final strategy where explicit differences between the two groups were identified was **keeping patients and relatives informed**. This was characterised by something that the comparison wards appeared to do that the positively deviant wards did not. Staff on the comparison wards described a proactive approach to keeping patients and relatives informed so that they were kept up to date and concerns were addressed as they arose. In contrast, staff on positively deviant wards appeared to describe more passive strategies such as displaying posters and information by the bedside.

T3W8: comparison ward

Staff Nurse 1: We also give feedback to the relatives as well. What, on the ward round what happened, on doctors round,you know. So that they are aware, updating them with information.

All: [agreement]

Consultant: And we do that proactively. Rather than waiting for them to say 'what's happening with [inaudible] now'. So when they are doing the nursing as well 'by the way the doctors been round, this is the plan' just [inaudible].

All: [agreement]

T5W10: positively deviant ward

HCA: They do tend to read them [live care records] because they are in the folders. So they can see what they've been, so that's a good way of communicating with the relatives. And then they come and ask you questions.

Although the differences were not explicit or exclusive to the positively deviant wards, interesting patterns between the two performance groups were highlighted within six of the subthemes: **external self-awareness of performance**, **measuring and monitoring performance**, **engagement in trust initiatives**, and the high order factors of **shared mental models, perceptions of safety**, and **leadership**. As they were not classed as positively deviant success strategies, and to maintain brevity, explanations of these factors and supporting focus group extracts can be found in Appendix 12.

4.4.3 Concrete strategies and tools

In addition to the abstract behaviours and cultures described above, staff across all wards identified various practical tools and strategies which they considered to

facilitate the delivery of safe patient care. The commonly used concrete strategies and tools are summarised in Table 4.5. They included a variety of staff meetings held daily, weekly or less frequently and were attended by varying members of the multidisciplinary team; a variety of formal (patient notes, handover sheets) and informal (bedside boards, visual prompts) documentation methods; patient activities; and improvement initiatives and innovative strategies that appeared to be unique to specific wards.

None of the concrete strategies or tools were considered to be positively deviant based on there being explicit differences between the two performance groups. Comparison wards discussed using a similar number of these tools and strategies as the positively deviant wards. However, as shown in Table 4.5, there was an explicit difference between the positively deviant and comparison wards in the ability for AHPs to write in the patient medical notes. In contrast to having separate physiotherapy and/or occupational therapy notes, staff reported that a more multidisciplinary patient record facilitated the accessibility and communication of information between different team members.

> *T2W6: positively deviant ward*
> *Junior Doctor: […] and now [physiotherapists have] started writing in medical notes as well so we know exactly what's going on…*
> *Consultant: Yes that's really helpful. Yeah that's made a big difference actually. I'd like completely multidisciplinary notes [laughs], =*
> *Ward Manager: = I think that's where we need to be. I think we need to be completely multidisciplinary.*

This strategy though, was not considered to be positively deviant because an intervention such as this, which fundamentally changes the documentation process and affects clinical governance and ways of working across all levels of a NHS organisation, requires approval and implementation at an organisational level. As the positively deviant wards within Trust 2 (T2W3 and T2W6) mentioned using this strategy, it is also likely to be used by the comparison ward within this trust (T2W5) but staff on this ward did not discuss it. Simply not discussing something within the confines of a short focus group does not mean that a ward does not conduct a specific behaviour or use a certain tool or strategy.

Table 4.5 The commonly used concrete strategies and tools used to deliver safe patient care

Strategy/Tool	Positively deviant wards				Comparison wards			
	T1W1	T2W3	T2W6	T5W10	T1W2	T2W5	T3W8	T4W9
Verbal handovers		✓	✓	✓	✓		✓	✓
Handover sheets	✓	✓		✓			✓	✓
Safety Briefing		✓	✓			✓	✓	
Board round				✓	✓		✓	✓
MDT meeting	✓		✓				✓	✓
Ad-hoc meetings		✓	✓		✓			
Ward based AHPs	✓	✓	✓	✓		✓		
AHPs write in medical notes	OT & Physio	Physio	Physio	OT & Physio				
Bedside boards		✓	✓				✓	✓
Ward boards		✓		✓			✓	✓
Patient Activities			✓	✓		✓		✓
Cohorting							✓	✓
Intentional rounding	✓				✓	✓	✓	
Innovative strategies	Discharge to Assess			Dementia care Discharge nurse		Morning routine	Diabetes & Sepsis trolleys	

4.4.4 Feedback meetings

Feedback meetings were held with each ward or group of wards within a trust and were predominantly attended by the ward manager/s, consultant and/or matron. Overall, staff reported that the factors (those relating to both positive deviance and high performance) 'felt right' and 'seemed to make sense'. Staff on the whole, but particularly from the positively deviant wards, considered the positively deviant strategies to be related to exceptionally safe patient care. However, staff on some of the comparison wards (particularly T3W8) thought that their multidisciplinary ward teams also conducted some of the positively deviant strategies suggesting that they were not exclusive to the exceptional performers.

The importance of stable and static teams was widely considered to be important with a number of comparison wards highlighting the challenges they currently or had previously faced in maintaining this (e.g. T3W8, T4W9, T1W2). One of the positively deviant wards (T5W10) considered 'knowing one another' to be the crux of positively deviant success, stating that they thought this facilitated many of the other positively deviant (e.g. it's a pleasure to come to work) and high performing (e.g. support one another) factors. In contrast, the positively deviant strategy of using a passive approach to 'keeping patients and relatives informed' was widely considered to be counter intuitive. Staff thought that a more proactive approach would facilitate exceptionally safe patient care and some wards said they would still want their wards to take a proactive approach regardless of whether this was positively deviant or not.

Staff seemed to value their participation in the research and the utility of the study findings. A number of ward managers reported that their hospital's chief nurse would be interested in the findings and that they would discuss them with these individuals. Others mentioned the benefit of knowing what 'good' looks like rather than only knowing what is 'bad'. Staff on some wards (particularly the comparators) questioned the extent to which all the wards were comparable but appeared satisfied with the measures that had been taken during phase 2, Chapter 3 to maximise homogeneity.

4.5 Discussion

Stage 2 of the Bradley et al. (2009) positive deviance process was conducted to generate hypotheses about the positively deviant strategies that facilitated exceptionally safe patient care. Through the use of the pragmatic method of multidisciplinary team focus groups, staff identified 14 team behaviours, cultures, and dynamics where explicit differences existed between the positively deviant and

comparison elderly medical wards. These factors were hypothesised to be positively deviant success strategies.

These strategies fell within a wider thematic framework of factors that enabled high safety performances across all of the participating wards (positively deviant and comparison). This framework included: additional behaviours, cultures, and team dynamics; high-order factors; and concrete strategies and tools. Although not necessarily indicators of positive deviance, these findings increase our understanding of high performing teams. Schein's (2004) model of organisational culture (artifacts, espoused beliefs and values and underlying assumptions) provides a useful framework for considering the study findings and is used to structure the discussion below.

4.5.1 Artifacts

One of the objectives of this study was to assess the practical tools and strategies that multidisciplinary teams use to deliver exceptionally safe (i.e. positively deviant) patient care on elderly medical wards. The 14 concrete strategies and tools and a small number of subthemes within the thematic framework (e.g. celebrating success and freeing up frontline staff) were considered to be 'artifacts'. Artifacts form the surface level of culture and are the observable patterns of behaviour within a ward or organisation, such as the structures, processes, and tools that help staff deliver safe patient care (Schein, 2004). They are easily identified but are the product of deeper cultural levels which are more difficult to decipher (Schein, 1990, 2004).

There is existing evidence to support the use of some of the concrete strategies and tools identified within this study. For example, intentional rounding improves clinical and patient reported outcomes (Flowers et al., 2016; The National Nursing Research Unit, 2012), and safety briefings/huddles are used to identify and resolve patient safety issues and to increase situational awareness (Goldenhar, Brady, Sutcliffe, & Muething, 2013; Institute for Healthcare Improvement, 2016b; Setaro & Connolly, 2011). The use of printed handover sheets has been recommended to ensure completeness of verbal handovers, to provide additional information, and to act as a reference point, although, their static nature has been criticised (Arora et al., 2009; Rosenbluth, Jacolbia, Milev, & Auerbach, 2015). However, in answer to the research question that was posed, none of the concrete strategies or tools were considered to be positively deviant. This supports previous findings from Curry et al. (2011) whose application of positive deviance found no differences in the processes and protocols used for acute myocardial infarction in positively deviant and low performing hospitals.

There are two possible explanations for this. Firstly, due to the number of complex factors that can influence overall safety performance, the tools and strategies identified within this study may be more or less effective depending upon the context within which they are implemented. ‘What’ you do, ‘how’ you do it, and the ‘environment’ or context within which you do it are equally important (Bate et al., 2014). Cultures can be very difficult to interpret based on artifacts alone (Schein, 2004) and so although concrete strategies and tools are easily described, their meaning cannot be appreciated without understanding their underlying assumptions (Schein’s deepest level of culture).

Secondly, the methods used within this study may have influenced the fact that none of the concrete strategies and tools were considered to be positively deviant. Due to the time limited and broad ranging nature of the focus group discussions, researchers may not have uncovered the nuanced details about each of the concrete strategies and tools that made them positively deviant. This raises an important consideration which, although relevant to all of the study findings, is exemplified particularly well within the concrete strategies and tools. Simply because a strategy, behaviour or culture was not mentioned by staff during the focus groups does not mean that it does not exist or occur within a ward. For example, nursing handovers are fundamental to most ward routines but they were not mentioned by staff on two of the wards (see Table 4.5). The topics of conversation were directed by staff and so the exclusion of information may either represent its lack of salience during the conversation or staff perceptions about the extent to which it facilitates patient safety.

4.5.2 Espoused beliefs and values

The second level of organisational culture, espoused beliefs and values, comprise a group’s shared and conscious values, norms, and rules (Schein, 2004). Espoused beliefs and values guide day-to-day behaviours and so predict observable behaviour at the artifacts level (Hughes, Kate Lapane, Watson, & Davies, 2007; Schein, 2004). A key objective of this study was to explore how behaviours, cultures, and dynamics within elderly medical ward teams facilitate the delivery of exceptionally safe (i.e. positively deviant) patient care. All of the positively deviant strategies, and many of the factors contained within the thematic framework, represent espoused beliefs and values. Staff were consciously aware of them and could verbalise them to others.

Some of the positively deviant strategies are supported by previous research and evidence. The importance of staff knowing one another has been recognised within the World Health Organisation’s Surgical Safety Checklist (World Health Organization, 2016a). This intervention, which asks staff to introduce themselves by name and role, has significantly reduced surgical mortality rates and complications globally (Haynes et

al., 2009). Knowing who other team members are, their roles, and their capabilities can help the management of high risk situations (World Health Organization, 2016a). The combination of this and another of the positively deviant strategies, trust, may help to create a state of psychological safety (Edmondson, 1999) which has previously been identified as a factor associated with high performing hospitals (Taylor et al., 2015). Psychological safety refers to staff perceptions about the consequences of taking interpersonal risk, and it is considered important for organisational learning and improvements in patient safety (Edmondson, 2004). It enables staff to take calculated risks, engage in behaviours that lead to greater positive change and learning, and to speak up when errors occur (Edmondson, 1999). It also enables people to ask questions or ask for support without fear of retribution or feeling incompetent which in this study relates to the finding that staff on positively deviant wards discussed the emotional aspects of asking questions or for help.

Having truly integrated multidisciplinary teams – including the integration of ward based AHPs – was previously highlighted as a positive deviance strategy by Curry et al. (2011) when exploring 30 day mortality performance for patients with acute myocardial infarction within high performing hospitals. They found that nurses reported feeling empowered and valued and were central to improvements, and pharmacists actively informed decision making and were closely integrated into the care process. More generally within the literature, multidisciplinary teams are widely promoted for improving patient safety especially within elderly populations where patients have complex care needs (Tanaka, 2003; World Health Organization, 2004). The extent to which staff on the positively deviant wards emphasised the true integration of team members (including AHPs and unqualified staff) may highlight an understanding that the mere physical presence of multidisciplinary staff does not necessarily lead to an integrative and collaborative way of working that benefits patient outcomes (Liberati, Gorli, & Scaratti, 2016).

The study of HROs has paid little attention to the influential effect that different systems (ward or units) within the organisation have on achieving overall reliability (Wilson, Burke, Priest, & Salas, 2005). Team level factors (or high reliability teams) may contribute to achieving the five principles of high reliability[1] at an organisational level (Wilson et al., 2005). Some of the positively deviant behaviours identified within this study speak to this and may demonstrate a shift towards high reliability. The true integration of staff within this study may increase situational awareness and enable the team to build shared mental models which Wilson et al. (2005) believe promotes

[1] The five principles of high reliability are: sensitivity to operations; commitment to resilience; deference to expertise; reluctance to simplify; and preoccupation with failure. See section 4.2.2.1 for more detail.

sensitivity to operations and commitment to resilience. The ways in which wards include and integrate unqualified staff may represent a deference to expertise with staff valuing and acknowledging the role that every individual plays in keeping patients safe. Finally the positively deviant strategy of learning from incidents may also represent a commitment to resilience. HROs recognise that errors will happen but they ensure that they are not disabling – instead errors are contained and learnt from.

The two positively deviant strategies identified under the staffing theme support previous research which demonstrates the beneficial effects that low staff turnover has on reducing patient safety incidents such as medication errors, falls, and adverse events (Lee, Tzeng, Lin, & Yeh, 2009; O'Brien-Pallas, Murphy, Shamian, Li, & Hayes, 2010). Stable and static teams may be linked to the positively deviant behaviours within the staff relationships theme, as having a stable team provides greater opportunity for staff to form relationships and build trust with one another. Positively deviant wards also appeared to place less emphasis on the use of additional staff such as 1-1s and agency staff. This may reflect an attitude within the teams (which was particularly noted on T5W10) that patient safety incidents are not reduced by increasing a ward's staffing numbers but by changing what the staff actually do (Shekelle, 2013). High staff turnover has been linked to low job satisfaction (O'Brien-Pallas et al., 2010) and so stable and static teams on the positively deviant wards may also facilitate positively deviant staff perceptions that it is a pleasure to come to work. Biddison, Paine, Murakami, Herzke, and Weaver (2015) have shown that high employee engagement is strongly correlated to a positive safety culture at ward level. Despite this supporting evidence, the extent of these potential relationships between the positively deviant strategies (and their directions of causality) remain to be tested in subsequent stages of the positive deviant process.

Keeping patients and relatives informed was identified as a positively deviant strategy, however, positively deviant wards appeared to be less proactive in informing patients and relatives about their care. Intuitively, this does not fit with delivering exceptionally safe, high quality care. Although patients are heavily encouraged to be active partners in their care (Ocloo & Matthews, 2016), the current NHS climate is extremely challenging and staff face increased pressure to deliver more with less. The 'Triple Aim' of improving population health while enhancing patient experience and reducing costs (Berwick, Nolan, & Whittington, 2008) has been widely been accepted as a framework for improving healthcare performance. However, in achieving this aim staff burnout is widely prevalent and so Bodenheimer and Sinsky (2014) have proposed a fourth dimension which focuses on improving the working life of healthcare professionals. By slightly shifting their attentions away from patients and relatives to focus on the wellbeing of their staff (as demonstrated by some of the positively deviant strategies e.g. it's a pleasure to come to work), positively deviant wards may reduce

the harmful effects that poor staff wellbeing have on patient safety and the performance of healthcare systems (Wallace, Lemaire, & Ghali, 2009). Alternatively, the shared mental models held within these positively deviant teams coupled with their integrated ways of working may mean that they are able to address the patients' needs without their explicit involvement. Conversely, and as previously discussed, this strategy may be the result of limitations in the method and may exemplify the fact that conclusions cannot be drawn based on the absence of a discussion.

More generally, the focus group method was well placed to uncover positively deviant strategies that fell within the espoused beliefs and values level of organisational culture. Staff were consciously aware, willing, and able to articulate the strategies to others. Interactions between staff prompted the exploration and clarification of strategies that were used, more so than would have occurred if individual interviews had been conducted (Kitzinger, 1995). Most focus group research is conducted with homogenous staff groups but bringing together diverse groups can also facilitate the exploration of different perspectives (Kitzinger, 1995). Although the inclusion of all staff within a single focus group (from housekeeper to consultant) may have inhibited or influenced the content of discussions, their positive nature is hoped to have limited the effect of this and benefits were derived from observing how the team members interacted with one another. This may have helped target the third level of organisational culture (Schein, 2004).

4.5.3 Underlying assumptions

Underlying assumptions form the deepest level of organisational culture (Schein, 2004). They are the unconscious and unarticulated beliefs and values that group members share, and they are formed when beliefs and values are repeatedly and successfully implemented. They tend to be extremely difficult to change as they are taken for granted – alternative behaviours are considered inconceivable.

Within the overall thematic framework, seven factors were considered to represent underlying assumptions and all but one of these were high order factors (shared mental models; perception of safety; positive outlook; pride; cohesion within the team; leadership; and engagement with trust activities – see Appendix 12 for more detail of these). In support of the unconscious nature of underlying assumptions, these factors were predominantly generated through researcher field notes. Although some interesting patterns were identified between positively deviant and comparison wards, none of the high order factors were considered to be positively deviant strategies.

While it is possible that positively deviant strategies did not exist within this deepest level of culture, considering the patterns that were identified, it is more plausible that

the method influenced their lack of identification. Schein (1990) proposed that methods such as ethnography, in-depth observation, focused questioning, and intense self-analysis should be used to uncover underlying assumptions. Time-limited focus groups, covering a broad range of topics, are unlikely to have provided this depth of information. Therefore, the study may have limited the extent to which underlying cultural factors were identified by selecting a pragmatic method that involved staff in the identification of positively deviant strategies.

This has implications for the subsequent stages of the Bradley et al. (2009) process. During stage 3, positively deviant strategies are quantitatively tested within representative samples to assess their association with exceptional performance. As has been found when developing safety climate surveys (Scott, Mannion, Davies, et al., 2003), it is challenging to translate unconscious, underlying assumptions into quantifiable questions. It is therefore likely to be more difficult to assess positively deviant strategies at this deep level of culture than those at the conscious level of espoused beliefs and values. In contrast, having some knowledge about the underlying assumptions may be advantageous for stage 4 of the Bradley et al. (2009) process – the dissemination of positively deviant strategies. As underlying assumptions are taken for granted they are extremely difficult to change and challenges to them generate anxiety (Schein, 2004). In order to change culture it is suggested that new behaviours and values (or positively deviant strategies) are tied into existing underlying assumptions so that they have legitimacy and are not considered threatening (Carroll & Quijada, 2004).

4.5.4 The acceptability and feasibility of positively deviant strategies

The feedback meetings held with staff on each of the participating wards highlighted some of the challenges associated with progressing to stage 3 of the Bradley et al. (2009) process. Although the feedback meetings were not a substitute for testing the hypotheses in larger, more representative samples (stage 3) they provided an indication as to whether staff considered them to be truly positively deviant and/or acceptable to others.

While staff were generally supportive of the positively deviant strategies identified, some staff on the comparison wards were a bit more sceptical and thought that their wards also demonstrated aspects of the exceptional behaviours and cultures. This highlights the problems associated with bias when assessing whether hypotheses are truly positively deviant or not. At the beginning of each feedback meeting wards were informed of their performance grouping (positively deviant or comparison). Although the comparison wards demonstrated above average levels of safety, their performance

level was still considered ‘disappointing’ in contrast to the positive deviants. All staff including those on comparison wards were then asked to reflect upon the positively deviant strategies – that were hypothesised to be absent within comparison wards – and so emotions such as disappointment, pride, and denial are likely to have biased staff views about the legitimacy of the strategies. In contrast, the positively deviant wards had just been told that they were exceptional performers. As such, they were more likely to have agreed with the strategies presented due to a confirmation bias whereby evidence is interpreted to bolster existing hypotheses or beliefs (Nickerson, 1998) – in this case about their exceptional performance levels.

Some staff referred to the possibility that certain behaviours, cultures, tools, or strategies had not been identified within their wards because they had not been salient to staff during the focus group discussions (a possibility previously outlined in section 4.5.1). One of the comparison wards in particular (T3W8) thought that they did in fact use a lot of the positively deviant strategies identified, but that they were second nature to staff and so had not been mentioned by the team. This observation links to the discussion presented in section 4.5.3 which suggests that the pragmatic nature of focus groups may have influenced the type of positively deviant strategies that were identified. The method may not have uncovered the unspoken, underlying assumptions and beliefs about how exceptionally safe patient care is delivered which are notoriously difficult things to assess.

The feedback meetings also highlighted the importance of ensuring homogeneity during Stage 1 of the positive deviance process. Some staff questioned the comparability of participating wards but appeared satisfied with the steps that had been taken to ensure homogeneity (phase 2, Chapter 3). This suggests that frontline clinicians considered the measures taken to be effective and appropriate for the identification of positively deviant wards. The meetings also indicated that staff considered the positively deviant findings to be acceptable and relevant to their ward and patient populations. During the meetings, some staff identified and discussed aspects which they could learn from or do differently, and others said that they would take the findings to higher levels within the organisation (e.g. chief nurse). However, staff did express some challenges to the acceptability of the findings – they were unsure whether other wards would implement these changes if they had not been involved in the study or had much lower safety performances. They highlighted that the positively deviant strategies were still relatively abstract and difficult to implement (they related to cultural rather than structural, process, and physical aspects of the ward), and that changes may depend upon the motivation and leadership style of the ward managers/team.

Returning to the ward environment also provided a stark reminder of the extremely fast paced and complex nature of healthcare. While discussing the findings, staff from both performance groups identified new initiatives that they had implemented on the wards since data collection had finished (e.g. the Discharge to Assess model, safety huddles, moving to new physical locations etc.). Although the positively deviant strategies identified through this study were predominantly cultural in nature and so more stable and resistant to change (Schein, 2004), many of the wards had new managers/leadership teams. The pace of change within healthcare organisations will not only influence the identification of positively deviant performances and strategies but also the dissemination of findings during later stages of the positive deviance process. Furthermore, leadership is influential in the development of culture (Schein, 1990) and so even positively deviant strategies of this more enduring nature are not immune from the complexity and speed of change within healthcare.

4.5.5 The use of a pragmatic method

Compared to some of the previous healthcare applications of positive deviance which have used extensive interviews and in-depth observation (as described in Chapter 2), the methods used in this study were chosen pragmatically for use on the frontline. Focus groups enabled collection of a large amount of data within a minimal amount of time and they more effectively engaged staff in identifying success strategies themselves. Although the unpredictable nature of acute healthcare made it challenging to arrange the focus groups, wards accommodated them by adapting staff breaks and/or conducting them during existing timeslots in the ward routine (e.g. team meetings). Despite using this method, the data still required extensive analysis. Each focus group took approximately six hours to transcribe and the analysis was extremely time consuming (it was conducted over several months). Frontline staff may not have the time or expertise required to complete the analysis to the degree at which nuanced positively deviant strategies can be identified.

The extent to which the study methods may have influenced the identification of positively deviant strategies has been outlined throughout the previous discussion sections. Although our methods attempted to involve staff in the generation of positively deviant strategies, their involvement could still be considered limited. As this study aimed to critically evaluate the positive deviance approach rather than to improve patient safety per se, it was difficult to avoid conducting a researcher led approach. More generally, it may be challenging for the positive deviance approach to be truly initiated and led from within, especially when assessing performance on broad outcomes and across several different organisations. However, there are few frontline groups who have oversight and scope to conduct the approach in this way. Regional

networks such as the Academic Health Science Networks (NHS England, 2016a), local Clinical Commissioning Groups (NHS Clinical Commissioners, 2016), Patient Safety Collaboratives (NHS England, 2016b), and the NHS benchmarking and audit teams (The Benchmarking Network, 2016) may provide a promising resource. They typically comprise clinical and academic staff who work across a number of different organisations and so may be best placed to implement a truly bottom up application of the positive deviance approach.

Throughout the focus groups staff also made links between the concrete strategies and abstract behaviours. For example, some wards discussed ensuring that all staff, including the unqualified staff, attended safety briefings which had the effect of more fully integrating the team members. The length of the focus groups did not enable in depth information about these relationships to be gained, and the qualitative nature of the methods did not allow the causality of these relationships to be assessed.

4.5.6 Considerations for the positive deviance approach

Some of the challenges to applying the positive deviance approach within healthcare organisations that were discussed in Chapter 3 were also exemplified by this study. Focus groups and feedback meetings highlighted the regularity with which wards implement new initiatives, processes, and/or tools to support the delivery of safe patient care. Compounding this, staff were often unable to put timescales on these changes, even when they had occurred relatively recently (within a year). The inability to reflect back and accurately pinpoint the timings of different interventions may make it difficult to identify strategies that truly contribute to the positively deviant performances for which teams are identified.

Focus groups also highlighted the challenge of ensuring that positively deviant wards succeed ‘despite facing the same constraints as others’. Although a homogenous group of elderly medical wards was identified during stage 1 (Chapter 3), the qualitative work highlighted various differences between the wards. For example, two wards had allocated beds for patients with clostridium difficile, one ward was attached to a smaller unit and staff were rostered to work across both wards, and all the wards had very different physical environments which may have conferred advantages or disadvantages to maintaining patient safety. Within the NHS it may not be possible to identify a completely homogenous population as trusts configure their resources and define their patient populations differently. This makes it difficult to assess whether wards have access to different types of resources or whether positively deviant wards choose to use their resources in different, more effective ways.

4.5.7 Study strengths and limitations

Many of the strengths and limitations of this study have already been discussed. The study used a theoretically underpinned method to facilitate staff identification of the factors that facilitated exceptionally safe patient care, and blinding reduced subjectivity while generating these hypotheses. However, one ward was unable to complete a focus group and the sample may have been affected by a self-selection bias whereby more engaged staff, with positive perceptions of the team and/or of patient safety, volunteered or were approached to attend the focus groups. These were, though, well attended by staff from a variety of grades and professional roles. Social desirability bias may also have led staff to present themselves favourably and to only report or to exaggerate the positive aspects of their practice.

As discussed in Chapter 3, the focus groups took place several months after the wards were initially identified (between five and seven and a half months). The quantitative findings from that study cast doubt as to whether positively deviant performances were retained into the qualitative data collection period of this study. As such, staff may not have discussed the factors that enable exceptionally high, positively deviant performance. However, while collecting the qualitative data, blinding enabled the researcher to make predictions about which wards they perceived to be the positively deviant ones. The majority of these predictions aligned with the NHS ST data and provided additional support for the way in which the wards had been identified.

Although participants were probed for additional detail, important positively deviant success strategies on elderly medical wards may not have been identified. Staff may have purposefully omitted detail or overlooked things that were not considered salient at the time. Failure to mention a practice does not mean that is does not happen. The framing of discussions may also have influenced data generation. The MaPSaF was used to theoretically underpin the focus groups, but other frameworks could equally have been used e.g. Donabedian (1966) or Lawton et al. (2012). Furthermore, because of blinding participants were instructed to discuss how their teams delivered ‘safe patient care’ rather to identify ‘positively deviant strategies’. Had the latter instructions been used, staff may have more openly discussed behaviours that would traditionally be considered ‘deviant’ e.g. workarounds or behaviours/practices that go against policy.

Finally, we are only able to infer the relative importance of each positively deviant strategy from the staff feedback meetings and cannot identify those that are most influential in the delivery of safe patient care. Despite blinding and the maintenance of rigour, different positively deviant success strategies may have been identified had the data been analysed in a different way or by a different person (e.g. a clinician).

4.5.8 Implications and future directions

The positively deviant strategies identified through this study are hypothesised to facilitate the delivery of exceptionally safe care. However, it is not known whether or not they truly do. The next stage of the positive deviance approach is to test the hypotheses within larger, more representative samples to assess whether they are associated with performance on the NHS ST harm-free care measure. When assessing these relationships it is also important to explore their directions in order to make inferences about causality. Some positively deviant strategies may generate improvements in performance, whereas others (such as 'it's a pleasure to come to work') may develop as a consequence of exceptional performance. Understanding the direction of these relationships is important to generating behaviour change when disseminating the positively deviant strategies. Similarly, some staff also made links between the concrete strategies/tools and the team behaviours, cultures and dynamics. It would be interesting to explore these relationships and their directions further to see whether certain concrete strategies can help change aspects of culture – which is a notoriously difficult task.

In summary, a relatively (although not entirely) pragmatic and feasible method successfully generated 14 hypotheses about the positively deviant behaviours that facilitate exceptionally safe patient care on elderly medical wards. These positively deviant strategies highlight the importance of organisational culture in delivering safe patient care especially in relation to staff relationships and integrating teams. The findings also highlight how the method chosen may influence the positively deviant strategies identified which may have implications for future stages of the positive deviance approach.

Chapter 5

The feasibility of identifying and learning from positively deviant general practices.

5.1 Chapter summary

Study 4 reports on an application of the positive deviance approach conducted within primary care. It addresses the first two stages of the Bradley et al. (2009) process by identifying positively deviant general practices (stage 1) and generating hypotheses about how they succeed (stage 2). This is the first known application of the positive deviance approach within a UK general practice setting. The study methods differed to those used within studies 2 and 3 with the principal aim being to assess the feasibility of applying the approach within this setting.

This chapter is divided into four discrete sections. The first section provides a background to the study, and outlines the rationale for focusing on positively deviant general practices that delivered exceptionally high quality, evidence based care, rather than exceptional levels of patient safety. The second section presents stage 1 of the Bradley et al. (2009) process and assesses the feasibility of identifying positive deviants across a range of different performance indicators. The third section addresses stage 2 of the process. Interviews and observations were conducted to understand how high quality care is delivered. The final section brings both stages together to discuss the overarching feasibility of, and considerations for, using the positive deviance approach to support improvement in a general practice setting.

5.2 Background

5.2.1 General practice in context

Primary care is the first contact point within the UK's healthcare system. It encompasses a wide range of services including dentists, community pharmacies, district nurses, community midwives, and high street optometrists, however, general practices are the central component (NHS Digital, 2016a). The provision of care within general practice is extremely heterogeneous. Practices vary in size from those that are run by single general practitioners (GPs) to those that are multi-partner and/or multi-

sited (Goodwin, Dixon, Poole, & Raleigh, 2011). They offer different services including online services, specialist clinics, pharmacies, and minor surgery clinics, and some work with their local hospitals to provide specialist services within their communities (Goodwin et al., 2011). Patient care within general practice is increasingly delivered by multidisciplinary teams which can comprise GPs, advanced nurse practitioners, nurses, physician assistants, and healthcare assistants (Goodwin et al., 2011).

General practices are contracted by the NHS to provide healthcare to their local population. They are independent businesses that operate either on their own or, increasingly, in partnership with others (British Medical Association, 2016), and they participate in the Quality and Outcomes Framework (QOF) – a pay for performance scheme designed to reward and improve high quality care (Roland, 2004). The QOF can provide up to 30% of a general practices' annual income (McDonald & Roland, 2009) and, although voluntary, 99.6% of practices participate (Campbell, Reeves, Kontopantelis, Sibbald, & Martin Roland, 2009). Since 2013, general practices are also members of their local Clinical Commissioning Group (CCG) who plan and commission the majority of secondary care services (e.g. emergency, mental health, and maternity care) and some GP services within their region (British Medical Association, 2016; NHS Choices, 2016b). Within this context, practices vary greatly in their organisational structure, systems, and processes, their working practices, and underlying cultures (Esmail, 2013; Lau et al., 2016).

In addition to this heterogeneous organisational context, general practice currently operates within a complex and challenging social context. The aging population is placing greater strain on available resources. Patients over the age of 65 years consult with GPs twice as often as their younger counterparts (Congressional Budget Office, 2007) and are 65% more likely to have multiple long term health conditions (Haslam, 2005). Economic austerity has increased focus on the cost efficiency and 'value' of care. Although approximately 90% of all health service interactions occur within primary care (NHS Digital, 2016a), it only receives approximately 10% of the NHS budget (NHS England, 2014c). General practice is also facing a workforce crisis. An increasing number of GP and GP training posts remain unfilled, GP job satisfaction and morale is low, and many GPs plan to retire or stop clinical work within the next five years (Addicott, Maguire, Honeyman, & Jabbal, 2015; Dayan, Arora, Rosen, & Curry, 2014).

Research within primary care is widely considered to be low in quality (Panesar et al., 2016; The Health Foundation, 2011d) and there are various barriers to engaging general practices in studies. These include high workload, a lack of time, few incentives to conduct research, and a lack of supporting systems (e.g. software) and measures (Lionis et al., 2004; Salmon et al., 2007). The heterogeneity and complexity

of general practice also makes it a challenging environment for research and quality improvement interventions (Esmail, 2013; Lau et al., 2016; The Health Foundation, 2011c) where the use of top down initiatives is unlikely to result in change (Esmail, 2013). In this study we explore whether the positive deviance approach provides an opportunity to engage with staff in order to understand the factors that enable multidisciplinary general practice teams to deliver high quality patient care.

5.2.2 Patient safety within general practice

Although patient safety incidents are commonly thought to occur within primary care, they are considered less common and less severe than those within secondary care (Esmail, 2013; Sarkar, 2016). It is often not as obvious when a safety incident has occurred within primary care (Sarkar, 2016) and the lack of data and research perpetuates the perception of reduced risk (Esmail, 2013). It is frequently reported that around 2% of all primary care consultations are affected by adverse events (Gaal et al., 2011; Panesar et al., 2016), however, estimates do vary considerably with studies identifying safety incidents in less than 1% but as many as 24% of patient consultations (Panesar et al., 2016). This is in part due to a lack of consensus about what constitutes an error, safety incident, or adverse event (Sandars & Esmail, 2003). Most patient safety incidents do not result in severe harm but, given the large and generally healthy patient population, the frequency of safety incidents is relatively high (Esmail, 2013; Sarkar, 2016). As such, patient safety presents a problem within primary care that requires addressing.

Sarkar (2016 pg 2) highlighted the urgent need for ‘definitions of events, harm, and preventability that can be implemented with consistency across multiple settings’. Definitions need to transcend clinical and research boundaries in order to measure and subsequently develop effective interventions to improve safety. Compared with secondary care, there is a lack of data and information about patient safety, for example, incident reporting has not been established within primary care to the extent that it has in hospitals (Esmail, 2013). Although routine data are regularly collected (e.g. for QOF) these databases are widely unused due to coding differences, poor data quality, and the effects of performance payments among other things (de Lusignan & van Weel, 2006). This is critical to the first stage of the positive deviance approach where reliable and valid measures are necessary for identifying those with exceptional performance (Bradley et al., 2009). While planning this study routinely collected and publicly available safety data were assessed to explore whether it was possible to identify positively deviant general practices that delivered exceptionally safe patient care.

The Primary Care Web Tool contains practice level data on various performance indicators including QOF results, clinical outcomes, prescribing habits, and patient access and satisfaction (Londonwide Local Medical Committees; NHS England, 2013). The tool is used to reduce unwarranted variation/identify outliers (poor performers) and the data can be compared to local and national averages (Londonwide Local Medical Committees). Although a limited number of indicators within the tool tap aspects of safety, none provide a direct or particularly valid measure. For example, an indicator on 'significant event reporting' measures whether the recommended minimum number of reviews has been met (with one and three year targets). Although reporting incidents is relevant to patient safety, significant event reporting could either signify a lack of safety whereby errors occur, or the existence of a positive safety culture whereby incidents are identified, reported, and learnt from (National Patient Safety Agency, 2006).

QOF data are also publicly available at practice level on the HSCIC website[1] (NHS Digital, 2016b). However, similar to the Primary Care Web Tool, few of the indicators directly measure safety – the majority of QOF indicators relate to clinical outcomes (e.g. chronic kidney disease, heart failure, hypertension). General practices are also paid for their QOF performance, and although indicators are regularly assessed and replaced, many have reached ceiling (Reeves et al., 2010). During the 2014/15 QOF year, practices on average achieved 529.6 points out of the 559 points available (94.7%) (NHS Digital, 2015). This lack of variation makes it difficult to identify those that perform exceptionally well.

The Care Quality Commission (2016) inspect and rate general practices for safety, however, it is difficult to make fair performance comparisons using these data. The ratings are predominantly qualitative, they are conducted over varying time periods, and currently not all practices have been rated using the same inspection model. There are also limited sources of routinely collected data that utilise patient feedback. The publicly available General Practice Patient Survey is conducted nationally but none of the survey items measure safety (Ipsos MORI, 2016). These explorations highlight the difficulties faced in using routinely collected data to identify positively deviant general practices which perform exceptionally well on *safety* outcomes. This study therefore broadened its scope to identify positive deviants that deliver exceptionally *high quality* patient care.

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[1] As of July 2016 the HSCIC changed its name to NHS Digital. However, this thesis will continue to refer to the HSCIC in order to maintain continuity with a) previous chapters and b) the time period within which the data were explored.

5.2.3 Moving towards quality – clinical effectiveness

As discussed in chapter 1 (section 1.3), safety falls under the broader concept of quality. 'Clinical effectiveness' is included within most quality frameworks (The Health Foundation, 2014) and is considered to be the delivery of care which, as far as possible, is based on rigorous scientific research evidence in order to benefit patients' health and quality of life (Institute of Medicine, 2001; NHS England, 2016d; The Health Foundation, 2014).

Evidence based practice provides a foundation for delivering clinically effective patient care. It refers to 'the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients' and it requires the integration of individual clinical expertise with the best available systematic evidence (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). However, there is a well-recognised translational gap whereby research is not routinely incorporated into patient care (Woolf, 2008). Integration is unpredictable, slow, and haphazard (Eccles et al., 2009) and it can take several years for the latest evidence to embed (Morris, Wooding, & Grant, 2011). This gap between evidence and practice is important as there are currently wide and unacceptable variations in the delivery and quality of healthcare which cannot be explained through population and case mix differences (NHS Right Care, 2016). Furthermore, this translational gap limits the economic, health, and social benefits of research and so has implications for policy makers, healthcare systems, and research funders alike (Cooksey, 2006).

Although quality can be improved through softer strategies such as peer and patient feedback (Campbell, Braspenning, Hutchinson, & Marshall, 2002), measurement is considered key to improvement (Rushforth et al., 2015). Clinical guidelines and targets are produced globally in an effort to increase the effectiveness of patient care (Guthrie, Inkster, & Fahey, 2007; Michie, Hendy, Smith, & Adshead, 2004). Within the UK, the National Institute for Health and Care Excellence (NICE, 2016) develop and promote evidence based clinical guidelines and recommendations and the QOF financially incentivise various quality targets (NHS Digital, 2016b). Consequently, adherence to clinical guidelines, recommendations, and targets are measured in order to assess the effectiveness of care. Although not all recommendations are directly amenable to measurement, indicators are frequently developed in order to assess adherence and thereby measure quality (Rushforth et al., 2015). Quality indicators measure aspects of performance where there is evidence (or consensus) that the measure effectively assesses quality of care (Campbell et al., 2002).

Many studies within primary care focus on single clinical outcomes/quality indicators or particular clinical conditions (Willis et al., 2016). Few seek to improve effectiveness across a range of different indicators and conditions. The primary focus

of this thesis was to critically appraise the positive deviance approach when applied to multidisciplinary teams and broad rather than narrow measures of care. In the absence of a broad outcome measuring safety or clinical effectiveness, it may be appropriate to identify positive deviants using a range of narrow indicators. Exceptional performance across a number of indicators and clinical conditions is likely to be facilitated by underlying or latent factors within the multidisciplinary team (Reason, 1995, 2000).

5.2.4 Study aims and objectives

In this study, our plan was to take advantage of links with an ongoing National Institute for Health Research programme at the University of Leeds – ASPIRE (Action to Support Practices Implementing Research Evidence: reference number RP-PG-1209-10040)[2] to test the feasibility of applying a positive deviance approach in primary care. The primary care data used for this study were collected through ASPIRE to measure adherence across a number of different clinical recommendations. The overarching aim was to assess the feasibility of applying the positive deviance approach to identify and then explore general practice multidisciplinary teams that deliver exceptionally high quality, evidence based care. In doing so, the following research questions were also addressed at each stage of the Bradley et al. (2009) process:

- Stage 1: Can positively deviant general practices that deliver exceptionally high quality, evidence based care, be identified using routinely collected adherence data for a range of different clinical recommendations?
- Stage 2: How is high quality, evidence based care delivered within positively deviant general practices?

[2] Rebecca Lawton (supervisor) is a co-applicant on the ASPIRE programme grant.

Stage 1 – Identifying positively deviant general practices

5.3 Introduction

5.3.1 The ASPIRE research programme

ASPIRE is a five year research programme which aims to develop and evaluate an adaptable intervention package to support general practices to implement 'high impact' evidence-based practice within the constraints and challenges of a real-life context (Leeds Institute of Health Sciences, 2016; Willis et al., 2016). ASPIRE was conducted through five sequential work packages:

1. NICE guidelines and indicators were screened to identify a set of 'high impact' clinical recommendations.
2. Patient data were analysed to a) identify 'high impact' clinical recommendations with greatest scope for improvement (i.e. low levels of adherence), and b) explore variations in adherence levels.
3. Behaviour change theory was used to develop an adaptable intervention package.
4. A randomised control trial assessed the effectiveness of targeting the high impact recommendations through the intervention package[3].
5. The intervention's delivery, mechanisms of action, and unintended consequences were evaluated.

ASPIRE work packages 1 and 2 were relevant to this study; data at the general practice level were collected to measure adherence to a set of high impact clinical recommendations. These data were subsequently used to identify positively deviant general practices.

ASPIRE identified their high impact clinical recommendations through a consensus process (Rushforth et al., 2015). Individual recommendations (n=2365) were identified from NICE clinical guidelines, NICE quality standards, and QOF clinical domain indicators. These recommendations were reviewed by a panel of general practice

[3] Stage 2 of this study took place while the ASPIRE trial was being conducted (work package 4). Consideration was therefore given as to whether the trial would influence the qualitative data that were collected. However, the trial focused on four specific high impact clinical indicators rather than the broad delivery of evidence based care, and the qualitative stage sought to understand how practices succeeded historically (at the point when work package 2 data were collected). In the end, none of the positively deviant practices were directly involved in the ASPIRE trial.

staff, patient and NICE representatives, and a health informatics specialist to identify a set of 18 recommendations. Search algorithms were then created within SystmOne (a clinical system containing Electronic Health Records - TPP, 2016) and anonymised patient data for each of the 18 recommendations were remotely extracted for 89 general practices in the West Yorkshire region (Rushforth et al., 2015). These data were analysed to explore the proportion of patients within each practice who had received appropriate care (after accounting for patient and practice level covariates). Recommendations with the greatest scope for improvement were identified, i.e. those where adherence was predominantly low and there was opportunity to improve. In total, eight of the eighteen recommendations (which are described in section 5.5.2) were considered to have 'high impact' based on their burden of illness; potential for significant patient benefit; the likelihood of cost savings without patient harm; and the feasibility of measuring change using routine data (Rushforth et al., 2015). The adherence data for these recommendations were used to identify positively deviant general practices.

5.4 Identifying positive deviants across a range of indicators

As this study sought to identify exceptional performance across a range of different indicators rather than a single broad measure, the analyses differed from those used in study 2. The various considerations and limitations of ranking performance data were highlighted in chapter 3, section 3.8.1. For example, Austin et al. (2015) found that organisations which ranked top on some measures did not always rank top on others. This study was unlikely to identify positively deviant general practices that rank top on every high impact clinical recommendation. Furthermore, rankings do not cleanly separate positive deviants from others in a community and so this approach provides no indication as to whether the top 10% or the top 5% of a population are positively deviant.

SPC methods, like those conducted in study 3, were also not suitable for this analysis. First, the ASPIRE data provided a 'one-off' measure and although data were routinely collected they were not routinely reported. Therefore, it was not possible to assess consistency of performance over time. Second, SPC is typically conducted using single performance measures, however, this study sought to identify positive deviants across a range of indicators. Third, as was demonstrated by the funnel plot in study 2 (see chapter 3, Figure 3.3), it is not always possible to identify special cause variation where data exceed upper or lower control limits (set at 3 standard errors). Consequently, this study was also unlikely to identify positive deviants that exceeded the control limits for all eight clinical recommendations.

One option was to derive a single composite measure from all eight clinical recommendations. Although there are advantages to composite measures – and many of the ASPIRE clinical recommendation were measured using composites (see section 5.5.2) – they are technically challenging to create (Jacobs, Smith, & Goddard, 2004). Decisions are required to transform the data onto a common scale and to weight each component within the overall measure. Furthermore, aggregating data can disguise areas of poorer performance, therefore, those that perform exceptionally well on the composite may not excel on individual measures (Jacobs et al., 2004).

Overall, the aims for stage 1 of the positive deviance process were to:

- Assess the feasibility of identifying general practices that demonstrate exceptional adherence across a number of different clinical recommendations.
- Identify positively deviant general practices that deliver exceptionally high quality, evidence based care.

5.5 Methods

5.5.1 Study design, setting, and ethical approvals

Secondary analyses were conducted using routine data from the ASPIRE research programme. In 2012, ASPIRE randomly sampled 89 general practices within the West Yorkshire region that used the SystmOne clinical record system (TPP, 2016). All practices were stratified by list size (number of registered patients), summary QOF scores, and a measure of area socioeconomic deprivation. The randomisation process proportionally represented all five Primary Care Trusts[4].

ASPIRE had ethics approval to collect and analyse their adherence data (NRES Committee Yorkshire and The Humber Leeds – reference number:12/YH/0254; UK Clinical Research Network Portfolio reference – 12751). This study obtained ethical permissions to conduct a secondary analysis on the ASPIRE data, and to then approach and conduct qualitative enquiries within the positively deviant general practices (London - Camden & Kings Cross Research Ethics Committee – reference number: 15/LO/2076). This study was registered on the UK Clinical Research Network Portfolio (reference – 31177).

[4] Clinical Commissioning Groups replaced Primary Care Trusts in April 2013 (NHS Clinical Commissioners, 2016) - all ten of the subsequent West Yorkshire CCGs are represented within the ASPIRE sample.

5.5.2 Data

The eight high impact clinical recommendations are listed in Table 5.1. They predominantly cover the management of long term conditions and are represented by single and composite measures of both processes (e.g. conducting a foot care review or receiving a recommended drug/treatment) and outcomes (e.g. achieving a specific blood pressure target or cholesterol level). The cross-sectional data reflected performance during the 2012/13 financial year.

Adherence to each recommendation was calculated after adjusting for patient and practice level effects. As patient effects such as age, sex, comorbidities, and polypharmacy differ for each clinical recommendation, the patient level adjustments reflected the particular patient populations that were relevant to each recommendation. Practice effects were also controlled for and included the number of registered patients, the number of GPs (partners and salaried), the practice teaching status, practice level Index of Multiple Deprivation, achievement of QOF indicators, and patient rated satisfaction and accessibility (Willis et al., 2016).

Table 5.1 The eight high impact clinical recommendations used to identify positively deviant general practices.

High impact clinical recommendation	Description	Process or outcome	Composite or single
Type II diabetes: processes of care	Patients who receive nine recommended processes of care (e.g. blood pressure/blood sugar level measures, full lipid profile, foot care review and eye screening)	Process	Composite
Type II diabetes: intermediate clinical outcomes of care	Patients who achieve three recommended targets (blood pressure, blood sugar, and cholesterol levels)	Outcome	Composite
Smoking comorbidities	Relevant patients who received cessation advice within the past 12 months	Process	Single
High-risk prescribing	Nine indicators grouped into two broad recommendations: 1) Co-prescribe an additional medication (PPI) when prescribing another type of medication (NSAID); 2) Stop prescribing a NSAID when a patient has renal risks	Process	Composite
Hypertension: blood pressure targets	Patients with treated hypertension who achieve their blood pressure targets	Outcome	Composite
Chronic Kidney Disease: treatment and outcomes of care	Patients who achieve the recommended blood pressure target and receive the recommended treatment	Process & outcome	Composite
Myocardial Infarction - secondary prevention	Acute MI patients who receive all four of the following drugs: ACE-I; aspirin; β-blocker; statin	Process	Composite
Atrial fibrillation	Atrial fibrillation patients (either post stroke or following a transient ischaemic attack) who are adherent to three different treatment recommendations.	Process	Composite

Abbreviations: PPI = Proton Pump Inhibitors; NSAID = Nonsteroidal anti-inflammatory drug; ACE-I = angiotensin-converting-enzyme inhibitor

5.5.3 Data analysis

All data were analysed by Robert West (RW) – Professor of Biostatistics and co-applicant for ASPIRE. Ruth Baxter (RB) did not have ethical permission to access the ASPIRE data, therefore, to maintain confidentiality RW analysed the data while consulting with RB about the aims of the study. Ethics approvals for this study (see section 5.5.1) enabled RB to approach these practices and invite them to participate in stage 2.

A polytomous Latent Class Analysis (LCA) was performed (Linzer & Lewis, 2011) to identify positively deviant general practices that demonstrated high adherence to a range of different clinical recommendations. LCA shares similarities with cluster and factor analyses and is based on the assumption that observed indicators (i.e. adherence to the eight clinical recommendations) are imperfect measures of an unobserved or latent variable (i.e. the behaviours associated with positive deviance). LCA enables distinct 'latent classes' or subgroups to form within the data, each of which are representative of different performance groupings. This study sought to identify a 'class' of positively deviant general practices that represented exceptional adherence across all of the recommendations.

LCA does not enable performance to be explored beyond the level of a latent class (i.e. to identify practices that perform top or bottom within a class). However, it is possible to identify practices that are more or less representative of a class (i.e. a general practice with a high probability of representing the adherence levels of the class). The LCA analysis for this study categorised adherence for each clinical recommendation as being either 'above' or 'below' average. The inclusion of high, medium, and low adherence categories added too many parameters and reduced the fit of the model. Models with an increasing number of latent classes were successively fitted to the data (e.g. 2, 3, then 4, etc.). The number of latent classes and fit of a model can be determined in various ways depending on the nature of the analysis (Linzer & Lewis, 2011). This study sought to identify a model which a) identified a 'positive deviant' latent class and b) showed the best fit to the data. Parsimony measures (e.g. the Bayesian information criteria and the Akaike information criteria) are used to assess fit with preference given to models which minimise these values (Linzer & Lewis, 2011).

As described in section 5.5.2, data for each clinical recommendation had previously been adjusted for relevant patient and practice level effects. Adding three covariates (number of GPs within a practice, the number of registered patients, and average area deprivation of patients) to the LCA model did little to predict class membership – they were not significant – and so these covariates were excluded from the final analyses. Class membership was defined by adherence levels alone.

5.6 Results

Adherence data were analysed for 88 West Yorkshire general practices. One practice with an incomplete data set was excluded. In addition, data for the smoking comorbidities clinical recommendation were excluded due to their poor quality. This recommendation was measured using a single rather than composite indicator and challenges were faced when adjusting for patient level characteristics. Also, the extent to which the data truly measured smoking cessation support and treatment was questioned. Consequently, positively deviant general practices were identified based on exceptional adherence to seven rather than eight high impact clinical recommendations.

A seven class solution to the LCA was used to identify positively deviant general practices. Compared to a six and eight class model, and in keeping with the purpose of the analysis, this model identified a latent class of practices that demonstrated exceptional adherence. Furthermore, the seven class model demonstrated better fit with lower Bayesian and Akaike information criteria (BIC=1008, AIC=872) than the six (BIC=1156, AIC=1000) and eight class (BIC=1262, AIC=1051) alternatives.

The seven class solution is represented in Figure 5.1. Each square characterises a latent class within the model. Within each class the probability that general practices demonstrated above (blue) or below (red) average adherence to each of the clinical recommendations is shown. To exemplify this, general practices that are representative of class 2 have a high probability (100%) of displaying below average adherence to the atrial fibrillation and Type II diabetes processes recommendations (as represented by the fully red bars). In contrast the class 2 practices are highly likely to display above average adherence on the myocardial infarction and high-risk prescribing recommendations (as represented by the fully blue bars).

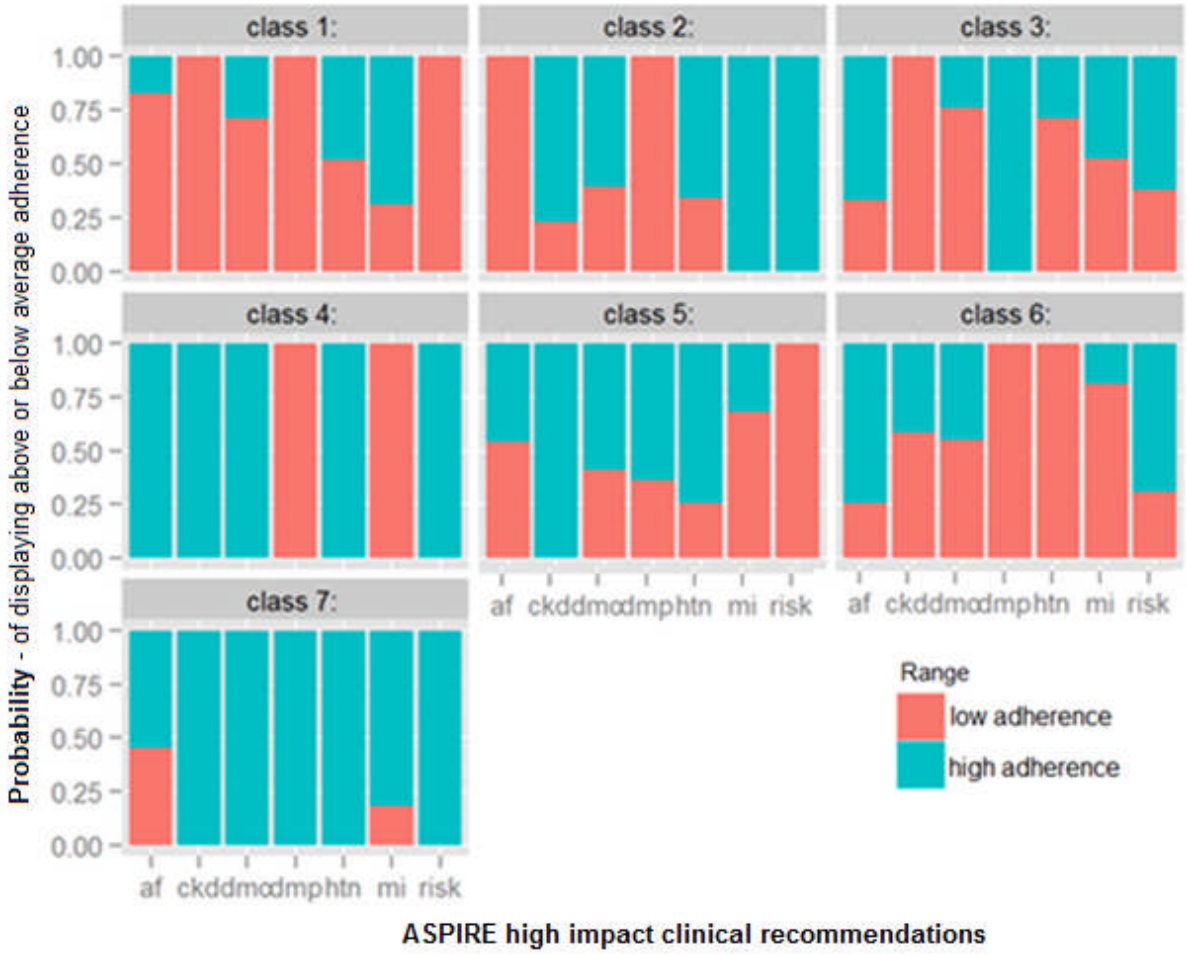

Figure 5.1 Latent class analysis results

High adherence represents above average performance; low adherence represents below average performance.

Abbreviations: AF = atrial fibrillation; CKD = Chronic Kidney Disease; DMO = type II diabetes: outcomes; DMP = type II diabetes: processes; HTN = hypertension; MI = myocardial infarction; Risk = High-risk prescribing.

The general practices that were representative of class 7 were considered to be positive deviants. Figure 5.1 indicates that practices within class 7 have an extremely high probability of demonstrating above average adherence on five of the seven recommendations, and a high probability of demonstrating above average adherence on the other two recommendations (atrial fibrillation and myocardial infarction). The probability values for each clinical recommendation within all of the latent classes are displayed in Appendix 13.

The number of general practices that represented each latent class is displayed in Table 5.2. Class 7 contained 11 general practices that were distributed across five West Yorkshire CCGs. This was considered an appropriate proportion to be classed as positively deviant (12.5% of the overall sample). All practices within this class were

100% representative of Class 7 adherence levels – their probability of belonging to the class was 1.

Table 5.2 The number of general practices that were representative of each latent class

Latent class	Number of general practices
1	13
2	8
3	21
4	2
5	19
6	14
7	11

Class 4 was not considered to be positively deviant despite demonstrating high adherence to five of the clinical recommendations (Figure 5.1). Compared to class 7 it had slightly lower adherence on the two remaining recommendations. Furthermore, it only contained two general practices (Table 5.2). These practices were likely to be outliers that were not entirely representative of the class 7 adherence levels.

To assess whether positive deviants were likely to succeed despite facing the same constraints as others (Marsh et al., 2004), post hoc tests assessed whether class 7 varied from others on a number of different variables that are associated with performance. These variables were not included within the LCA in order to maintain the power of the model. Table 5.3 displays how each latent class ranked on each variable and suggests that practices in class 7 are likely to face relatively similar constraints to practices that belong within the other classes (i.e. they do not have a specific advantage). Although class 7 ranked higher for QOF scores, the number of partners and salaried GPs, and for including a high proportion of training practices, they were not ranked top. The latter three of these variables are also linked as larger practices are more likely to be training practices (Kelly & Stoye, 2014). Class 7 ranked roughly within the middle for the remaining variables, although performed slightly less well on the patient reported variables – recommending and accessing the practice.

Table 5.3 Ranking of each latent class for a number of different variables

Predictor	Performance ranking for each latent class*
Index of Multiple Deprivation	6 3 7 1 4 5 2 least deprived most deprived
QOF scores	3 7 5 / 1 4 2 6 higher performance lower performance
Number of partners	1 7 6 3 4 5 2 more partners less partners
Salaried GPs	6 7 1 3 2 5 4 more salaried GPs less salaried GPs
Number of GPs	6 1 7 3 2 5 4 more GPs less GPs
Proportion of teaching practices	6 7 2 3 1 5 4 higher proportion lower proportion
Patients recommend the practice	4 3 1 6 7 2 5 more likely less likely
Patient access	4 5 6 1 3 7 2 better access worse access

*Each number represents the number of the latent class (as per Figure 5.1). For the variable 'index of multiple deprivation' practices within class 6 was less deprived than practices within class 3 and so on.

5.7 Discussion

LCA identified 11 positively deviant general practices within West Yorkshire (represented by class 7). These practices were highly representative of a latent class that displayed above average adherence across seven high impact clinical recommendations. LCA enabled performance to be assessed across a range of different indicators and clearly separated the positive deviants from others in their community.

The positively deviant practices were highly likely to display above average adherence on five of the seven recommendations. However, they were slightly less likely to display above average adherence to the atrial fibrillation and myocardial infarction recommendations. This may reflect associations between these two

conditions (Schmitt, Duray, Gersh, & S.H., 2009; Soliman et al., 2014) with lower adherence on one recommendation leading to lower adherence on the other. Lower adherence to the atrial fibrillation recommendation may also represent a geographical distribution of services within the region. Depending on how CCGs commission their services, it may be easier for some practices to refer patients to specialist clinics, e.g. warfarin clinics. This is relevant to one measure within the atrial fibrillation recommendation ('warfarin should be administered as the most effective thromboprophylactic agent'). All ASPIRE practices were plotted onto a map in order to examine geographic differences further,[1] however, there did not appear to be any distinct geographical variation within the positively deviant practices which were identified across five of the ten CCGs.

The post hoc tests that assessed whether class 7 varied from other classes on a number of different variables highlighted that the positively deviant general practices ranked roughly within the middle of the variables that were assessed. However, practices within class 7 did perform better and worse than others on some of the variables indicating that they may have been at a competitive advantage and disadvantage respectively. For example, practices within class 7 were likely to have a greater number of salaried GPs and partners but their patients were less satisfied with the service (less likely to recommend and report good access). This latter finding about patient satisfaction shares similarities with one of the elderly care medical wards from study 2 (ward T2W6 – chapter 3) where patient perceptions of safety were less aligned with the Safety Thermometer data and staff perceptions of safety. It may be that positively deviant general practice that provide clinically effective patient care are less able to deliver a positive patient experience. Overall, primary care is known to be extremely heterogeneous (Goodwin et al., 2011), and the post hoc tests exemplify the challenges that are faced in identifying positively deviant general practices that succeed despite facing the same constraints as others.

5.7.1 Feasibility of identifying positive deviants

Despite identifying 11 positive deviants, there are some important considerations regarding the feasibility of applying stage 1 of the Bradley et al. (2009) process within a general practice setting. This study initially aimed to identify positive deviants who delivered exceptionally *safe* patient care. To our knowledge primary care lacks a broad measure of safety similar to the NHS Safety Thermometer, and although narrower indicators are publicly available, they are not always within direct control of the

[1] This map is not presented within this thesis in order to maintain the confidentiality of the practices involved within this study and ASPIRE.

practice team. Consequently, this study had to widen its scope: firstly to identify and explore exceptionally high quality evidence based care; and secondly to identify positive deviants using a range of narrow indicators. Furthermore, the data that were used to identify positive deviants were routinely collected, however, they were not publicly available. The ASPIRE data were extracted from practice computer systems and analysed specifically for their research programme. Although CCGs and clinicians could create and run similar data enquiries, academics who conduct this approach will need a clinical partner organisation and NHS ethical approvals to access the necessary data.

Compared to the analyses used in secondary care (study 2), the LCA may have lacked generalisability to a clinical community. All analyses were conducted by a trained biostatistician (RW) and, due to the quantity and complexity of the data, specialist software were used. The heterogeneity of general practice also meant that it was necessary to effectively control for many different confounding variables (e.g. patient characteristics such as comorbidities and demographics, and practice characteristics such as list size and numbers of GPs). However, creating a composite measure in order to facilitate more accessible analyses (e.g. ranking or SPC methods) would also have required complex analyses (Jacobs et al., 2004) and may not have cleanly separated positive deviants from the rest of the community.

5.7.2 Strengths and limitations

ASPIRE's robust creation of high impact clinical recommendations meant that positively deviant general practices were identified using a range of indicators that had scope for improvement and potential to significantly benefit patient care. Many of the clinical recommendations were measured using composite indicators and it was possible to assess adherence while accounting for a number of different confounding variables. It is unlikely that this depth of information could have been matched by a publicly available source of data.

However, as the ASPIRE data were used, this study could only identify positive deviants from a sample of 89 randomly sampled West Yorkshire general practices that used SystmONE. There are around 300 general practices within the West Yorkshire region, although over two thirds of these use SystmONE (Willis et al., 2016). Due to this sampling frame, some West Yorkshire general practices with exceptionally high adherence will not have been identified as positive deviants. The lack of temporal analysis was another key limitation to this study which meant that it was not possible to identify positive deviants who *consistently* outperformed others. It remains unknown whether practices retained their exceptional performance while the qualitative data were collected during stage 2 of the Bradley et al. (2009) process (in summer 2016).

The ASPIRE clinical recommendations predominantly related to long term health conditions and so, although positive deviants may demonstrate exceptional performance in this specific aspect of patient care, they may be clinically ineffective in other areas e.g. the provision of acute care. Linked to this, many of the ASPIRE data were taken from the QOF (Willis et al., 2016) which has been credited with improving the quality of incentivised care but has had limited or detrimental effects in other non-incentivised areas (Campbell et al., 2009; Gillam, Siriwardena, & Steel, 2012). Consequently, positively deviant practices may only excel in incentivised aspects of care. Nevertheless, the ASPIRE recommendations were identified through a consensus process and were considered to be high impact based on burden of illness, potential patient benefit, and likely cost savings. Even if positive deviants only excelled on these specific indicators rather than delivering clinically effective care in the round, this is still likely to be of interest to clinicians, commissioners, and policy makers alike. Within the secondary care study other perspectives of safety were assessed to see whether they supported the identification of positive deviants (phase 3, chapter 3). There was insufficient time and resources available to conduct this additional data collection here.

Stage 2 – How do positively deviant general practices deliver exceptionally high quality, evidence based care?

5.8 Introduction

This section of the chapter addressed Stage 2 of the Bradley et al. (2009) process. The context of primary care meant that it was not possible to simply apply the same qualitative methods as those that had been used within secondary care (chapter 4). This study also sought to address the pragmatic issues that arose while conducting the approach within elderly medical wards, particularly the length of time it took to transcribe and analyse the data.

5.8.1 The study sample

During study 3, a lot of time was spent transcribing and analysing the qualitative data to generate hypotheses about positively deviant strategies. In this study, rather than recruiting a comparison group the researcher sought to conduct the qualitative work solely within positively deviant general practices and then present the findings for

review by an expert panel who work across/interact with a number of different practices. The aim of this different approach was to streamline the data collection process to make it as efficient as possible and therefore more likely to be feasible on the front line. As such, we were also interested in exploring whether it was possible to identify positively deviant strategies without reference to a comparison group.

An expert panel would comprise various primary care professionals who have broad oversight including academic GPs, staff within CCGs, CQC inspectors, the GP lead for training in the region and GP trainees. Consensus methods are commonly used to synthesise health service information and have previously been used to develop quality indicators and clinical guidelines (Jones & Hunter, 1995). Group judgements such as this are more consistent, reproducible, and less biased than individual opinion (Campbell et al., 2002). There are various methods to measure and/or develop consensus such as the Delphi technique and RAND method (Campbell et al., 2002; Jones & Hunter, 1995). The nominal group technique, or expert panel, is conducted through a structured meeting where experts are asked to rank, discuss and then re-rank the information to gain consensus (Jones & Hunter, 1995). In this study presenting the qualitative findings to generate consensus about which of them facilitate positive deviance (i.e. which of them were exclusive to positively deviant general practices) may provide a more pragmatic alternative to collecting and analysing data from comparator practices.

Furthermore, if the study is only sampling positive deviants there is no requirement for blinding the performance levels. This enables explicit discussion of the positively deviant status which may generate a better understanding about the true nature of positive deviance within primary care. For example, are strategies deviant or different? Is success achieved through compliance to formal guidelines and procedures or through conformity with socially prescribed norms? Knowledge of their ‘positively deviant’ status may alter the nature of conversations enabling staff to think and talk about the deviant, different and/or novel things that they do to succeed. This is in contrast to study 3 where elderly medical ward staff were only able to discuss how their team ‘succeeded’.

5.8.2 Data collection and analytical methods

Data on the elderly medical wards were predominantly collected using focus groups. Within general practice, GP partners and practice managers are able to convene multidisciplinary staff for practice team meetings. Although the frequency with which this is done varies by practice, focus groups may also provide a feasible method for qualitative data collection within this setting. However, advice was sought from Professor Robbie Foy, the principal investigator for ASPIRE and an academic GP. He

warned that an external researcher may face obstacles when trying to organise focus groups within general practices. This was supported by further communication with others who conduct research within this setting. Consequently, as this study was externally imposed and it was necessary that data were collected for the thesis, individual interviews were considered more feasible for this particular application of the approach.

Similar to focus groups, interviews may not provide insight into higher level, cultural factors which are less easily articulated. These espoused beliefs and underlying assumptions (Schein, 2004) may be critical to facilitating exceptional performance across a range of different performance indicators. Consequently, the researcher also planned to observe routinely held team meetings in order to assess the team dynamics within the positively deviant practices. These data were considered secondary to the interviews as they do not provide a historical assessment of how exceptional performance was achieved.

The focus groups in study 3 were theoretically underpinned to support a robust exploration of how success was achieved. Various theories and frameworks were explored for this study, however, none were considered suitable. Although the MaPSaF originated within primary care (Parker et al., 2008), positively deviant practices were identified for exceptional clinical effectiveness rather than safety. Structuring interviews around the MaPSaF was unlikely to target this different aspect of quality. The theoretically underpinned Systems Engineering Initiative for Patient Safety (SEIPS 2.0) (Holden et al., 2013) provides a model of factors relating to systems, processes, and outcomes. However, this model lacks the cultural aspects which may be key to facilitating team level success across several rather different clinical recommendations. Behaviour change theories and frameworks were also explored. The Theoretical Domains Framework (Michie et al., 2005) supports the implementation of evidence based practice but is mostly suited to understanding specific behaviours and problems rather than broad outcomes of care. Another framework for designing and implementing evidence based practice, the COM-B model (capability, opportunity, motivation, and behaviour - Michie, van Stralen, & West, 2011), may help to unpick the motivation behind positively deviant behaviours but was too broad to provide a structure for interviews.

As a suitable theory or framework to underpin data collection was not identified, this study intended to adopt a grounded theory approach. Grounded theory is commonly used to: a) generate mid-range theory, b) provide a new slant on existing knowledge, and/or c) when little is known about a topic (Goulding, 2002; Willig, 2008). It facilitates a process of discovery by progressively identifying and integrating ‘categories of meaning’ within the data (Willig, 2008). Grounded theory provides various strategies to

systematically and concurrently collect and analyse data (Charmaz, 2010; Goulding, 2002). Analytic interpretations are used to guide further data collection (Charmaz, 2010). The strategies include theoretical sampling, theoretical saturation, and the constant comparative method for analysis. This systematic method was intended to help create an explanatory framework to further our understanding of how exceptionally high quality, evidence based care is delivered within positively deviant general practices (Corbin & Strauss, 2008; Willig, 2008). Although few previous applications of the positive deviance approach report that they have used a full grounded theory approach, some have used the constant comparison method of analysis e.g. Assefa et al. (2014), Bradley et al. (2012a), Curry et al. (2011), Rose et al. (2012).

Table 5.4 summarises and compares the different methods that were used to apply stage 2 of the Bradley et al. (2009) process within the secondary and primary care studies. With these adaptations in mind, this study aimed to:

- Assess the feasibility of conducting Stage 2 of the positive deviance approach within a general practice setting.
- Explore how high quality, evidence based care is delivered within positively deviant general practice teams.

Table 5.4 The methods used to apply stage 2 of the positive deviance approach within primary and secondary care

Study aspect	What was done in secondary care	Adaptation / change for primary care
Sample	Positively deviant and comparison wards	Positively deviant general practices only
Blinding	Researchers and staff were blinded to performance levels	Explicit discussion of positively deviant status
Data collection method	Focus groups and researcher field notes	Interviews and observation of practice team meetings
Theoretical underpinning	Manchester Patient Safety Framework	None - grounded theory approach

5.9 Methods

5.9.1 Study design, setting and ethical approvals

The aim of this study was to assess the feasibility of conducting the positive deviance approach within general practice, therefore, the methods presented below are those that were intended. Necessary adaptations to these methods are reported initially in section 5.9.2 below and then in section 5.10.1 as findings.

A qualitative research study was planned within the sample of positively deviant West Yorkshire general practices (identified during Stage 1 - section 5.6). Staff interviews and observations of team meetings were conducted in each practice with the intention that an expert panel would generate hypotheses about the positively deviant strategies that facilitate exceptionally high quality, evidence based care. The NHS ethics approvals outlined in section 5.5.1 were applicable to Stage 2 of this study. Health Research Authority (HRA) approval was granted on the 25 May 2016. Data were collected between June and September 2016.

5.9.2 Recruitment of positively deviant general practices

All 11 positively deviant general practices were invited to participate in Stage 2 of the Bradley et al. (2009) process. Practice managers were contacted initially by email and subsequently by telephone. Participation was incentivised through a payment of £45 per interview (e.g. the practice received £225 if five interviews were conducted). The practices' exceptional performance and the positive nature of the study were highlighted, and lunch was provided at some of the observed meetings.

The intention was to recruit three or four general practices so that the similarities and differences between positively deviant teams could be explored. However, only two practices agreed to participate in the study. This meant that it was not possible to draw similarities and differences between practices and, as there were not enough data, the expert panel was not conducted. Further explanation and discussion of this is provided in section 5.11.1.2.

5.9.3 Recruitment of staff participants

5.9.3.1 Staff interviews

Practice staff were invited to participate in semi-structured interviews. RB intended to use theoretical sampling whereby data are collected and analysed concurrently and new participants are sampled in light of the developing analyses (Goulding, 2002). The study sought to sample participants until theoretical saturation had been reached i.e.

where there was no new evidence to inform the developing analysis (Goulding, 2002). As such, a final sample size was not defined, however, to manage expectations each practice was given a guide of approximately five multidisciplinary staff (e.g. the practice manager, salaried and partner GPs, a nurse, and a receptionist). RB liaised with the practice managers to identify the most appropriate staff to interview. All staff were initially approached by the practice manager rather than RB.

5.9.3.2 Observed team meetings

Up to three routinely occurring team meetings were observed within each practice. Attendees of each meeting were classed as participants and were therefore recruited opportunistically. Efforts were made to publicise the observed meetings (via practice managers and posters) so that participation could be considered and questions asked. As the size and frequency of meetings vary between general practices a target sample size was not set.

5.9.4 Data collection tools

A semi-structured interview topic guide (Appendix 14) was created to facilitate conversations. A more structured interview guide was disregarded to prevent the imposition of assumptions about what facilitates success. The intention was that concurrent collection and analysis of the data would help inform the questions that were asked during later interviews.

Observation guidance (Appendix 15) facilitated consistent observations across team meetings. It was generated from a brief synthesis of research which had explored high performance within primary care settings globally (see Appendix 16 for details). Although the guidance was generated from existing research, additional observations were recorded where relevant.

5.9.5 Procedure

Interviews were conducted at a mutually agreed time and location within the general practice. Participants were given information sheets and provided with an opportunity to ask questions. Written informed consent was gained. Interviews were intended to last up to 60 minutes. All interviews were audio recorded and transcribed verbatim.

RB liaised with practice managers to identify appropriate team meetings to observe. At the beginning of each meeting the researcher introduced themselves, explained the purpose of the observation and provided information sheets. Written informed consent was gained. RB then sat to the side of the meeting and made detailed field notes

attending to the guidance where possible. Field notes were typed up following each meeting.

5.9.6 Data analysis

It was intended that the constant comparative method would be used to analyse data. This key aspect of grounded theory compares like for like in order to identify differences and similarities within emerging aspects, or conceptual categories, of the analysis (Goulding, 2002). It enables the common features of a phenomenon to be identified but also allows categories to be broken down into smaller units depending on where they differ (Goulding, 2002). This increases the generalisability and explanatory power of the findings as properties can be generated for each conceptual category.

The intention was for rigour to be maintained in a similar way to study 3 (chapter 4 section 4.3.6). Coding problems were to be discussed with supervisors, and a reflexive diary and audit trail of the analysis were to be maintained.

5.10 Findings

The findings from stage 2 of the positive deviance process are presented in two parts. Section 5.10.1 addresses the overall aim of this study – to assess the feasibility of conducting the positive deviance approach within a general practice setting. Section 5.10.2 presents preliminary qualitative findings regarding the factors that facilitate exceptionally high quality, evidence based patient care.

5.10.1 Feasibility of the methods

The methods described above were those that RB had intended to use while conducting stage 2 of the Bradley et al. (2009) process. However, various challenges were encountered and so adjustments were made to the approach that was finally taken. These adjustments are summarised in Table 5.5 and discussed below.

Table 5.5 The study's intended methods, the problems encountered, and the ways in which they were overcome

What was intended	Problems encountered	What was done
To recruit three or four positively deviant general practices	Struggled to get hold of practice managers. Most practices did not want to participate.	Only two general practices were recruited. Data from one of these practices was not included in the qualitative analysis.
Recruit members of staff from the multidisciplinary team	Researchers had limited or no access to clinical staff. Difficult to recruit doctors.	Recruitment organised through the practice manager who identified participants and scheduled interviews
Conduct interviews lasting up to 60 minutes	It was extremely difficult to get this much time with practice staff, especially GPs. On occasion interviews had to be postponed.	Interviews were scheduled in between clinics. On average interviews lasted 25 minutes.
Grounded theory approach	Practice management selected participants and scheduled interviews with several occurring in one day. This made it difficult to collect and analyse data concurrently.	Data were analysed thematically on completion of all data collection. It was not possible to assess whether theoretical saturation had been reached while collecting data.
Expert panel to generate hypotheses about positively deviant strategies	It was only possible to analyse data from one positively deviant general practice.	The expert panel was not conducted. It was not possible to identify factors that were common across a number of positively deviant practices.

5.10.1.1 Recruiting positively deviant general practices

General practices were repeatedly contacted over a three month period, initially via email to the practice manager and then via telephone calls. After struggling to speak with many of the practice managers, advice and some practical support was gained from the ASPIRE research team. Only two of the eleven positively deviant general practices participated in stage 2 of this study. 'Practice A' responded directly to a follow up email that was sent to the practice manager. 'Practice B' was recruited through a member of the ASIPRE research team (CH) who already had established relationships with the practice management[1]. CH discussed the study face to face with the senior partner and invited them to participate. In total, four practices explicitly declined to participate, predominantly reporting a lack of time or capacity. RB was unable to establish a meaningful dialogue with the practice managers of five positively deviant practices (despite emails, voice messages, and repeated telephone calls).

Challenges were also faced in gaining timely approvals. NHS ethical permissions were gained on 26th November 2015 and practices were initially contacted at the beginning of December. At that time, it was necessary to know which practices were participating so that NHS permissions could be sought for the relevant CCGs. Confirmation of participating practices and the necessary paperwork (a 'Site Specific Form' which required a GP signature) were not gained until April 2016. By then the process for gaining approvals had changed (Health Research Authority, 2016). The new HRA approval was not granted until the end of May 2016. This severely delayed data collection.

5.10.1.2 Recruiting participants, collecting, and analysing data

The observations were predominantly conducted as intended. Both practices held meetings which involved all or parts of the multidisciplinary team. In practice A, three of the weekly practice team meetings were observed and, in practice B, a practice, nursing, and an operations team meeting were observed (each of which occurred monthly). Recruitment details for each observation are presented in Table 5.6. A total of 35 unique staff members were observed. The observations were relatively easy to organise as the meetings were already embedded within the practices' routine. Reception staff did not attend any of the observed meetings in either practice (other than the reception manager in practice B).

[1] At the time when this study was recruiting, Practice B were also involved in the process evaluation for ASPIRE (work package 5 of the programme grant) (Willis et al., 2016).

Table 5.6 Details of observed team meetings

	Type of meeting	Number attended	Profile of attendees
Practice A	Practice team meeting	11	Practice management, GPs, nurse practitioners, practice nurse, HCA, HCA apprentice, phlebotomist
	Practice team meeting	7	Practice manager, Senior partner, nurse practitioners, practice nurse, HCAs
	Practice team meeting	9	Practice management, GPs, nurse practitioners, practice nurse, HCA
Practice B	Practice team meeting	13	GPs (partners and salaried), nurse practitioners, staff with management roles
	Nursing team meeting	10	Nurse practitioners, practice nurses, HCAs, HCA apprentices, student nurse
	Operations meeting	4	Staff with management roles

Study methods were adjusted in a number of ways to complete the interviews. Recruitment in both practices was directed by the practice management who identified staff and scheduled interviews around workload and clinic commitments. RB was only able to play a small role in organising them e.g. by suggesting job roles and asking to interview staff who had preferably worked in the practice during 2012/13 (when the ASPIRE data were collected). Both practices organised multiple interviews within one day, predominantly around observed team meetings. This was despite RB saying that she could attend the practice at any time and on multiple occasions.

Although the researcher was not directly involved, the interviews did not appear too challenging to schedule. Practice managers were not bound to clinics, and interviews with nursing staff took place during non-clinical time within their schedules. However, neither practice was able to offer 60 minutes of staff time - the average interview length was 25 minutes. It did appear to be particularly challenging to schedule interviews with doctors: they were the last interviews to be arranged within each practice; one had to be cancelled altogether; and another had to be rearranged a few minutes after starting it.

Various factors made it neither possible nor appropriate to conduct the key strategies of a grounded theory approach. As interviewees were predominantly selected by the practice management – and this was dependent upon availability and clinic schedules – there was limited opportunity to conduct theoretical sampling.

Several interviews and an observation were often conducted within one day preventing the concurrent collection and analysis of data i.e. the use of the constant comparison method. The smaller than intended practice sample (n=2) compounded this problem as there were less data and therefore less scope to explore the similarities and differences between practices. Furthermore, although data saturation may have been reached within each individual practice, it was not possible to reach theoretical saturation for the overall study in order to generate positively deviant strategies. Consequently, the grounded theory approach was not considered appropriate and the methods were adjusted. Data were analysed thematically using a similar process to that of study 3 (see chapter 4, section 4.3.5). The guidance by Braun and Clarke (2006) was followed to conduct an iterative process of: 1) familiarisation with the data; 2) generating initial subthemes; 3) searching for themes; 4) reviewing these themes; 5) defining and naming the themes; and 6) producing a written analysis.

Although two positively deviant practices were recruited to the study, the qualitative analysis to identify factors that facilitated exceptionally high performance only included data from Practice B. There were various reasons for this, all of which centre around the time lag between collecting the ASPIRE data (2012/13) and the qualitative data for this study (June to September 2016). Interviews and informal conversations with staff from Practice A indicated that the current practice set up bore little resemblance to 2012/13. There had been many changes to the senior partner, other partners, the practice management, and the multidisciplinary team. Although both practices appeared to have changed to some extent, some staff in practice A did not consider these changes to be positive. Some staff also reported that currently the practice was not performing exceptionally well within the region.

> *Practice A, GP Partner: […] because we had such a high turnover for various reasons last year. One of the partners moved, a salaried GP left us, we had a change in practice manager, and then one of the other GPs went on sick leave and then left.*

> *Practice A, Practice Nurse: I've got to say, in the last couple of years since we moved to this practice [different location], […] it's changed a right lot in this last couple of years because you know we've had lots of new starters, people leaving, people retiring. So I personally think we've had a lot of change. And change is good in a lot of things and you learn a lot of things and you pick new information up from other people, but I think you lose something sometimes, do you know what I mean?*

> *Practice A, Practice Manager: And I think this is why sometimes when you look at the stats of us as a practice within the CCG we're not the best. We're not the worst, we're not the best.*

As such, the qualitative analysis presented within this thesis only included data from Practice B.

5.10.2 Factors that potentially facilitate positive deviance

In total six interviews were conducted within Practice B. These were with a healthcare assistant, practice nurse, advanced nurse practitioner (ANP – who was also the nursing team coordinator), a receptionist, the practice business manager (PBM), and a GP partner. Only two of these staff had *not* worked at the practice during 2012/13 (practice nurse and PBM).

Following the iterative process for thematic analysis a total of seven themes and thirty subthemes were generated from the data. These covered factors that operated at an individual, team, and wider organisational level. As data were only analysed from one practice it was not possible to assess which of these factors may support positive deviance across a range of exceptionally performing practices. All factors which staff thought facilitated their success are discussed below and presented in Figure 5.2.

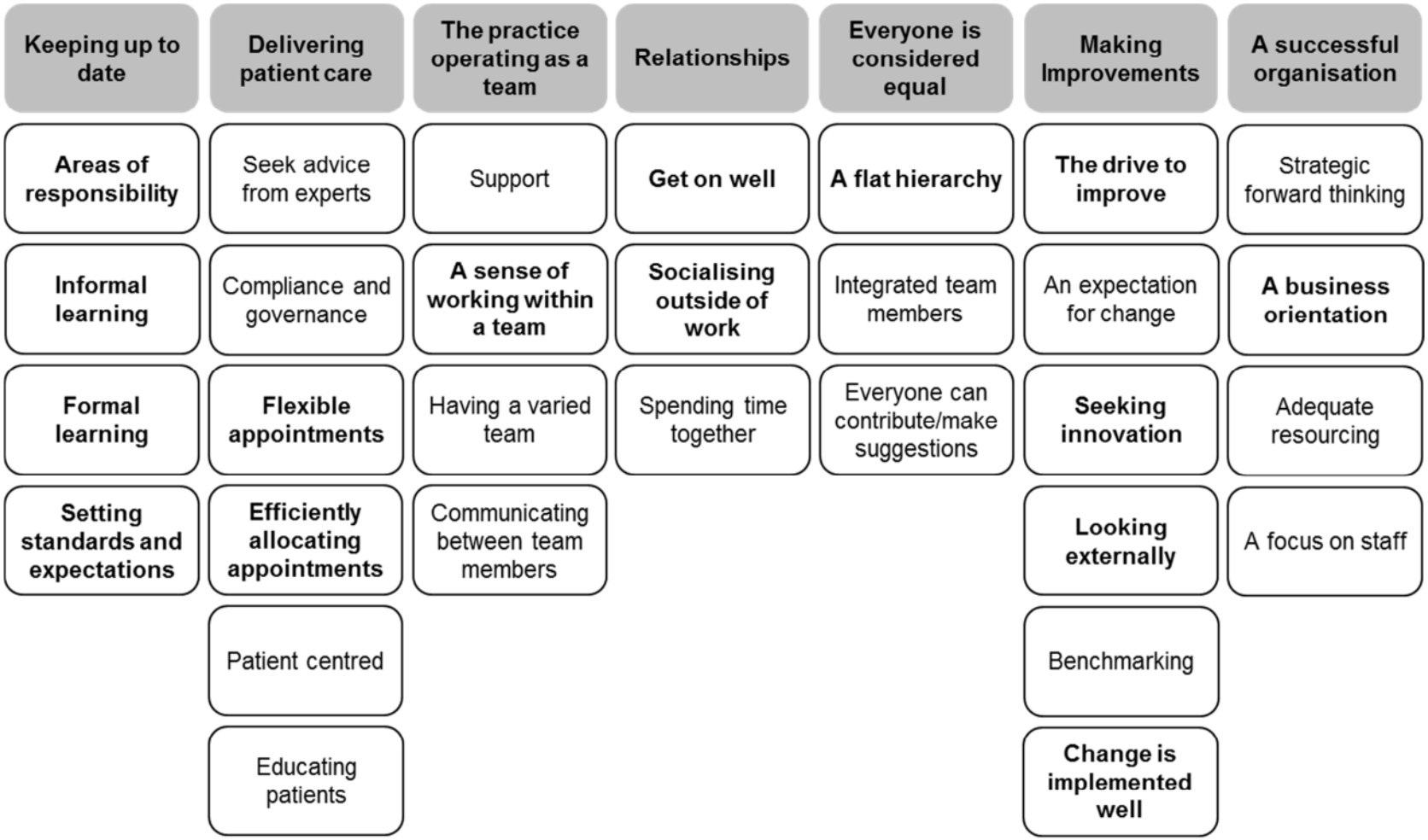

Figure 5.2 The themes and subthemes generated through thematic analysis of the data.

Themes are represented in grey. Subthemes which staff explicitly stated to exist in 2012/13 are emboldened.

At an individual level, staff discussed '**keeping up to date'** with the latest guidance and evidence based practice. Staff had *'areas of responsibility'* for different aspects of clinical care that they specialised or were interested in. They were responsible for identifying guidance updates and disseminating them to the rest of the team. Responsibilities existed across all levels of the team (admin to GP) and latest guidance was predominantly shared through various team meetings.

> *GP Partner: So the way we structure our care group – so we try to divide into areas of medicine so diabetic, cardiovascular, respiratory, palliative etc. So each doctor kind of heads up an area.*
>
> *Practice Nurse: We all have a specific area that we are responsible for updating guidance on. And so my area is learning disabilities and infection control. So if there are any issues or new guidance, or updates relating to both of those subjects it's my role within that meeting to stand up and say what those changes have been.*
>
> *Receptionist: There is one receptionist that does a diabetic clinic so she schedules and arranges that one. […] I do baby clinics. We've got a carer – a receptionist that does the caring role […] So everyone's got their own kind of little thing what they deal with.*

Sharing guidance and recommendation updates with other staff was just one of the mechanisms for learning within the practice. Overall there was a strong emphasis on *'informal and formal learning'.* Staff identified many ways in which this happened: staff deliver training sessions within clinical meetings; they attend formal updates and courses; they share learning from courses with the rest of the team; and they invite external experts to talk about specific topics.

> *Researcher: If you could pinpoint one particular thing, if you had to choose one thing what would you =*
> *GP Partner: = that enables us to be successful?*
> *Researcher: Yeah*
> *GP Partner: Recognising the value of continuous learning I'd say.*
>
> *Healthcare Assistant: Oh we also do quite a lot of training so we go to like [place] and do a lot of training there. Plus we do have a lot of meetings so we have quite a lot of expertise coming into that.*
>
> *Practice Nurse: We have weekly clinical meetings where all the clinical staff, so there is all the GPs, all the nurses, healthcare assistants, all get together. So there will be a topic for that week, usually delivered by a clinician but at the same time then, there is an opportunity for, if you've been on any training, like for example I did smear care training last week and picked up some new things, so we, I kind of disseminate that back to the nursing team. So we do share. We all have a specific area that we are responsible for updating guidance on.*

In part the emphasis on keeping up to date may be broadly driven by the practice leadership who *'set expectations and standards'* around how care should be delivered.

> *PBM: [describing how Practice B had previously acquired a poorly performing practice and subsequently worked with them to improve their performance] And just, I think across the kind of clinical and non-clinical - set the standard as to actually this is how we think it should be done.*

> *GP Partner: So coz we are a teaching practice, having GP registrars kind of does keep you on your toes coz they ask you questions that are based on latest NICE guidance. So you kind of do have to be aware of it, or if you're not you are having to learn it alongside them. So being a teaching practice does try to maintain a focus on recent evidence base. So we've had that where we have been a training practice a long, long time now.*

Also at an individual level, staff described various ways in which they **'delivered patient care'** within the practice. As staff specialise in specific aspects of care they recognised that their knowledge was often outdated in other areas. Consequently, staff readily *'sought advice from experts'* within the team when they were unsure about the best course of action or treatment. Advice was sought either face to face (e.g. by speaking in between appointments within a clinic) or through the task function within SystmONE.

> *GP Partner: It's really hard to keep on top of things these days. So I recognise that I am somewhat deskilled in respiratory medicine now because I'm more skilled in diabetes and cardiovascular. I think it's increasingly hard as a GP to be excellent in all of it […] and therefore we readily task each other messages you know 'is this what we are supposed to be doing?'.*

> *Healthcare Assistant: Say if [the patient] had got a letter from the hospital that said that they needed a particular [wound] dressing and I didn't know where to find it or whatever. One of the nurses used to be in the district so she specialises in wound care. So I'd probably bob off and have a chat with her maybe.*

The nursing team in particular focused on *'compliance and governance'*. Their work was described as being heavily driven by guidelines and they highlighted that they would always record decisions that had been made within the patient notes after referring to guidelines or seeking advice from others.

> *Practice Nurse: Everything we do is evidence based. Everything is to the latest guidelines. We work to NICE guidance. … […] We've got protocols as well but the protocols do come from NICE guidance and things like that. If I'm doing anything that, for example I do a lot of women's health and contraception that type of thing, and I work to the Faculty of Reproduction and Sexual Health*

> *guidance. So everything is backed up and evidence based. And if it is something you know we, … that I've checked within that guidance I'll often record that in the patient's records as well so it's kinda clear where that information has come from.*

The allocation of appointments supported the delivery of patient care in two key ways. First, appointments were *'allocated flexibly'* to ensure that, where needed, patients were always seen. Second, *'appointments were allocated efficiently'* so that they were not wasted, they were available for those who need them most, and so that patients were seen by the most appropriate staff member. A 'telephone triage' system supported this flexibility and efficiency whereby ANPs made telephone calls to patients and allocated appointments on the basis of medical need. Efficiency was also maintained through a 'long term conditions line' which ran alongside the telephone triage to support the management of patients with long term conditions. If appropriate, patients with long term conditions (e.g. diabetes) were given a telephone consultation with a specialised member of nursing staff rather than a face to face appointment within the practice. Some staff reported that they thought these systems made their practice different to others.

> *Receptionist: We might not always be able to give an appointment immediately, but after they have spoke to the triage nurse which is medically trained, if they feel that they need to be seen, they will be seen that day whether there were an appointment that we could give or not. […] but we would never ever say 'oh ring back tomorrow' or you know. It is dealt with on the day regardless of what we've got to give. And I think that's what makes us different to a lot of surgeries really.*

> *Receptionist: Sometimes it is difficult coz they do think, they see you as a barrier between an appointment or being able to see a GP. It's not that that is the case, it's just that we need to make sure that they are seeing the right person initially coz then it's wasting appointments that are not necessary.*

> *ANP: We have a long term – this is all part of the nursing team – we have a, something called a long term conditions line which we run aside triage. I don't know any other practices that, I mean there might be other practices that do it. This is just something that we dreamt up ourselves. … We had a lot of patients on triage that were long term conditions that might ring and ask for rescue medication. […] Or you might see somebody say an asthma and treat them and think 'oh they're not very well. Come back in three days'. So then obviously you are using appointments. If they need to be seen they need to be seen, I don't mean it in that sense. Sometimes a phone call would do. We set up a long term conditions line and that runs parallel with the triage.*

Throughout these subthemes *'patients were central'* to how care and appointments were offered. Staff, particularly the nurses, attempted to improve the experience of patients seeking care: they would see patients on other colleagues' lists if clinics were running behind to avoid delays for the patient; they would seek advice from experts

immediately or telephone patients back to save them making another appointment; and the flexibility of the telephone triage was seen to not only improve efficiency but also to benefit the patients. *'Patient education'* was also considered key to delivering care within the practice. Both clinical and non-clinical staff had a role to play in educating patients about how services can be accessed.

> *ANP: I might see someone for a woman asthma review and she might say 'oh while I'm here I've got a problem with my pill'. Well I don't know what to do with that – come back and see [person]. Or - I'll see [person] and so we'll all you know use each other skills and sort of do it like that. And then obviously the patient benefits because they are not having to come back to three different people, you sort it out there and then. Or you say 'look, I'll get back to you'. …*

> *Receptionist: But then I think it's patients' education, being educated that you know, that if you've got a virus you know there is not a lot, you know, we can do. And we've started advertising in the surgery on the TVs – I don't know if you've seen that. We do that practice leaflet what we do every month you know. There has been lots of – so the diarrhoea and sickness what to do, hay fever, you know it's just educating your patients I think that's the big issues as well.*

> *ANP: A lot of patients will ring up - they don't ask for long terms conditions but they will say 'oh I've got diabetic problem I need to see a diabetic nurse about'. So that's all how we've educated them. And I tell all the diabetics and COPD, you know if they're a new patient to the practice, if you're struggling with your asthma or your COPD or you think you need us just give us a ring. […] But I think we educate them you know. If your peak flow is this and you're really unwell you need to tell them you need to be seen.*

At a team level the importance of **'operating as a team'** came across strongly from staff with *'support'* being a key subtheme within this. Staff support one another when they are busy to make each other's jobs easier and to reduce burden or stress. Staff also felt supported to raise problems with the rest of the team so that others could help to overcome them.

> *Practice Nurse: If we are doing clinics and I've got a gap and I'm a bit in front but the nurse who's in the room next door to me is running a little bit behind we kind of help each other out. […] It saves patients waiting and being late and things like that. And it also takes the pressure, the sort of stress off that nurse of thinking 'oh I've got two patients waiting and'.*

> *PBM: You know I'll go to the meetings and someone will say 'well actually I've got a problem with this' and everybody is, you know, people aren't switching off. 'Right ok well what is it?' And you don't, I don't think anybody feels in any way deficient by saying 'I've got an issue can you help'. And there is a forum to do that - I think that is crucial.*

Overall, staff described a sense of *'working within a team'* rather than as individual clinicians and they acknowledged and respected the need for a *'varied team'* which included staff with differing skills, mind-sets, and personalities. The ability to *'communicate between team members'* was important to enabling teamwork and, at times, this was facilitated electronically through SystmONE.

> *Receptionist: We've got staff off and everybody is just working together, covering where they can, doing extra clinics, extra appointments and just working as a team. And to my knowledge – I don't know if that is not happening on other levels, I know it from my level – but I just see that everybody chips in and just does what they do.*
>
> *Practice Nurse: It is very, very much a team effort within the nursing team.*
>
> *ANP: You couldn't work in a nicer team. A lot of different team dynamics. You know some people are quieter than others, some people have always got something to say. But if you didn't have that, it's. The element of a team is a mixture isn't it. You know if they were all 'doers' or all 'thinkers'. I can't think of the example - all these things what makes a team.*
>
> *PBM: I think there is a culture of I would say mutual respect and an understanding that different people bring different personalities and different skills.*
>
> *Healthcare Assistant: But my experience of communication within the nursing team is very, very good. We are all very good at kinda sharing information or something that's new or different or. It makes everybody else's job easier and it improves care for patients.*

Linked to teamwork was the importance of **'relationships'** which were discussed by staff from all roles. Staff were passionate about the fact that everyone within the team *'got on well'* and this was backed up by observations within various team meetings. Staff, from the receptionist to the GP partner, highlighted and considered it important that the full team *'socialise outside of work'*.

> *ANP: I think we're a really good, a good team. There is no, we don't argue among each other, everybody gets on. We go out, out of work. We socialise.*
>
> *GP Partner: And it, you know, coz I've worked in one place where the nurses didn't want to go on the Christmas do with the doctors, which I thought was really odd! Coz that's totally, you know, the doctors, the nurses, the receptionists we all kind of do these things together. So it is, you know, allows very good interpersonal relationships based both on friendliness but also professional mutual respect.*
>
> *Observation of practice team meeting: Staff around the room appeared to have a laugh and a joke with one another. This occurred across the whole group and*

with individual members of the team that people happened to be sat next to. These moments appeared to be really genuine and staff seemed to get on well with one another.

Staff also considered it important to have opportunities to *'spend time together'* within work without there being a specific patient or practice related purpose. This time was either facilitated through meetings or it was purposefully scheduled into the clinical day. It enabled staff to come together to catch up with each other. These moments were considered important by, and they included staff from, all roles within the practice.

PBM: I think we do meet regularly. ... I think that's, … I think that's really important because as a clinician your job [interruption at the door]. As a clinician I understand your role can be very isolating because you are hid and that is from nurses to healthcare assistants. So that's from that side. From a nonclinical side you have limited opportunities to meet with your clinicians and I think we meet as a community very regularly and I really do think that's important in terms of making sure you are still on track with people. I think it is important in terms of camaraderie. I think that, do you know that's massively important because you feel supported.

GP Partner: And also kind of there is sort of a lot of chit chatting that goes on […]
Researcher: How important would you say that kind of chit chatting is to the functioning of the team? Not necessarily about specific work or a patient or – just that informal =
GP Partner: = Highly important because that is how you maintain the relationships. And that's also sometimes where some of the bouncing of ideas off each other comes from. So we get, we actually have it built in when we do a diabetic clinic, we have it built into our timetable that we sit and have coffee together afterwards. It allows us to unburden about the patients, but also to kind of talk through any bits and pieces that we have heard of. Make sure that we are all ok.

Complementing the themes of teamwork and relationships, staff described an environment whereby **'everyone was considered equal'**. Staff across a range of roles reported that there was a *'flat hierarchy'* within the practice which made it easy to approach others.

Receptionist: I think that we all get on really well here. There is no – you daren't speak to that person and, you know, you don't go to that person until you've spoke to that person. I regularly go in and speak to [PBM] and say 'oh I've done this'.

GP Partner: Yeah so we've always tried to avoid the classic hierarchy that occurs within general practice. So coz we have quite a number of advanced nurse practitioners we've got nurses leading on things. And essentially the nurses deliver a lot of the long term conditions management. And nurses are

very good at following guidelines - that may be part of it. So we would we were kind of very respectful of those, there is a very flat hierarchy, that we all have our own skill sets and that the doctors quite readily turn to the nurses and say 'what should we be doing in this scenario'. Because we recognise that they often know a lot more than us about COPD inhalers so.

Staff across the whole practice were also *'integrated'* as a multidisciplinary team. Meetings enabled staff from different roles and different sites to come together as a team. They worked closely together, predominantly in their specific care groups, which encouraged integration across roles. Staff also highlighted a culture whereby everyone could *'contribute and make suggestions'*. Everyone was invited to, and felt comfortable in raising concerns or problems that they faced and to make suggestions about what change or action should be taken. This was also noted during the observation of all three meetings.

GP Partner: So I was here and then went to that other place and then came back and I found it really – it really messed with my head a little bit! Because so the nurses had their corridor and the doctors had their corridor where as we've never mixed that. You know when we are doing triage – acute calls – we work directly alongside the nurses doing the same things. So the nurse practitioners will be doing clinics that look very similar to our own. And there is a session where I go and sit with the nurses doing the diabetes clinic and we – I see exactly the same patients as them. It's not that I will see the tough ones it's just whoever is free. So it is, it feels very flat and it recognises that we have all got slightly different skill sets.

Practice Nurse: If you're kind of a lead for something like I am for like learning disabilities, we also have an admin or a receptionist attached to us. So we work very closely with the admin or the receptionists in things like that as well. And also with GPs.

Receptionist: And I've tried to liaise with victim support and they are coming in actually to do a meeting. So I'm just trying to explain that I'm always going in and saying 'what about this [PBM], what about this'.

GP Partner: No so one of our healthcare assistants said well 'why don't we just do everyone's review on their birthday wouldn't that be easier and then we would do it all across the year' which is a thing that is becoming more commonly done. It was like 'yeah that will work, let's just do that' so how are we going to make this work. So anyone can have the idea and we encourage everyone to float ideas as well.

Researcher: What are the kind of forums for that?

GP Partner: So we have a practice meeting monthly where people can bring up ideas, or if a problem is being discussed it's sort of free open discussion about solutions.

The practice team placed a lot of emphasis on **'improvement'**. Although the *'drive to improve'* predominantly comes from the partners, there was an *'expectation for change'* ingrained within all staff who worked within the practice.

> *ANP: Well Dr [name] is the senior partner now and he's head of, chair of the CCG. His vision and what, where he wants to go - he wants to take over primary care! I suppose there must have always been that element coz he hasn't always been the senior partner. Before it was Dr [name] it was Dr [name]. But obviously he's always been a partner and the partners must get together and be like 'right we are gonna go for this'.*

> *GP Partner: Quite a few of us are involved in the local CCG as well with various levels so that kind of has always led to an ethos that we should always strive to try to be good and we can't really have a lot of currency in certain conversations if actually we are not performing well in practice ourselves.*

> *PBM: So I think that comes from the partners, that's within the organisation and I think people who work here accept that that is the ethos and that there will always been change. […] So [staff] understood that's what they are about. And if we talk about change they are not surprised coz they either know about it or they expect it. 'Where is the next change coming from?'*

Further to this, there was a focus on *'innovation'* within the practice and staff identified various innovative things that they had implemented. They were keen to learn from others and they *'looked externally'* to identify new practises to implement and new ways to improve. This open culture meant that staff were willing to see what else was out there and to learn and share with others. The external focus and thirst for innovation was partially facilitated by the GPs, many of whom have additional roles within the CCGs or local hospital trusts. This enabled them to bring new ideas or technologies into the practice.

> *PBM: I think there is an ethos among the partners to seek innovation. So for example, we have advanced nurse practitioners at the surgery and they have been here for 12 or 13 years and they were awarded a kind of beacon funding award because of the innovation that they. So I think that there has always been a hunger for innovation, always been a hunger for how can we do it better, how can we improve.*

> *ANP: Then [the CQC inspector] asked me 'can I just ask you something else. Can you just go back to what you were telling me about [the telephone triage] – 'oooh that's really, that's good initiative that. How did you know, where did you get to know about that?'. He was really interested. And because he was a GP – 'we bring all the insulins in, they are using all these appointments. And we haven't really got time so that's a really good idea'.*

> *Healthcare Assistant: We've got Dr [Senior Partner] he's in with the CCG and so are some of the other doctors that are here. So we get to know a lot of new things. Sort of first hand. […] So I think little things like that, new, new*

equipment and things like that, we tend to sometimes be the first ones to be using them.

PBM: I think there is an ethos of taking responsibility, being accountable, taking a few more risks – not clinical risks – but in terms of how you develop things. And being open, that's really quite important, being open and seeing what else is out there. […] As opposed to this is our intellectual property or let's not go out there coz we might be frightened by what we see because they might do so much better than us.

Observation of a Practice Team Meeting: One staff member mentioned that some practices had queried other [practices] being able to see their data [on a CCG dashboard] but he laughed about this and said that this had been possible in the previous system. The Senior Partner also pointed out that all the practices, including theirs, had all signed up to a commitment to openness and sharing of data with each other via this computer system and that this was really important.

The practice gathered data to *'benchmark'* themselves against their own and other practices' performances. Furthermore, staff described situations where *'change had been implemented well'*. Change was planned for and consideration was given to its impact on patients, staff, and the practice.

PBM: I think the other elements then are look at how we benchmark ourselves against other practices as well. So I'm interested in external data we get through the primary care website which kind of compares our performance clinically and in terms of kind of services, medicines management optimisation.

PBM: We do an annual [patient] survey every year in terms of our performance against different indicators. Whether it is, you know, literally GP consultations, nurse consultations, convenience of services, opening times, how we communicate so all those elements and we track those year on year. [NB: this survey was in addition to the national GP Patient Survey]

ANP: And then I was instrumental in setting up the telephone triage system. We had a project board. You know we did it all properly, researched it. And didn't just say we are going to do it. We had to tell all the staff what were happening and how it were going to work. And we went to other places what did it to see how they worked. So we did really research it and set it up properly. One of the GPs, [name] who used to be the nurse lead, myself, and reception, and [name] admin - we were all on the board. So we implemented it all.

PBM: … and to begin to think about planning our changes and planning our improvements and then looking at the consequences of all that in terms of people and services and cost.

The final theme related to running **'a successful organisation'**. Primarily staff described a practice that demonstrated *'strategic forward thinking'* and a *'business orientation'*. The partners were constantly looking to see how the primary care

environment was shifting and to identify future opportunities. The practice appeared to plan for these opportunities through organisational level decisions and staff described a practice that appeared to be financially and commercially savvy. However, despite this focus, patients were still central to everything that the practice and staff did.

> *PBM: This practice has acquired others. So this practice ten years ago I think was beginning to trial the model. So [this practice] acquired [practice 1] in [place] which was an underperforming practice ten years ago and over ten years they have turned it round. Right, so I think that was the first foray into doing that within primary care. And as part of [this practice] the partners here were already I think, about four or five years ago set up a brand, like a joint venture. So it was called [name] and they ran GP practices, walk in centres outside of the area, further than West Yorkshire.*

> *PBM: So [the multi-speciality community provider contract] is based on a 30,000 list size. So again we looked around to see who we could collaborate with or merge with to put ourselves in the position when that contract appears – so that is why we are looking at [acquiring practice name]. So there is always a bit of … it's not quite strategic but it's… it's – I think it's between being a bit strategic and a bit entrepreneurial. It's just looking for where the opportunities might be and setting yourself up for those.*

> *Researcher: What do you do when there is a patient who doesn't quite fit in with a guideline or who you actually think the recommended practice is wrong for them. =*
> *GP Partner = thing is wrong. Yeah so there is. …. Generally do what is in the patient's best interest and involve them in decision making. So often, let's say for instance diabetes, I don't necessarily agree with the guidelines 100% in terms of what I should and shouldn't be offering at certain stages in the stepped process of oral anti diabetic drugs. So I just tell the patients what the pros and cons are and see what they fancy. They are the ones that are going to take it. I know what I would take but that's probably doesn't sit with guidelines either.*

> *Observation of a Practice Team Meeting: During the discussion about [the current acquisition of two other practices], ANP1 raised a question about how patient satisfaction was going to be affected by the merger. The staff all seemed to be concerned and interested in the effect that this would have and patient satisfaction. It seemed to be something that was high on the whole team's priorities.*

At this organisational level, the team and the practice appeared to be *'adequately resourced'* in order to do a good job and there appeared to be a *'focus on staff'* whereby both the management and the individual staff members cared about one another's wellbeing and staff were made to feel valued in their roles.

> *Observation of an Operations Meeting: The practice is recruiting a project manager to support with the mergers of some of the practices [that they are acquiring]. This is because they have learnt from the challenges they faced and the lack of resources that they had for previous mergers.*

Practice Nurse: They are very, very good here at kind of making sure you've got a work life balance. If you've problems at home you can always try and work round it and help each other out.

Healthcare Assistant: I just think it's down to their staff. A lot of, we always have a, … the practice always pays for a Christmas 'do' for us every year. And a lot of places don't do things like that. […] We always get a bonus - if you don't have any sick over the year you get a bonus in your wages. And a lot of practices don't tend to get that. I don't think they feel as though they are appreciated.

5.11 Discussion

Stage 2 of this study sought to a) assess the feasibility of conducting the positive deviance approach within general practice, and to b) generate hypotheses about the positively deviant strategies used to deliver exceptionally high quality, evidence based care. Adjustments were made to the research methods in order to collect data, and an overall lack of data prevented the generation of hypotheses through an expert panel. The discussion below focuses firstly on the feasibility of conducting stage 2 of the approach and secondly on the preliminary qualitative findings from practice B.

5.11.1 Feasibility of conducting stage 2 of the positive deviance approach

The feasibility of conducting stage 2 of the Bradley et al. (2009) process is discussed under three key headings: the ability to recruit positively deviant general practices to participate in the application; the pragmatic nature of the methods used and how suitable they are for future healthcare applications of the approach; and the feasibility of conducting these methods within a general practice setting.

5.11.1.1 Recruiting general practices to the study

During this study, only two of the eleven positively deviant general practices were recruited. Although the challenges of recruiting within primary care are well documented (Fransen et al., 2007; Goodyear-Smith et al., 2009; Salmon et al., 2007), it was hoped that various aspects of the recruitment approach would encourage participation: a monetary incentive; the limited requirement of practice time or resource; the positive nature of the study; and being identified as an exceptional performer.

Monetary incentives have previously been found to improve recruitment particularly in survey based research (VanGeest, Johnson, & Welch, 2007), however, the amount given for this study was not as substantial as some (R.Foy, personal communication,

March 2015). The perceived relevance of research is also thought to affect general practice participation (McAvoy & Kaner, 1996; Salmon et al., 2007). While recruiting practices, RB highlighted how the findings may help improve quality and clinical effectiveness, however, the practices may not have perceived these benefits as relevant because they were already considered exceptional performers. This poses a challenge for the positive deviance approach as it relies on teams and organisations to share and be open about the factors that make them successful (Bradley et al., 2009). In an environment where general practices are financially independent, sharing these factors may be perceived as a competitive risk.

5.11.1.2 The pragmatic nature of the methods

This study sought to streamline data collection by recruiting an expert panel rather than a comparison group of practices. Although it was not possible in this study to conduct the expert panel, it may have been equally, if not more difficult to recruit a group of comparison practices considering the challenges faced in recruiting positive deviants. Therefore, an expert panel may remain the most pragmatic method for comparing positive deviants to others in a population.

In contrast to study 3, individual interviews were conducted with multidisciplinary staff. This was considered pragmatic for this particular application of the positive deviance approach as it increased the likelihood of collecting data (R.Foy, personal communication, Nov 2014). However, each individual interview required transcribing. Had three or four positively deviant practices participated in the study there could have been 15-20 interviews. Although these were shorter and less complex to transcribe than focus groups (each interview took approximately 3 hours), this represents a substantial time resource when totalled together. It is difficult to assess how long 15-20 interviews would have taken to analyse. Therefore, it may be more pragmatic to conduct focus groups for future, clinically led applications of the approach. Team meetings provide an opportunity to conduct these within general practices, although the frequency and attendance of these meetings vary (weekly versus monthly; full or part practice teams). As such, it may be necessary to adapt the methods to the organisational context of each practice involved if positive deviance was being implemented as a quality improvement approach.

5.11.1.3 The feasibility of the methods used

It was relatively easy to schedule and conduct the observation sessions required for this study. RB's experience of observing the same type of meeting multiple times (in practice A) and different types of meetings once (in practice B) highlighted that it may be advantageous to see how different subsections of the team operate within different types of meeting. However, the ability to do this may depend on the size and setup of the general practice. The main disadvantage to observation as a method was that it

did not help to retrospectively uncover how practices succeeded during 2012/13 when the ASPIRE data were collected.

During the study, it was not possible to schedule interviews for as long as had been intended (60 minutes). This may have led to a lack of depth in the data as some conversation ended before coming to a natural close. However, on reflection, a full 60 minutes may not have been required from all participants. When conducting the positive deviance approach at a team or organisational level it is important to consider data saturation both within an individual site and across the whole study (Rose & McCullough, 2016). Saturation was achieved within practice B after conducting six interviews as few additional themes and sub themes emerged. This is supported by Guest, Bunce, and Johnson (2006) who found that data saturation was achieved within twelve interviews but that themes were present in as few as six. Despite meeting saturation within Practice B, a lack of overall participation meant that data saturation was not met for the study. It is not known how many positively deviant practices an application would need to sample in order to meet overall saturation. This problem has been experienced by this and other applications of the positive deviance approach (Rose & McCullough, 2016).

The interviews in this study were not theoretically underpinned which may have impacted the generation of data. It had been intended that a grounded theory approach would allow the questions to develop as interviews progressed. However, as this was not possible and because the topic was broad, the questioning may have lacked depth. This may have meant that staff did not pinpoint the specific, nuanced things that enabled success. In part, the lack of in depth questioning may have contributed to earlier reflections that 60 minutes interviews were not required. During interviews it is also the researcher's responsibility to probe staff for further detail, however, RB's lack of general practice experience and knowledge may have limited her ability to do this (see section 5.12.2 for a more detailed discussion). In contrast, focus groups on the elderly medical wards enabled staff to discuss and generate ideas between themselves and so less prompting was required from the researcher. It could therefore be suggested that the interactive nature of focus groups (Kitzinger, 1995) facilitated a deeper exploration of positively deviant topics than was possible through interview.

It is also important to reflect on how RB may have influenced data collection. The ethics/HRA delays that were experienced (section 5.10.1.1) and the pressure to collect data in a timely manner from an already limited sample may have led to the methods being adapted more readily than would otherwise have been necessary. As RB was aware of the difficulties faced when recruiting within primary care (Fransen et al., 2007; Goodyear-Smith et al., 2009; Hummers-Pradier et al., 2008) she may have more

readily interviewed any staff that she could get time with rather than seeking to theoretically sample specific individuals within the practice (i.e. accepted the practice managers suggestions). However, even if this were the case, participants represented the multidisciplinary team and many of them had worked at the practice during 2012/13. Although this is an important consideration, it is unlikely to explain all of the adaptations that had to be made during the study (e.g. the problems recruiting practices, conducting shorter interviews, and scheduling interviews through the practice management). Therefore, the feasibility concerns that have been discussed are still valid.

5.11.2 Factors enabling high quality, evidence based care

Despite the difficulties in collecting data, seven themes and thirty subthemes were generated within one general practice. These addressed factors relating to an individual's clinical practice, the functioning of the team, and the running of the organisation. However, various challenges were faced including: navigating different perspectives to identify factors which were important to success; assessing whether factors within one practice were similar or different to those in another practice; and assessing whether factors existed at the time when the positively deviant performances had been identified.

Interviewing multidisciplinary staff provided a number of different perspectives on how success was achieved. These perspectives seemed, to some extent, to be influenced by job role. For example, the PBM discussed implementing change and running the organisation while the ANP highlighted the importance of patient education and allocating appointments flexibly and efficiently (predominantly because she helped to deliver the telephone triage system). The themes and subthemes that were generated through this analysis were discussed and evidenced by a number of different staff, however, some important information may have been overlooked because only one staff member with a particular role/perspective was interviewed. The organisation of general practice means that in some circumstances there is only ever one staff member who holds a specific job role (e.g. the practice manager). As such, when conducting the positive deviance approach within primary care it is necessary to sample several positively deviant general practices rather than only one. This facilitates theoretical saturation and consensus between the differing perspectives on which behaviours, strategies, cultures etc. are important to delivering exceptionally safe or high quality patient care.

During the interviews staff also found it very difficult to identify whether factors within their practice were different or similar to other practices. This has implications for identifying success strategies that are exclusive to positive deviants.

Researcher: Is that, would you say that is similar or dissimilar to what other practices would do?

GP Partner: So it's really hard coz we work in a silo doing what we do and we never really know what anyone else is doing. Which is often why some studies are fascinating because you get to maybe see a little bit of insight into others. Also when we had our CQC inspection I was chatting to the inspector. He was telling us things they like 'that sounds brilliant'. I was like 'isn't that just normal practice?!' So you do kind of lose sight of it and there is no way of knowing.

When applying the positive deviance approach to address a broad outcome such as high quality, evidence based care the success strategies that are identified are more likely to represent abstract cultures and behaviours than specific concrete strategies or tools. If staff do not have a benchmark against which they can compare their performance (i.e. don't know how things work within other practices) then they are unable to say whether abstract factors such as relationships and team working are better in one practice than another. Consequently, within a primary care setting it is necessary that someone has broad oversight of how various different practices operate. Neither a group of positive deviants, nor a group of comparison general practices seem able to do this. This finding supports the decision to identify positively deviant strategies using an expert panel who have a broader perspective. Alternatively, comparisons could be made by the researcher, however, uncovering these abstract differences would require extensive and far less pragmatic qualitative data collection.

RB was able to interview a number of staff who had worked within the practice during 2012/13 (four staff in practice B). To some degree this enabled staff to refer back and identify factors had been present at the time when their exceptional performance had been measured. However, the time lag created a number of problems which were particularly evident in this study. As the adherence data were not routinely published it is not known whether the positively deviant general practices still demonstrated exceptional performance. Although staff were prompted to consider how things had previously been within the practice, they inevitably discussed the present moment. When they did reflect back it was difficult to pinpoint the timing of specific initiatives and changes and, when talking about abstract concepts such as culture, staff predominantly gave vague responses.

Although the findings are preliminary, the factors that were identified through this study did share some similarities with the positively deviant strategies identified on elderly medical wards (chapter 4). The emphasis on people within the team getting on well and socialising outside of work relates to the positively deviant factor of 'knowing each other' within secondary care. Staff within both healthcare settings emphasised the importance of leaders setting expectations and standards for the team to work to

and of having integrated teams involving staff from various different roles. Although slightly different, there was also some commonality between ‘everyone can contribute and make suggestions’ in primary care and the ‘feeling able to ask questions or for help’ in secondary care whereby all staff felt able to speak up within the multidisciplinary team, albeit for different reasons. The study findings also share similarities with some of those from Gabbay et al. (2013) who explored positively deviant US primary care practices that had successfully implemented a new ‘medical home’ care model. They assessed whether successful implementation of the model was facilitated by stronger structural and staffing systems and a greater ability to buffer stress and cope with change. Among other things, positively deviant medical homes had more stable financial systems and processes which links to the ‘business orientation’ of practice B in this study. To implement the initiative, medical homes demonstrated shared leadership and buy in, and they deliberately planned and tested changes. This is similar to the GP partners driving improvement, staff expecting and being engaged in change, and the fact that change was implemented well within practice B. Similar to this study, positively deviant medical homes also had a ‘sense of team’ and conducted benchmarking.

Findings from this study also resonate with broader research which has explored factors that influence clinical effectiveness within primary care. A recent systematic review of reviews assessed barriers and facilitators to the implementation of change e.g. of clinical guidelines, new roles, technologies etc. (Lau et al., 2016). These were grouped into a conceptual framework which operated across four levels – the external context, the organisation, professionals, and the intervention. Strong leadership and a positive culture, which was receptive to change and valued innovation, was considered an important facilitator. This shared similarities with aspects of the ‘making improvements’ theme within this study (a drive to improve, an expectation for change, and seeking innovation). The systematic review highlighted a lack of organisational readiness (defined as the degree of preparation for implementation) as being a barrier to implementation which, if considered in a more positive light, could represent the ability for organisations to ‘implement change well’ – another subtheme within this study’s ‘making improvements’ theme. The review also identified the benefits of positive and trusting inter-professional relationships as well as giving staff the opportunity to discuss important matters and provide input into the challenges they faced. This links to ‘getting on well’ and allowing ‘everyone to contribute or make suggestions’. Interestingly, all of these similarities between Lau et al.’s (2016) systematic review of reviews and the findings from this study fell within the organisational level of their conceptual framework. This is likely to have reflected the focus of this study which sought to explore how multidisciplinary general practice teams (i.e. an organisation) succeeded in delivering exceptionally high quality

evidence based care. The links that have been highlighted with existing literature on positive deviance and clinical effectiveness indicate that the factors identified through this study show promise for enabling positively deviant success. However, to assess this conclusively it is necessary to overcome the key methodological challenges that have been described above.

5.11.3 Strengths and limitations

Although feasibility was problematic at times, there are various strengths to consider when critically appraising stage 2 of this positive deviance application. First, RB was able to interview a wide range of multi-disciplinary staff within both practices including nursing, administrative, and medical team members. She was also able to attend three types of meeting within Practice B to observe the team in different scenarios. The various perspectives that were gathered provided a more complete picture of how exceptionally high quality, evidence based care may be delivered within positively deviant general practices.

A number of challenges and limitations to conducting this stage of the positive deviance process within primary care have been discussed above. The key limitation was the lack of data that prevented the generation of hypotheses about the positively deviant strategies. In addition to this, there was a possible degradation in the quality of the data. Conducting an observation and several interviews within a single day is likely to have taken a cognitive toll on the researcher and may well have reduced the quality of the interviews that took place towards the end of the day. Furthermore, as the findings were preliminary and in order save resources, RB did not ask supervisors to second code a proportion of transcripts. However, a thorough audit trail of the analysis was maintained and multiple extracts were provided in section 5.10.2 to exemplify the themes and subthemes identified.

Overarching discussion

5.12 Challenges for the positive deviance approach

5.12.1 Identifying positively deviant general practices

This study highlighted a number of overarching challenges to conducting stage 1 of the Bradley et al. (2009) process within a primary care setting. First, there was a lack

of publicly available data that could be used to identify positively deviant general practices. To overcome this, ASPIRE created search algorithms in order to extract data from the electronic systems within the sampled practices. Although CCGs could create and run similar data enquiries, not all practices in the UK use SystmONE (TPP, 2016). Therefore, when conducting future applications of the positive deviance approach, difficulties may be faced when trying to extract data from all general practices within a population.

Second, with regards to the LCA that was conducted to identify the positive deviants, individual general practices are unlikely to have the capability to conduct analyses such as this. However, when exploring performance on broad outcomes like clinical effectiveness, the positive deviance approach is unlikely to be applied within a single practice. Broad applications such as this are more likely to take place at a regional level e.g. within CCGs. These bodies may have the resources and skills required to conduct the necessary analyses and, if not, they are more likely to have access to them via academic contacts.

Ultimately, while designing this study it was necessary to broaden the scope of the application from safety to focus on high quality, evidence based care. This highlights the extent to which a lack of data hinders the feasibility of applying the positive deviance approach within primary care. Although patient safety and clinical effectiveness is high on clinicians' and policy makers' agendas, it may not always be possible to address these problems using the positive deviance approach.

5.12.2 Generating data: an insider versus outsider perspective

While reflecting upon the feasibility of conducting this study RB also considered how she influenced the data that were generated. To provide context, RB has previously worked within acute hospitals but has no experience of working within primary care. As such, she has limited knowledge of the systems and processes that operate within general practice and how these are influenced by the likes of GP contracts, QOF, and CCGs. This made it difficult for RB to probe staff during interviews. She did not know whether the topics of conversation were a) unique, interesting, or positively deviant or b) relatively commonplace. As such irrelevant behaviours and strategies may have been over explored while interesting or positively deviant ones may have been overlooked.

These reflections highlight 'insider' and 'outsider' perspectives which are predominantly discussed in relation to ethnographic and observational methods but are relevant to all qualitative data collection and analytic approaches (Dwyer & Buckle, 2009). Insiders conduct research within a community to which they already belong -

they share characteristics, roles, and/or experiences with the study participants. On the other hand, outsiders temporarily join a community to conduct a study (Adler & Adler, 1987; Dwyer & Buckle, 2009). Although it is overly simplistic to present these perspectives as a dichotomy (Dwyer & Buckle, 2009), there are advantages and disadvantages to both. Insiders may have a greater depth of understanding about a topic due to their shared experiences. They hold greater legitimacy and so are better accepted by participants which can lead to greater openness and subsequent depth of data (Dwyer & Buckle, 2009). However, as an outsider, having distance from an experience can provide clarity and facilitate greater conceptualisation. Outsiders are better able to cut through the complex, confusing, and contradictory nature of experiences and can offer a wider perspective, making connections between things that may not be apparent to insiders (Dwyer & Buckle, 2009). Depending on who the outsider is, they can also provide expertise in rigorous research methods and provide assurances of anonymity to participants (Thomas, Blacksmith, & Reno, 2000).

In their recently published guidance, Rose and McCullough (2016) highlight the importance of researchers understanding the underlying construct upon which positive deviants are sampled (e.g. the outcomes that they succeed on). In support of this, the experience of RB demonstrates that it may also be necessary to have an understanding of the context within which a positive deviance application is conducted. In this study, RB would be considered an outsider, and on reflection this may have influenced the quality and depth of the data that were collected. Intuitively, RB did not feel as though the interviews got to the bottom of what facilitated positive deviance and her outsider perspective may have been a contributing factor. However, this was in no doubt also influenced by the small sample, the time lag, and the use of interviews which provide a more superficial understanding of topics compared to ethnographic methods.

One solution is to include clinicians and academics within the same research teams. For example, Thomas et al. (2000) jointly involved nurses (insiders) and academics (outsider) in various data collection and analysis methods including focus groups. This combination provides a broader range of perspectives and greater interpretation of the data (Thomas et al., 2000). It may also potentially provide greater access to participants. There are of course challenges to doing this within applications of positive deviance. Clinicians often lack capacity to support data collection and analysis, and dividing tasks between clinical and academic researchers to best utilize skills and experience may pose problems (Thomas et al., 2000). As briefly mentioned above, insider and outsider perspectives exist on a continuum (Dwyer & Buckle, 2009). It may be useful to consider their influence when designing applications of the positive deviance approach, however, the action that is taken will vary depending on the individual involved and the context of the study.

5.12.3 Generating learning from positive deviants

Section 5.11.2 highlighted the lack of awareness that staff have regarding how they perform in relation to others, and the challenge this poses to identifying positively deviant success strategies. There are, though, three other important challenges to consider when assessing whether it is possible to learn from positive deviants in a general practice setting.

First, and fundamental to the positive deviance approach, is that staff and organisations need to be open to sharing the strategies that enable them to succeed (Bradley et al., 2009). While conducting this study, there were indications that this willingness may not be present within primary care. During an informal conversation, one of the GP Partners said that he was not surprised that only two practices had participated. He thought that many practices do not participate in research for fear of being told that they are doing something wrong. This was supported by interview and observation extracts that were presented in section 5.10.2 (in relation to the subtheme *'looking externally'*) which suggest that other practices are less inclined to share data and look externally for improvement. Together, this has implications for collecting data during stage 2, but also the ability to conduct stages 3 and 4 of the positive deviance approach.

Second, this study highlighted the difficulties in identifying positively deviant behaviours when there is a time lag between collecting quantitative performance data and conducting the qualitative inquiry. Although this was particularly pertinent during this study due to the use of ASPIRE data, the lack of publicly and frequently published performance data within primary care means that the concern is not isolated to this application. Difficulties are also faced in assessing which strategies to share in order to learn from positive deviants. Behaviours, cultures, and the use of physical tools and strategies are not static and so positively deviant behaviours that existed in 2012/13 could either have been adapted and enhanced over time, or adopted by others within the region so that they are no longer uniquely positively deviant. Furthermore, a behaviour or strategy which was not previously considered to be positively deviant may have developed over time into a unique success strategy that no one else uses. These shifts over time make it difficult to know exactly which strategies one should learn from when applying the positive deviance approach.

Third, is the heterogeneity of general practice. The approach assumes that positively deviant strategies will be acceptable, feasible and sustainable to others in the community (Marsh et al., 2004). However, the background section to this chapter highlighted how practices vary greatly in their organisational structure, systems, processes, and cultures (Esmail, 2013; Lau et al., 2016). Despite controlling for a number of confounding variables when identifying positive deviants, this heterogeneity

may limit the ability to share learning with others. This was highlighted by one staff member in Practice B:

> *ANP: Now that works well in this practice and we've always worked like that. But I talk to other practice nurses and they've tried it and it's not worked in their practices. So is that patient influence, is it just the practice itself, is it nurses? I don't know you know some practice nurses will just do one of these, one of them, one of the other and get you know go on a general clinic with a mixture in. Whereas we have dedicated asthma clinics, respiratory, diabetes, well-woman you know everything.*

The challenge of sharing the learning is likely to be more pronounced if positively deviant strategies relate to physical and concrete strategies, tools, procedures etc. This is because the *context* within which something is implemented is equally important as *what* is actually implemented (Bate et al., 2014). Primary care applications of the positive deviance approach may therefore be more suited to identifying cultural features of a team or organisation that facilitate success, however, these factors are more enduring and difficult to change (Schein, 2004). In an attempt to overcome this challenge it is important to identify positively deviant success strategies that are common across a number of different positively deviant general practices. If the strategies are successful in a heterogeneous sample of positive deviants they are more likely to be adopted by the wider population.

5.13 Future directions

Although this study was unable to generate hypotheses about positively deviant strategies, there is an ethical obligation to use the data that were collected as productively as possible. It may be still be possible to make use of the data from practice A despite the changes that have occurred since 2012/13. Data could be analysed alongside that of Practice B and then ethical permissions could be sought to go back and ask more detailed questions about specific behaviours, processes, or strategies that emerged within the findings. Focused questioning may facilitate more in depth conversations about how Practice A delivered exceptionally high quality, evidence based care during 2012/13.

Personal relationships are known to facilitate recruitment within primary care (Goodyear-Smith et al., 2009) and were successfully used to recruit practice B in this study. In contrast to individual practices, networks such as the CCGs may perceive there to be greater benefit to participating in a study like this as they will be interested in supporting their lower performing practices to improve. During stage 1, five positively deviant general practices were identified within the same CCG. With an

ethical amendment it may be possible for this study to engage with the CCGs who could either approach or give their backing to the study which might encourage practice level involvement.

Research Capability Funding from the West Yorkshire CCGs has also been awarded to RB, RL and RF to build upon the findings of this research (reference RCF-2016-002). Practices that are rated as 'outstanding' by the CQC[1] could be considered to be positive deviants – there are relatively few outstanding practices and they deliver exceptionally high quality patient care. This research seeks to a) analyse publicly available CQC inspection reports, and b) interview CQC inspectors in order to explore how outstanding, or positively deviant, general practices are perceived to deliver exceptionally high quality patient care.

5.14 Recommendation and conclusions

This study has highlighted a number of considerations and recommendations that may support future applications of the positive deviance approach within a UK general practice setting:

- Consider whether it is possible to measure general practice performance on the outcome of choice. Are the data available and can performances between practices be compared? What are the time lags for this data?
- Due to the heterogeneity of general practice, it is important to carefully control for confounding variables which may influence performance e.g. size of the practice, number of GPs, levels of local deprivation, local services.
- Carefully consider what strategy will be used to recruit general practices. Is it possible to recruit through local networks or existing relationships?
- It is necessary to sample a number of positively deviant practices to gain consensus about what facilitates exceptional performance across a number of different practices. Identifying success strategies that are common across positive deviants is likely to increase their adoption elsewhere.
- It is not possible to identify positively deviant strategies by conducting the qualitative inquiries solely within positively deviant teams. It is necessary for applications of positive deviance to include some form of comparison group. Within primary care, further research should explore whether a comparison can be gained through consulting an expert panel.

[1] Across England the CQC inspect and rate all NHS general practices as either outstanding, good, requires improvement, or inadequate.

- It is important to consider how the researcher impacts qualitative data collection. It may be necessary to combine insider and outsider perspectives along with a theoretically underpinned topic guide.

Applying the positive deviance approach within a UK general practice setting has proved a greater challenge than doing so within a secondary care setting. Fundamental characteristics of primary care make it a less conducive setting for the approach. This includes a lack of publicly available performance data, a lack of engagement in research, heterogeneity, and the fact that general practices operate in silos. These barriers must be overcome if the positive deviance approach is to have any success within a general practice setting.

Chapter 6

General discussion: thesis summary, reflections, critique, and directions for future research.

6.1 Chapter summary

This final chapter begins by recapping the thesis aims and research studies that have been conducted to address them. As each study has been discussed extensively throughout chapters 2 to 5, this chapter summarises the key findings in relation to the questions posed at the outset of the thesis. Following this, four reflections about the positive deviance approach are highlighted: how positively deviant strategies can be translated into frontline improvement; whether the approach can successfully address broad safety issues; whether it identifies strategies that are truly deviant; and how the approach could be implemented by frontline healthcare teams. Consideration is then given to the thesis limitations and some directions for future research are proposed. Finally, suggestions for practical implications are offered.

6.2 Thesis aims and overview

Fifteen years ago, the publication of reports such as 'To Err is Human' (Kohn et al., 1999) and 'An Organisation with a Memory' (Department of Health, 2000b) highlighted substantial deficits in the quality and safety of patient care and spurred extensive international efforts to improve them. Traditional approaches to improving quality and safety within healthcare have predominantly been deficit based and, although there have been some notable improvements, levels of error and harm have remained stubbornly unchanged (Landrigan et al., 2010; Vincent et al., 2008). Considering the scale of the problem faced, some have suggested the need for a different perspective (Bisognano & Schummers, 2014; Hollnagel, Braithwaite, et al., 2013b; Vincent & Amalberti, 2016). In contrast to the traditional Safety-I, 'find and fix' approach, Safety-II is built on the premise that things go right far more frequently than they go wrong (Hollnagel, Braithwaite, et al., 2013b). Safety-II provides a proactive approach to safety management, however, while a number of tools and processes exist to support

improvement under a Safety-I approach, Safety-II is yet to offer concrete processes for understanding and managing safe patient care (Hollnagel et al., 2015).

In line with this Safety-II perspective, positive deviance provides an asset based approach to quality improvement. It seeks to identify and learn from individuals, teams, or organisations that perform exceptionally well on an outcome of interest despite facing the same constraints as others (Marsh et al., 2004). The positive deviance approach originated within the field of international public health (Wishik & Van Der Vynckt, 1976) but has increasingly been applied within healthcare organisations. Bradley et al. (2009) have proposed a four stage process to do so: 1) positive deviants are identified using routinely collected data; 2) hypotheses are qualitatively generated about how they succeed; 3) positively deviant strategies are tested in representative samples; and 4) then disseminated with the help of key stakeholders. However, despite this process there is limited guidance to support the implementation of positive deviance within healthcare organisations (Lawton et al., 2014; Rose & McCullough, 2016).

Many previous applications of the positive deviance approach have been conducted using extensive resources such as time and skills (Baxter et al., 2015). If positive deviance is to become a useful approach for supporting patient safety on the front line of healthcare organisations then its methods must be feasible and accessible for clinicians and quality improvement staff to implement. Therefore, this highly applied and methodologically driven thesis was approached using an improvement science lens and sought to generate evidence regarding a pragmatic method for implementing the positive deviance approach within healthcare. Specifically this thesis aimed to address the following novel research questions:

1. What methods have previously been used to apply the positive deviance approach within healthcare organisations?
2. Can positively deviant multidisciplinary ward teams be identified using routinely collected safety data?
3. How do positively deviant multidisciplinary ward teams deliver exceptionally safe patient care?
4. Can what underpins positively deviant success within multidisciplinary ward teams be identified using limited time and resources?
5. Is it feasible to apply the positive deviance approach in order to identify and learn from positively deviant general practices that deliver exceptionally high quality, evidence based care?

To address the questions outlined above three substantive pieces of research were conducted – a systematic review and two applications of the positive deviance approach, both of which applied stages 1 and 2 of the Bradley et al. (2009) process. In study 1 (chapter 2) a systematic review was undertaken to explore the methods that had previously been used within healthcare applications of the positive deviance approach. Studies 2 and 3 (chapters 3 and 4) applied the positive deviance approach within an acute NHS ward setting. Study 2 analysed routinely collected Safety Thermometer data to identify positively deviant elderly medical wards within the Yorkshire and Humber region and assessed whether staff and patient perceptions of safety corroborated their identification. Study 3 tested a method, which required limited time and resources, to generate hypotheses about the positively deviant strategies that elderly medical ward teams use to deliver exceptionally safe patient care. Study 4 (chapter 5) sought to assess the feasibility of identifying and learning from positively deviant general practices who delivered exceptionally high quality, evidence based care.

6.3 Summary of key findings

6.3.1 How has positive deviance previously been applied within healthcare organisations?

At the inception of this thesis limited guidance was available to support the implementation of the positive deviance approach. The only previous systematic review of positive deviance assessed its impact on reducing childhood malnutrition when combined with ‘hearth’ education sessions (Bisits Bullen, 2011). This review highlighted that included studies lacked rigorous design, had small samples, and inconsistently reported results. However, the settings of these included studies were very different to complex healthcare organisations. Consequently, little was known about how to apply the approach within healthcare settings. Study 1 (chapter 2) systematically reviewed applications of the positive deviance approach that had been conducted within healthcare organisations. It aimed to better characterise the methods that had been used, to assess the challenges that were faced, and to provide further guidance for those seeking to implement the approach. Findings from the review can be summarised under two key reflections.

The first reflection considers what we can learn from the methods that have previously been used to apply positive deviance within healthcare. During stage 1 of the positive deviance process, previous applications have predominantly identified positively deviant organisations (e.g. hospitals) or individuals (e.g. specific clinicians) that succeed on narrow or specific outcomes and processes of care. The subsequent

studies within this thesis sought to fill these gaps by exploring whether the approach could be applied to identify multidisciplinary teams that demonstrated exceptional performance on broad outcomes of safety. This focus was taken as healthcare is predominantly delivered to patients through clinical microsystems such as multidisciplinary ward teams (Nelson et al., 2001). Furthermore, the widely accepted systems approach to safety management suggests that the latent or upstream factors which contribute to one type of error (e.g. falls) are likely to be the same factors that contribute to different types of error (e.g. pressure ulcers) (Reason, 1995, 2000). As such, a broad approach to tackling patient safety problems is increasingly preferred over narrow, more specific ones (Shortell & Singer, 2008; Vincent et al., 1998). If we are able to identify multidisciplinary healthcare teams that succeed on broad outcomes of care, there are likely to be some latent factors that facilitate their success. As suggested by Bradley et al. (2009), the systematic review also highlighted that positive deviants had primarily been identified using quantitative, and in some cases routinely collected, data. However, few or no criteria had been used to distinguish positive deviants from others in the community. Assuming that positive deviants display 'exceptional' rather than just 'good or high' performance, the ability to reliably distinguish them from others was considered important for future applications. This was addressed in studies 2 and 4.

Stage 2 of the positive deviance approach was predominantly conducted using individual interviews, although many of the included studies used multiple methods, some which included focus groups/DADs[1]. Under a third of articles did not report what factors had been explored during the qualitative inquiries, and very few used theory or frameworks to support data collection. This makes it difficult to assess whether all the potential success strategies have been identified and limits the ability to amalgamate learning across studies. Overall, many of the included studies conducted their qualitative inquiries using extensive resources which are not always available on the frontline. This thesis sought to conduct robust research to critically appraise the positive deviance approach as a quality improvement rather than research method, therefore, the studies within it sought to generate hypotheses about how positive deviants succeed using more pragmatic and feasible methods. The systematic review also highlighted the extent to which applications of the approach sampled comparators. Only six of the included projects sampled a discrete comparison group. All six of these applications sampled negative deviants while three of the applications also sampled comparators that displayed other levels of performance e.g. Assefa et al. (2014) who alongside positive deviants included healthcare facilities that displayed

[1] Discovery and Action Dialogues – group conversations to identify and then discuss implementation of positively deviant strategies.

lower (negative deviants) and improved levels of patient retention in antiretroviral treatment. Including comparators that display higher levels of performance was considered important in order to distinguish how positive deviants succeed from those who display, not only the worst, but also good levels of performance within a population. With regards to stages 3 and 4 of the Bradley et al. (2009) process, the review highlighted that very little is known about how to test and disseminate positively deviant strategies to others in the community.

The second key reflection from the systematic review refers to the lack of detail that was included within the published articles. Reports lacked information on a range of different things including definitions of the positive deviance approach; information on what process had been followed; justification of the sample sizes, data collection tools, and analyses; details of the intervention/s that had been used; and what positively deviant behaviours had been identified. While the positive deviance approach is establishing itself within a healthcare setting, it is important that different definitions, processes, and methods are reported. Although academic publications are often limited by strict word counts, there are various ways in which authors can share and disseminate this information, e.g. by publishing protocol papers and by providing supplementary documents. This is essential to enable others to explore and discuss the differences and similarities between studies in order to progress the field.

6.3.2 Can positive deviants be identified using routinely collected safety data?

At the beginning of this thesis the positive deviance approach had yet to be formally applied within a UK healthcare setting and it was not known whether routinely collected NHS data could be used to identify positive deviants. Furthermore, the approach had rarely been applied to identify positively deviant multidisciplinary ward teams that performed exceptionally well on broad outcomes of safety.

While designing study 2, an exploration of NHS data sources identified very few that provided a recent measure of safety while being publicly available, valid, reliable, and consistently collected across organisations. Furthermore, very few data provided a broad measure of safety at ward level. The lack of suitable data within the NHS limits the application of positive deviance within the UK. Indeed, the measurement and monitoring of safety has posed a number of different problems, not least in knowing whether interventions have improved safety or not over the past 15 years (Vincent et al., 2013).

Only one measure of safety was considered suitable for study 2. The NHS Safety Thermometer (ST) harm-free care data were analysed to identify positively deviant

elderly medical wards. ST data were extracted over a 12 month period and cross-sectional and temporal analyses were conducted. These analyses were considered to be more robust than many previous applications of the approach which had simply ranked performances within a population. The analyses distinguished positive deviants from other wards that performed well and ensured that exceptional performance was consistent over time rather than just a one-off success. Furthermore, the analyses were considered to be relatively pragmatic for regional frontline applications of the approach as, for example, SPC is increasingly being used within healthcare organisations (Thor et al., 2007).

In total, five positively deviant elderly medical wards were identified using the ST data. They ranked highest within their region, outperformed their trust on a comparable measure, and displayed consistent performance over a 12 month period. To assess whether other measures of safety supported the identification of these wards, staff and patient perceptions of safety were assessed on a sample of positively deviant and comparison wards (that performed slightly above average). In the main, staff and patient perceptions of safety supported the identification of positive deviants, although patient views were less aligned. This may have been due to the ways in which multidisciplinary ward teams achieved their exceptional levels of safety – for example by delivering care which is exceptionally patient centred versus maintaining safety through excessive compliance with policy and procedure (which may not be conducive to an exceptionally positive patient experience).

Based on these findings it was considered possible to identify positively deviant elderly medical wards using the routinely collected and publicly available ST data. However, there are caveats to this. First, during phase 2 of study 2 the positively deviant wards only exceeded the 2 rather than 3 standard error control limits on the funnel plot, and they did not fulfil the probability-based rules for interpreting run charts (although, for this study these rules were not considered entirely appropriate). Second, the extent to which the positive deviants clinically rather than just statistically differed from others in the population can be questioned. Although positive and negative deviants substantially differed in their ST performance, the positive deviants and comparator wards only differed on the measure by a few percentages points. Further discussion about distinguishing positive deviance from high performance is provided in section 6.5.2 below. Third, despite displaying exceptional performance over a 12 month period, data from phase 3 of study 2 indicated that positive deviants did not maintain their exceptional performance throughout the 12 month period following their initial identification (in total, over a 24 month period). Although there is limited consensus on how to define sustained performance (Benn et al., 2009) and so displaying exceptional performance over 24 months may have been an unrealistic expectation, it highlights the possible challenges that clinicians face when delivering

care to patients within rapidly changing organisations where leadership, teams, systems, processes, and technologies etc. are ever evolving.

6.3.3 How do positive deviants deliver exceptionally safe patient care?

This thesis sought to generate evidence regarding a pragmatic method for applying the positive deviance approach rather than to improve an aspect of patient safety per se. However, while critically appraising the methods that were used to conduct stage 2 of the Bradley et al. (2009) process, study 3 was able explore how multidisciplinary elderly medical ward teams deliver exceptionally safe patient care.

Transcripts from eight multidisciplinary team focus groups (four positively deviant wards and four slightly above average comparison wards) were thematically analysed in two stages. The first stage generated a framework of factors which staff perceived to facilitate good levels of safety (termed high performance). This included a range of themes and subthemes relating to abstract behaviours, cultures and team dynamics (e.g. supporting one another, ward atmosphere, and approachability); concrete strategies and tools (e.g. safety briefings, handovers, and intentional rounding); and a small number of high order factors (e.g. perceptions of safety and shared mental models). Following the generation of this framework, factors were assessed to identify differences between the positively deviant and comparison wards. Positively deviant success strategies were considered to be those where explicit differences were found, for example, where a factor was only mentioned by positively deviant wards or where there was a substantial difference in how a factor was discussed. To increase the rigour of this analysis blinding of the performance groups was retained until this final stage.

In total, 14 abstract behaviours and cultures were hypothesised to be positively deviant success strategies. These factors were either exclusive to the positively deviant wards or there was an explicit difference between the two performance groups on how a factor was discussed. Staff predominantly emphasised the importance of team members knowing one another and working within a highly integrated multidisciplinary team which included AHPs and unqualified staff. Staff on positively deviant wards reported having high levels of job satisfaction and that their teams were stable (low absence and turnover etc.). They felt able to approach others within the team to ask questions or for help without fear of reprisal. Leaders set clear and high expectations, and their teams tried to learn from incidents that had happened on the ward. The positively deviant wards had a strong focus on discharge. With many of these factors it is difficult to disentangle what comes first – the behaviours and cultures

or the positively deviant success. For example, high levels of job satisfaction and stable staffing may be the function rather than cause of positively deviant success.

Feedback on the positively deviant strategies was gained from the participating wards and other clinicians within the Yorkshire and Humber region. Although this is not a substitute for testing the strategies within larger, more representative samples (stage 3 of the Bradley et al. (2009) process), it provides an indication that, in the main, the study identified factors that clinicians consider important for delivering exceptional levels of safety. Their identification is also supported by previous patient safety and positive deviance literature, for example, having a sense of psychological safety (Edmondson, 1999); the importance of staff knowing one another (World Health Organization, 2016a); and truly integrating AHPs into the multidisciplinary team (Curry et al., 2011). Testing these strategies in larger more representative samples, paves a clear direction for further research and, if the strategies are shown to be associated with exceptional performance, they could have great impact in improving the safety of similar elderly medical wards within the region and nationally. However, a number of potential difficulties are faced when testing the hypotheses, discussion of which is provided in section 6.4.1. In addition, exploration into the direction of the relationships between success and the positively deviant strategies may also be warranted in order to identify the influence of cause and effect – although again, there are challenges associated with doing this within complex healthcare settings which are discussed later in section 6.4.2. However, even without testing the strategies, the findings from this study provide indications about what healthcare teams should strive for.

6.3.4 Can positively deviant success be identified using limited time and resources?

The systematic review (study 1) highlighted that many previous healthcare applications of the positive deviance approach had used extensive resources, skills, and time, particularly when conducting the qualitative inquiries of stage 2. To make the approach accessible to those who work outside of academia, this thesis sought to generate evidence regarding its utility as a quality improvement method rather than a research endeavour. As such, study 3 explored whether it was possible to uncover what underpins positively deviant success using limited time and resources.

Multidisciplinary staff focus groups were conducted on positively deviant and comparison wards to explore how teams deliver exceptionally safe patient care. A short activity using an adapted version of the theoretically underpinned MaPSaF enabled staff to identify and then discuss aspects of safety culture that they thought their team particularly excelled in. Focus groups were considered feasible to implement on the frontline as they were relatively easy to organise and they enabled

data to be gathered from a range of different staff within a short period of time (1 hour per focus group). As a secondary source of data, researcher field notes were made following each focus group to explore dynamics between the multidisciplinary team. It is important to recognise, though, that both of these methods were conducted by an external researcher – further discussion of whether clinical teams could practically implement the positive deviance approach within healthcare organisations is given in section 6.4.4.

The 14 behavioural and cultural factors that were discussed in section 6.3.3 provide a preliminary indication that focus groups were successful in identifying what underpins positively deviant success on elderly medical wards. However, analysis of the qualitative data was a time consuming task that required specialist skills and so this limits the extent to which focus groups could be considered truly pragmatic. Conducting the MaPSaF activity was considered useful for framing the subsequent focus group discussions and generating in depth data about the underlying factors that enabled success. Without this, staff may only have pinpointed ‘artifacts’ (Schein, 2004) or surface level factors that supported safe care e.g. handover meetings and intentional rounding documentation. As such, future applications of the positive deviance approach may benefit from theoretically guided data collection – especially when assessing broad rather than narrow outcomes of care. However, study 3 did not empirically assess whether this theoretically underpinned framework led to greater understanding of how positive deviants succeed and so this likely to be a useful avenue for further research. Although theoretically underpinned data collection may influence the type of positively deviant strategies that are identified, choosing an appropriate framework is likely to ensure that qualitative data collection explores all of the relevant possibilities about how success is achieved. Also, as the number of healthcare applications of positive deviance increases, theoretical frameworks will enable researchers to amalgamate findings between studies and thus assess the efficacy of the approach.

The focus group method is likely to have influenced the type of positively deviant strategies that were identified. As strategies were generated through discussion, staff had conscious awareness and were able to articulate them. All of the positively deviant strategies identified during study 3 represented ‘espoused beliefs and values’ – the conscious values, norms, and rules of a group (Schein, 2004). Consequently, the focus group method retained, to some extent, the bottom up nature of the positive deviance approach (by involving staff in the identification of strategies), required limited resources in line with the key aim of the study, and identified positively deviant behaviours that are relatively amenable to change. Focus groups, though, did not identify any ‘underlying assumptions’ that enabled positively deviant success. While this deeper level of culture may have been revealed through methods such as

ethnography, an approach like this would have made it more difficult to conduct the subsequent stages of the Bradley et al. (2009) process – the enduring nature of underlying assumptions and a lack of awareness about them is likely to make it more difficult to test and then disseminate positively deviant strategies of this type. Therefore, it may be less useful to know about positively deviant underlying assumptions as they are less amenable to change (Schein, 2004). Further research could explore the relationships between positively deviant strategies that exist at 'espoused beliefs and values' and 'underlying assumptions' levels of culture in order to see whether implementing strategies at the former, conscious level of culture eventually leads to the latter, deeper form of cultural change.

Finally, and of critical importance to this research question, study 3 was only able to provide an *indication* that positively deviant strategies can be identified using limited time and resource. Although feedback from clinical staff and improvement fellows suggested that findings were along the right lines, it is not possible to know whether they are truly associated with exceptionally safe patient care until they have been tested through stage 3 of the Bradley et al. (2009) process.

6.3.5 Is it feasible to apply the positive deviance approach within general practice?

Although safety is of concern to primary care (Sarkar, 2016), patient safety research has predominantly focused on reducing errors and harm within secondary care settings (The Health Foundation, 2011c). Within primary care, it has been suggested that traditional top down initiatives may lack effectiveness due to the heterogeneity of general practice (Esmail, 2013). Consequently, the positive deviance approach, which seeks solutions to problems from within (Marsh et al., 2004), may prove useful for improving the quality and safety of general practice. Study 4 reports on the first known application of positive deviance within a UK general practice setting. It aimed to assess the feasibility of identifying and learning from positively deviant general practices. Findings highlighted four important considerations for the approach and its future application.

The first consideration is the lack of routinely collected and publicly available safety data within general practice. Study 4 intended to identify and learn from positive deviants that delivered exceptionally *safe* patient care. However, in contrast to the secondary care study, this was not feasible. Consequently the scope of the study was expanded and ASPIRE data were analysed to successfully identify 11 positively deviant general practices that delivered exceptionally *high quality*, evidence based patient care. Although their identification indicates that it was feasible to identify positively deviant general practices, applying the approach in this way was more

problematic as primary care data predominantly measure narrow, condition specific outcomes and quality indicators. Furthermore, the analyses conducted within this study were more complex than those used within secondary care (study 2). They required specialist knowledge and software, and due to heterogeneity it was necessary to control for a number of patient and practice level confounding variables. The difficulties that were faced in identifying positively deviant general practices may have been reflected within the findings of the systematic review (study 1) where only a small number of primary care applications of the approach were identified. The complexity of analyses may limit the extent to which the positive deviance approach can be applied in the future as it may need to be supported at a regional level for example by CCGs or CLAHRCs. Findings also support recent calls to improve the uniformity with which safety is defined and subsequently measured (Esmail, 2013; Sarkar, 2016). Without this, researchers and clinicians alike will face difficulties in implementing the positive deviance approach.

The second consideration that requires attention is recruiting general practices to participate in positive deviance applications. Study 4 was only able to recruit two general practices despite offering financial incentives and requiring minimal amounts of staff time. This study therefore adds to the body of evidence that reports difficulties in primary care recruitment (Goodyear-Smith et al., 2009; Hummers-Pradier et al., 2008; Salmon et al., 2007). Some of this literature identifies a fear of being observed and measured and/or a resistance against external influence as one of the barriers to participation (Armstrong, 2002; Hummers-Pradier et al., 2008), however, this study suggests that difficulties are faced even when research is positive in nature and seeks to learn from those who excel. Compounding this culture of non-participation is the increasing pressure that primary care providers are facing. General practices are required to deliver care for an increasingly aged and unhealthy population (Goodwin et al., 2011) while contending with a depleting workforce (Dayan et al., 2014). Regardless of whether positive deviance is implemented as a quality improvement or research method, poor recruitment has important implications for the feasibility of future applications.

The third consideration relates to the methods that are used to conduct the qualitative inquiries (stage 2). It was concluded that focus groups are likely to provide a pragmatic and time efficient method for data collection. Care is delivered by multidisciplinary teams in both primary (Goodwin et al., 2011) and secondary care settings (Nelson et al., 2001), therefore, by bringing staff together it is possible to consider different perspectives when discussing how success is achieved. Furthermore, observations of the multidisciplinary teams in study 3 and 4 added to and confirmed the success strategies that had been generated by staff. In contrast to individual interviews, during focus groups staff are able to discuss and develop ideas

between themselves which can also be of benefit if the facilitator is not considered an ‘insider’. Guidance can warn against conducting multidisciplinary and hierarchical focus groups (Barbour, 1995; Kitzinger, 1995) and this certainly must be considered - especially if sampling negative deviants or those who perform less well. However, the positively deviant teams throughout this thesis reported flat hierarchies and, within general practice, it may be advantageous to bring different professionals together - especially since findings from study 4 indicate that staff may hold very different views about how success is achieved. The simple process of bringing multidisciplinary staff together to discuss success may, in its self, be a beneficial activity that helps teams overcome a prevailing Safety-I discourse and facilitates them to think about how they can maintain success and build their team’s resilience.

Study 4 also highlighted the need to include some form of comparator in applications of the positive deviance approach, thus confirming a recommendation that arose from the systematic review (study 1). Purely sampling positive deviants does not facilitate the identification of success strategies that are exclusive to positive deviants rather than common to all. Study 4 highlighted that the need for comparators may be particularly pronounced within primary care as staff more frequently work in silos and have less knowledge of how other general practices operate. As such, they may be less able to articulate what it is that makes their performance exceptional. Furthermore, the competition that results from general practices being managed as individual businesses may mean that staff are also less willing to do so.

The final consideration to discuss is how heterogeneity impacts the feasibility of implementing the positive deviance approach. As discussed earlier in this section, heterogeneity increases the complexity of the analyses used to identify positive deviants within general practice. However, it also influences the number of positive deviants that need to be sampled during applications of the approach. Although not the intention of the study, the primary care application of positive deviance highlighted the need to sample more than one positively deviant practice in order to generate hypotheses about how they succeed. Despite controlling for different variables it will never be possible to identify a homogenous sample within healthcare settings – whether they be in primary or secondary care. Therefore, if it is possible to identify similar strategies across a number of different positive deviants, there is greater likelihood that these will be acceptable to others and feasible to implement across a more heterogeneous population. If positively deviant strategies are only identified within a single practice they may dependent upon the particular structures, processes, and culture within it.

6.4 Thesis reflections

Some reflections about the findings from this thesis are presented below. These reflections highlight: a) the challenges that may be faced in translating positively deviant strategies into patient safety improvements on the front line; b) whether the positive deviance approach is better suited to addressing broad rather than narrow outcomes of care; c) whether healthcare applications of the positive deviance approach identify behaviours that are truly deviant; and d) whether it is possible for clinicians rather than researchers to implement the approach as a method for quality improvement.

6.4.1 Translating findings into improvement: stages 3 and 4 of the Bradley et al. (2009) process

Ultimately, all applications of the positive deviance approach seek to improve performance on an outcome of interest. Bradley et al. (2009) propose that once positively deviant hypotheses have been generated they should be tested within larger, more representative samples (stage 3), and then disseminated with the help of key stakeholders (stage 4). However, the systematic review (study 1) highlighted that very few healthcare applications of the approach have done this. The majority of applications, including those reported within this thesis, focus on identifying positive deviants and exploring how they succeed (stages 1 and 2).

The acute myocardial infarction research by Bradley and colleagues provides the most comprehensive example of these latter stages (Bradley et al., 2009; Krumholz et al., 2011). A web-based survey, which was distributed nationally to a random sample of hospitals, assessed the positively deviant strategies that could be objectively and reliably measured. Hypotheses were statistically tested through a regression model. Positively deviant strategies (which had been statistically tested) and contextual factors (from the qualitative findings of stage 2) were disseminated through a national public campaign which included a ‘change packet and toolkit’, webinars, newsletters featuring success stories, workshops, and an online community (Bradley et al., 2009). Despite this example, there is very little evidence or guidance about how researchers and clinicians should test and disseminate positively deviant strategies. For those attempting to address this evidence gap in the future, the research within this thesis has highlighted some potential challenges to consider when completing these final stages.

The first challenge relates to creating a survey in order to test positively deviant strategies. The qualitative findings from studies 3 and 4 (chapters 4 and 5) predominantly related to abstract behaviours and cultures. These are likely to be

extremely difficult to distil into closed-ended survey items which provide valid and reliable measures of their intended constructs. Creating appropriate items for a survey can be extremely resource intensive and, even if a pragmatic approach is taken, creating a survey which is ‘good enough’ is likely to pose a challenge if assessing abstract constructs. It is important to note that it may not always be necessary to conduct surveys in order to assess positively deviant strategies. Routinely collected data within NHS trusts may be able to provide validation. For example, in relation to study 3, data on staffing levels, turnover, and absence may help assess the positively deviant hypothesis about stable and static teams, while the NHS Staff Survey (Picker Institute Europe, 2015b) may target whether staff on positively deviant wards display extremely high job satisfaction. However, accessing these data will require ethical permissions from multiple NHS trusts (e.g. 13 trusts in the Yorkshire and Humber region) which is likely to prove a resource intensive process.

The second challenge relates to gathering accurate responses about the presence of positively deviant strategies within a community. Stage 3 relies on healthcare teams across all performance levels to honestly report on how they deliver patient care. During stage 2 of the process, when the positively deviant strategies from study 3 were fed back to participating wards, the researcher noted that some staff on comparison wards thought that their wards used the positively deviant strategies too. Although this could well be the case, desirability bias is likely to have influenced their responses during these meetings and so may also affect how staff respond to questions within a survey (stage 3 of the process). Staff may seek to reflect their teams in a favourable light, particularly if their role is one of leadership. This is likely to be compounded by the prevailing Safety-I perspective (Hollnagel, Braithwaite, et al., 2013b) and punitive blame cultures whereby staff will not wish to report practise which is a) unsafe, b) not consistent with best evidence, or c) not socially desirable/accepted. Bias is also likely to be compounded by the nature of the positively deviant strategies identified. Firstly, because abstract behaviours and cultures exist on a continuum (rather than being discrete entities) responses about whether they exist or not are likely to be overestimated rather than underestimated. Second, most of the strategies that were identified during study 3 were intuitive to facilitating safer patient care. As such, a social desirability bias is likely to affect responses and thus limit the ability to assess whether the strategies are truly associated with improved outcomes or not.

The third challenge relates to disseminating strategies and generating change within the population (stage 4 of the process). Changing the behaviours of healthcare professionals is considered to be extremely difficult (Oxman, Thomson, Davis, & Haynes, 1995). Although positively deviant solutions are supposed to be acceptable to others, feasible to implement, and sustainable over time (Marsh et al., 2004), challenges are likely to be faced when disseminating and embedding them within

different communities/settings. Theoretically underpinned complex interventions are increasingly considered to be most effective at changing behaviour (Craig et al., 2008). If a theoretical approach is used to identify and then disseminate positively deviant strategies (stages 2 and 4 of the Bradley et al. (2009) process), this may support effective behaviour change and thus the improvement of outcomes.

6.4.2 Applying positive deviance: broad or narrow outcomes of care?

It is readily accepted that medical accidents, error, and harm result from various factors that operate across different levels of the system, for example, the task, the team, the working environment, and factors that operate even further upstream e.g. organisational, management, and institutional factors (Reason, 1995; Shortell & Singer, 2008; Vincent et al., 1998). According to this thinking, the factors that contribute to one type of harm are also likely to contribute to other types of harm. Therefore, the underlying premise of this thesis was that if multidisciplinary teams can succeed on broad outcomes of care there are likely to be some underlying or latent factors that facilitate their success. As such, this thesis explored positive deviance on broad rather than narrow outcomes of safety.

However, the studies conducted during this thesis encountered a number of challenges as a result of this broad rather than narrow focus. With regards to stage 1 of the positive deviance process, taking a broad focus made it more difficult to identify homogenous populations as it increased the myriad of confounding factors that influenced performance. In both healthcare settings, difficulties were also faced in identifying broad sources of routine data against which performance could be measured. With regards to stage 2, a broad perspective greatly increased the scope of the qualitative inquiries as there were a greater number of ways in which success could have been achieved (e.g. cultures, behaviours, leadership, systems, processes, documentation, technologies, equipment, and external influences among others). This makes it more difficult to uncover the crux of what facilitates positively deviant success – especially when taking a pragmatic approach.

When applying the positive deviance approach to broad outcomes of care, the complexity of healthcare is likely to be particularly obvious. Healthcare organisations are considered to be complex adaptive systems and this may provide a useful way in which to consider these findings and broad applications of the positive deviance approach. Complex adaptive systems are multifaceted and display intrinsic laws or principles such as self-organisation, emergent behaviours, and the capacity to learn or evolve (Hollnagel, Braithwaite, et al., 2013b). They are thought to be characterised by a number of different properties: ‘fuzzy’ boundaries; changing membership; non-linear

interactions; and they exist within, and are influenced by, other systems all of which co-evolve and adapt over time (Plsek & Greenhalgh, 2001; The Health Foundation, 2010). The behaviours of members within a complex adaptive system are based on instincts, constructs, and mental models which are not always shared, explicit, or logical to others. As a result of these characteristics the behaviour of complex adaptive systems is fundamentally unpredictable (Plsek & Greenhalgh, 2001). During study 3, a number of different positively deviant strategies were identified. It is unlikely that any single one of them - or even a single combination of them - will have produced the exceptional performances displayed by wards. Indeed, although the strategies were exclusive to the positive deviants, they manifested differently on each ward and were used in different combinations (for example 'trust' and 'learning from incidents' was not discussed by all positively deviant wards). The potential variations in how positive deviants succeed makes it more challenging to generate improvements on the front line.

Although it is potentially more challenging, there are a number of advantages to applying positive deviance to address these broad outcomes of care. As is confirmed by complexity science, narrow processes and outcomes do not occur in isolation – they are the product of wider and interacting systems. Taking a broad approach encourages the researcher to reject the cause and effect model which we usually rely on when explaining safety - or the lack of safety (Hollnagel et al., 2015). Instead it forces the researcher to look beyond the immediate aspects of a system to assess how the wider factors may influence and be influenced by positively deviant success. Doing so provides a more complete picture of what might affect change and improvement, thus increasing the chances that an intervention will succeed.

6.4.3 Positive *deviance* or high performance?

Positive deviance has previously been defined as 'intentional behaviours that significantly depart from the norms of a referent group in honourable ways' (Spreitzer & Sonenshein, 2004 p.841). In the Vietnamese story of positive deviance, shrimps, crabs, and sweet potato greens were added to children's meals to prevent malnutrition. These foods were considered inappropriate to eat and so went against the local social norms (Lindberg et al., 2009; Sparks, 2004; Sternin & Choo, 2000). However, none of the findings from studies 3 and 4 of this thesis appear to be particularly 'deviant', for example, having stable teams, knowing one another, or feeling able to ask questions. If positively deviant strategies lack this element of 'deviance' there may be little benefit in considering them separately from strategies that are used to facilitate high performance.

One explanation for the lack of ‘deviant’ strategies is that the methods used during the studies did not uncover the truly ‘deviant’ behaviours that facilitate success. Focus groups may not uncover enough detail about how specific strategies and tools are implemented in a ‘deviant’ way, and the broad focus of the study may have meant that discussions lacked detail about specific aspects of *deviant* practice. Alternatively, positive deviance may manifest itself differently within western healthcare settings (in comparison to rural communities in low socioeconomic countries) where ‘rules’ in the form of policies, guidelines and procedures are written in order to maintain safety and prevent error (Parker & Lawton, 2003). Deviance within healthcare has negative connotations, for example, in some circumstances violations can lead to the loss of professional registration. As such, positive *deviance* may simply not exist within healthcare in the way that it does within public health/community settings. However, there is evidence to suggest that deviance of this nature does exist within healthcare systems as it is particularly discussed in the context of workarounds – behaviours that differ from prescribed or intended procedures to circumvent or temporarily ‘fix’ a workflow hindrance in order to achieve a goal (Debono et al., 2013). Although a recent review highlighted that workarounds are predominantly reported in a negative light and that they can widen gaps in the safety of care, the potential ways in which these deviant behaviours can lead to safety innovation and excellence is being increasingly recognised e.g. by circumventing barriers to the delivery of care (Debono et al., 2013). According to this perspective, positive *deviance* in its truest sense may well exist within healthcare organisations. If positive workarounds do represent positively deviant strategies, further research is needed to explore what methods should be used to uncover their crux. It would also be interesting to explore how context-specific or generalisable these positively deviant workarounds are. For example, are different strategies used to work around medication management policies versus falls and pressure ulcer protocols, or are there similarities between the workaround strategies that enable teams to succeed on broad outcomes of safety.

In contrast, positively deviant strategies could represent behaviours that go against the social norms rather than the formal rules and procedures that operate within healthcare settings. Positive deviants may identify and use strategies that facilitate success despite others in the community not considering them to be appropriate behaviour, for example, an intensive care nurse handing a sanitised gown and gloves to a consultant surgeon who had come to check on their patient (Singhal, 2010). Similarly, positively deviant strategies may just be different compared to those that are used by others in the community. For example, in relation to the findings from study 3, it may be the case that team members on elderly medical wards that perform less well do not know one another and do not enjoy going to work. Further research could

usefully explore the nature of this deviance in order to better conceptualise the approach.

6.4.4 A quality improvement method or research endeavour?

The overarching aim of this thesis – to generate evidence regarding a pragmatic method for applying the positive deviance approach – influenced the methods that were used within each study. However, one limitation of the thesis is that all of the studies were conducted and led by a researcher who was external to the clinical environment. The research was conducted in this way in order to balance the need for testing a pragmatic approach while gathering robust data to address the thesis aims. As positive deviance is relatively novel within healthcare organisations, researcher led studies enabled evidence to be generated in order to test and advance the approach.

Some quality improvement approaches and methods, which predominantly address issues of Safety-I, have been adopted within healthcare organisations and are readily used by clinicians who work on the front line every day, e.g. Plan Do Study Act cycles (Taylor et al., 2014). It may be less feasible for the positive deviance approach to be implemented in this way, especially when applying the approach across broad outcomes of care. As this thesis has demonstrated, applications of positive deviance often require oversight across, and access to, a number of different organisations which frontline staff are unlikely to have. Applications are also time intensive especially when conducting the qualitative inquiries of stage 2. The studies in this thesis sought to reduce this intensity by using pragmatic methods, for example, by conducting focus groups and by (planning to) sample an expert panel rather than full comparison group. However, data analysis was a time consuming process and frontline staff are unlikely to have the necessary skills required to effectively facilitate focus groups and then analyse the data. Also, for some applications of the positive deviance approach where success is rooted at a deeper cultural level, it may be necessary to conduct less pragmatic methods such as ethnography in order to generate rich, in depth qualitative data on how positive deviants truly succeed. Although feasibility is likely to depend on the organisation within which a clinician works (e.g. the opportunity and time given for improvement) and their own individual traits (e.g. passion for improvement), ultimately, broad applications of the positive deviance approach may not be feasible if they are implemented solely by frontline clinical staff who have many competing demands on their time.

Further research could usefully assess whether a group of clinicians, or clinical networks could implement broad applications of the approach alongside their clinical / commissioning / regulatory commitments. For example, it would be interesting to see whether the application of positive deviance on elderly medical wards (phase 2 of

study 2 and study 3) could be replicated by regional networks in different areas of the country. As mentioned in chapter 4, there are a number of teams within the NHS that would be well placed to support applications of positive deviance. They include the Academic Health Science Networks/Improvement Academies, the NIHR CLAHRCs (Collaboration for Leadership in Applied Health Research and Care), Patient Safety Collaboratives, CCGs who commission services, clinical networks e.g. the stroke network, and national audit teams. These groups often conduct quality improvement work within their regions but, in contrast to academics, they are closely connected to and/or work within NHS organisations. This would maintain the bottom up nature of the approach and would ensure that data is gathered by someone who has greater understanding of the setting and problem under investigation (which was highlighted within study 4 as being important). Clinical networks often have access to a number of different data sources that are not publicly available and they have staff who are well trained in data analysis (which is necessary for identifying positive deviants). Although staff within these networks may not have extensive qualitative research skills, training could be provided to support the effective facilitation of focus groups (or interviews) and the analysis of qualitative data.

6.5 Limitations and directions for future research

Limitations of the research and directions for further study have been thoroughly discussed above and throughout the chapters of this thesis, however, some overarching considerations are discussed below.

6.5.1 Generalising from the positive deviance applications

The generalisability of findings from this thesis is limited predominantly because of the settings within which the studies were conducted: acute elderly medical wards and general practices. Although these represented two extremely different settings, various different multidisciplinary teams work within primary and secondary care (e.g. district nursing and health visitor teams in primary care, or surgical and rehabilitation ward teams in secondary care). It may not be possible to generalise the methods and learning from each application to these other types of multidisciplinary team. For example, when identifying positively deviant wards the NHS Safety Thermometer data are less relevant to the safety concerns of maternity and surgical units. Furthermore, as the analyses depend on the nature of the data collected (be it routinely or in addition as part of research), it will also not always be possible to generalise the analyses to other types of data. Similarly, Study 4 concluded that focus groups may

provide the most pragmatic method for exploring how positive deviants succeed, however, these may rely on teams sharing a common place of work (physical location). Many teams work across a variety of locations (e.g. community midwives, health visitors, mental health professionals) and so this method may not be suitable for all primary care applications of the approach. Focus groups may also require an independent and non-threatening facilitator as, despite the positive nature of discussions, facilitation by regulators or senior management may limit the openness or change the nature of discussions. Future applications should assess under what circumstances the methods are effective in identifying and learning from positive deviants in other clinical settings.

As discussed in section 6.4.1, because stages 3 and 4 of the Bradley et al. (2009) process have not been conducted it is also not possible to generalise the positively deviant findings to other elderly medical wards or general practices in the region. Further research could be undertaken to progress these findings and address these latter stages.

6.5.2 Sampling within the positive deviance applications

Small sample sizes have been problematic, particularly during studies 2 and 4 of this thesis. In phase 3 of study 2 it was not possible to statistically assess whether staff and patient perceptions of safety corroborated the identification of the positively deviant wards (due to limited time and resources). Although these other perceptions of safety – particularly those of staff – indicated that positively deviant wards did display exceptionally high levels of safety, a much larger and more representative sample would be required to confirm this. Ideally such a sample would include wards from across the performance spectrum rather than wards that just display exceptional and slightly above average levels of safety.

The small sample size within study 4 was also a key limitation and highlighted the need to a) sample more than one positively deviant team within applications of the approach, and b) achieve thematic saturation not only within but also between practices. On this latter point, it is not yet known how many positive deviants and comparators are required to achieve saturation during stage 2 of a positive deviance application in primary or secondary care. The recently published guidance by Rose and McCullough (2016) suggests that between three and five positive deviants and comparators should be sampled (3+3 or 5+5) – three may lead to a lack of understanding, but five may not be feasible/pragmatic. Rose and McCullough (2016) report recently using a ‘hybrid approach’ whereby a greater number of sites are initially screened and then in depth data is collected from a smaller subsample. Future

research could usefully explore this question further to maximise the efficient use of resources during applications of the positive deviance approach.

Interestingly, Rose and McCullough (2016) suggest to sample positive and negative deviants – organisations or teams at opposite ends of the performance spectrum. As highlighted by study 1, this was the case for many previous healthcare applications of the positive deviance approach. When comparing positive with negative deviants the differences between the two groups are likely to be more apparent and so it may be possible to generate hypotheses by sampling a smaller number of each. However, during study 3 positively deviant wards were compared to those with slightly above average performance. Although it is important to know how positive deviants succeed compared to those that perform worst in a population, it is also considered important to understand how they excel when compared to those who perform relatively well (average). Positive deviants identify solutions and succeed where others do not, therefore, their behaviour, structures, processes etc. should differ from everyone in a population, not just the worst. Sampling above average comparators also alleviates ethical concerns about identifying poor performers, especially when it is not known whether the methods are effective or not. Although, it is still considered important for a comparison group to include those with higher levels of performance, this does make it more challenging and more resource intensive to identify positively deviant strategies. In agreement with Rose and McCullough (2016), it may be necessary for future studies to empirically examine what the best composition of a comparator group is, acknowledging that there may be differences in how this is practically realised within a primary and secondary care setting.

Related to sampling, this thesis is also limited by the populations in which positive deviants were identified: the Yorkshire and Humber region and a random sample of West Yorkshire general practices. The positive deviants that were identified may not have performed exceptionally well compared to other wards nationally, or other general practices within West Yorkshire. Furthermore, chapter 3 highlighted a key limitation of study 2 whereby, although positively deviant wards differed statistically from others in their population, this difference may not have been clinically significant (i.e. may not have represented an overall clinical advantage or benefit to patients). If future research were able to extend these applications of the positive deviance approach to more nationally/regionally representative samples it may be possible to assess what size the population has to be in order to identify positive deviants that statistically and clinically differ from others in a population. Conducting the applications within these smaller populations may have also influenced the positively deviant strategies that were identified (the behaviours and cultures etc.) and may not have uncovered strategies that truly facilitated positive *deviance*.

6.5.3 Spreading positively deviant strategies to others

As previously mentioned many of the positively deviant strategies that were identified during study 3 are abstract in nature and spreading these to others is likely to be difficult. However, while discussing the positively deviant strategies (behaviours and cultures) staff identified a number of practical ways through which they thought their teams had achieved them. For example, when creating a fully integrated multidisciplinary team including AHPs and unqualified staff, some positively deviant wards invited *everyone* to their 'safety briefings' regardless of role, they turned a doctors room into a MDT room, and placed a desk opposite the nursing station for AHPs to work at. In addition, wards had various mechanisms to focus on discharge including a dedicated discharge nurse role which band 5 nurses rotated into each month. One direction for future research may be to explore whether these more concrete ways of working can facilitate behavioural and cultural change which is notoriously difficult to achieve. In doing so, the positive deviance approach may not only shine a light on the positively deviant behaviours/strategies that are used to succeed, but also highlight how teams implement and develop them.

6.5.4 Role of patients

Although patient perceptions of safety were gathered in study 2, the focus of this thesis has been on staff – using routine data that are gathered by staff, asking staff to discuss the ways in which safety is achieved, and feeding back the findings to staff who worked on participating wards. Patients, though, are fundamentally at the heart of healthcare policy and practice (O'Hara & Lawton, 2016). They are increasingly involved in maintaining their own safety and they are able to provide a unique perspective on the safety of care delivered (Giles et al., 2013). Interestingly, this was touched upon during study 4 where general practice staff highlighted the importance of patient education in delivering high quality care. A key direction for future research may therefore be to assess how patients can be involved in either identifying positive deviants or uncovering the strategies that they use to succeed. Depending on the positively deviant strategies uncovered, it may also be possible to engage patients in disseminating them to others (stage 4).

Further to this, future research may seek to understand how we can identify and learn from positively deviant patients. In the only known study of its kind, Kim et al. (2008) identified positively deviant patients (and nurses) within Indonesian public clinics who effectively communicated during family planning consultations. In total, five factors supported patients' effective communication: motivation/need; confidence in abilities; positive feedback from nurses; beliefs about rights and responsibilities; and communication aids. At a time when our healthcare service is increasingly under

strain, it may be beneficial to understand how patients effectively and efficiently seek appropriate care in order to, for example, achieve a timely diagnoses, maximise the effectiveness of their treatment, and achieve continuity across different providers.

6.6 Practical implications

6.6.1 Methodological implications

There are a number of implications that have emerged from the applied research that has been conducted throughout this thesis. The most obvious implication relates to the guidance that can be put forward for any future researchers or clinicians who wish to implement the positive deviance approach within a healthcare setting. Much of this has been reported in the respective chapters but a brief summary of key points is provided below.

- As far as is possible, identify a homogenous population from which positive deviants can be identified.
- When selecting a data source or measure to identify positive deviants with, consider whether the data are routinely collected, valid, reliable, consistently collected and accessible across the population, and whether they represent recent performance.
- Sample multiple positive deviants during stage 2 rather than a single exceptional performer. This will facilitate the identification of common features that enable them to succeed.
- Focus groups appear to offer a pragmatic and effective method for identifying positively deviant success strategies, particularly in secondary care.
- Include some form of comparison group in order to identify positively deviant strategies that are unique to positive deviants rather than common across the population.
- A theoretical/theoretically underpinned framework can help ensure that good quality, in depth qualitative data are collected and that all potential factors that could contribute to exceptional performance are explored.
- When conducting the qualitative inquiries (stage 2), consider how the researcher's / clinician's experience may impact data collection and the subsequent generation of positively deviant hypotheses. Do they have sufficient understanding of the setting and/or problem under investigation to effectively uncover the crux of positive deviance?
- When publishing applications of the positive deviance approach ensure that enough details are given about how the approach was conducted and what was found (include appendices/supplements if needed). This will help others assess

which methods have or have not been successful in the past and will enable greater exploration of the approach's effectiveness.

In relation to this final recommendation the creation of networks and bodies to support emerging fields and concepts has previously been successful, for example, the Cochrane Collection helped establish evidence based medicine (Marshall et al., 2013). At present the 'Positive Deviance Initiative' (www.positivedeviance.org) describes itself as a network organisation 'dedicated to amplifying the use of the positive deviance approach'. It provides a repository for applications of the positive deviance approach and, although some healthcare applications are contained within its pages, it predominantly focuses on those within nutrition and public health. Strengthening the healthcare aspect of this website (or creating a similar but separate network) may be beneficial to the development of the approach.

The research within this thesis also has a number of wider messages with regards to the measurement of safety and the data that are held within the NHS. In both healthcare settings, selecting a suitable data source that could be used to identify positive deviants posed a challenge. NHS organisations collect a wealth of information about safety at a local level, however, many of the data that were publicly available were not published at the ward or clinical microsystem level, and/or were not recent measures of performance. Regardless of what approach is taken, unless it is possible to measure safety we will lack the ability to improve it (Rushforth et al., 2015). Vincent et al. (2013) have proposed the need to reduce fragmentation of NHS data in order to integrate safety information at a useful and appropriate level and also to measure the extent to which care is safe, not only in the past but also in the present. Development of these aspects of measuring and monitoring will be crucial both for taking forward a Safety-II perspective and for applying the positive deviance approach.

6.6.2 Clinical implications

Although the overall aims of this thesis were methodological, clinical implications can also be drawn for individual clinicians, wards and organisations, and at a national level. As previously discussed, a second application of the thesis findings would be to test the positively deviant success strategies that were identified during study 3 in order to see whether they are truly associated with better safety outcomes. If they are, the findings from this thesis have the potential to improve patient safety on similar wards across the NHS. Even without robustly testing the strategies, many of the positively deviant strategies are intuitive to the delivery of safe patient care and there has been interest to disseminate the findings at regional meetings (e.g. with the British

Geriatrics Society (2016) and the Yorkshire and Humber Improvement Academy (2016)), and nationally through the Sign up to Safety campaign (NHS England, 2016c). At an individual and ward level, consultant geriatricians with whom I have discussed the findings have also talked about their utility in enabling them to run their services within a constrained and pressured organisation (A.Cracknell and R.Kersh, personal communication September 2016). The strategies provide evidence which can be used by individual clinicians and ward teams to push back against organisational level decisions that affect leaders' abilities to run their wards. For example, having the autonomy and resources to do things like maintain a static team, integrate allied health professionals within their teams, and to create an environment which ensures that staff enjoy their jobs.

In addition to this individual and ward level impact, the qualitative findings have implications at a more strategic and organisational level. It is well recognised that one of the best ways to improve patient outcomes is to focus on how we can deliver existing treatments and therapies more effectively rather than to focus on developing new ones. Similarly, findings within this thesis suggest that one of the greatest opportunities to improve patient safety may arise from improving the behaviours and cultures that underpin the delivery of specific strategies and tools, rather than from developing new ones. As such, organisations should focus, not only on whether initiatives such as safety briefings and intentional rounding are being conducted, but also on how ward teams are conducting them.

Many of the positively deviant strategies on elderly medical wards were underpinned by leadership (e.g. setting expectations, focus on discharge, feeling able to ask questions and for help) and this was considered an important facilitative factor within the positively deviant general practice team. Organisations and national bodies should invest in the training and development of their future leaders as the skills required to manage and lead a team of people are very different to those required to care for poorly patients. Alongside this, it is important to recognise that cultural and behavioural change takes time and that interventions to improve these factors may not immediately improve clinical processes and outcomes. High performing leaders are often moved from one ward to another in an attempt to resolve problems and improve performance. Although it may be pertinent to change to clinical processes and to implement new strategies, these ward leaders should also be given the time and resources that are necessary to make behavioural and cultural changes. Furthermore, support should be given to the team that the leader is leaving behind to ensure that they can sustain performance under new leadership.

The thesis findings also contain a number of policy and/or national level implications. The importance of behavioural, teamwork, and cultural factors in

facilitating exceptional performance may influence the type of measurement that is conducted within healthcare teams and organisations. Although it is necessary to measure clinical processes and outcomes (e.g. through audits), it may also be pertinent to measure behavioural and culture factors within teams for example through quarterly or bi-annual measurement of safety culture/climate. In the US, the measurement of safety culture is mandated as part of hospital accreditation (Joint Commission for Accreditation of Healthcare Organisations, 2016), but this is not currently so in the UK. Routine measurement of safety culture at ward level would provide a useful data source for the future identification of positively deviant wards. However, it is also important that measurement provides a useful quality improvement tool for individual wards. Mandating the measurement of safety culture at a national level could create a 'tick box' exercise and organisations may start performance managing their wards based on results. Therefore, it may be better for national policy to 'recommend' rather than 'mandate' safety culture measurement. This would require individual ward teams to be engaged in the beneficial reasons for measuring safety culture, and to be equipped with the knowledge and skills to build a meaningful programme of measurement that works for their own improvement goals.

Findings within this thesis also suggest that staff on positively deviant wards display extremely high job satisfaction, belong to stable teams, and do not consider 1-1 or agency staff to be a safe staffing option. However, recently there has been widespread coverage about doctors' intentions to practice abroad (BMA, 2016), the increasing number of nurse and doctor vacancies (BBC, 2016), and the detrimental impact that removing nursing, midwifery and AHP bursaries may have on attracting people into these careers (Imison & Dayan, 2016). Workforce development should be prioritised at a national level to ensure sufficient numbers of staff are trained in a variety of multidisciplinary professions, and to position the NHS as one of the UK's top employers.

At a national level, the content of clinical training programmes could also be adjusted to emphasise the importance of cultures and behaviours. Subcultures exist within professional groups (Schein, 2004) and so changes could be made when training our future clinicians to promote cultures that facilitate the delivery of safe patient care. It may also be beneficial to increase the amount of training that is conducted within multidisciplinary settings in order to increase understanding about the roles that different healthcare professionals' play and to enhance perceptions about the importance of MDT working.

6.7 Concluding comments

It has become increasingly apparent over the past 15 years that the traditional deficit based ‘find and fix’ approaches to improving patient safety have had neither the hoped nor intended effects. The positive deviance approach adopts a Safety-II perspective and instead seeks to identify and learn from those that demonstrate exceptionally safe patient care. Although the approach has been applied within healthcare organisations and a four stage process has been proposed (Bradley et al., 2009), at the inception of this thesis there was a lack of guidance for researchers and clinicians on how to implement the positive deviance approach.

The research conducted as part of this thesis has attempted to generate high quality, robust evidence for a pragmatic method to identify and learn from positive deviants. The systematic review highlighted a number of gaps and shortcomings within the previous literature, some of which were addressed through the subsequent research. Studies 2, 3 and 4 reported novel applications of the positive deviance approach within two UK healthcare settings. Through these studies evidence and guidance was generated to support other similar applications, and the challenges of applying the approach were highlighted. Although the findings indicate that it is possible to identify positive deviants and to generate hypotheses about how they succeed, this thesis has raised additional questions about the extent to which positive deviance provides a truly pragmatic quality improvement approach that can be implemented by clinicians on the front line, especially when applying it within a general practice setting.

A lot remains unknown about the positive deviance approach including, most crucially, whether the approach can effectively and efficiently improve patient safety outcomes. However, it is hoped that the findings generated through this thesis can provide guidance to support the rigorous application of future positive deviance projects within healthcare organisations. Only by doing so will it be possible to build on the evidence base in order to address these questions.

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Appendices

Chapter 2

Appendix 1 PRISMA Checklist (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

Appendix 2 Systematic review search strategy: results and a worked example (as applied to Web of Science)

Appendix 3 Data extraction details

Chapter 3

Appendix 4 Ward rankings for each of the NHS ST measures.

Appendix 5 The survey used to assess patient perceptions of safety

Appendix 6 The survey used to assess staff perceptions of safety

Appendix 7 Histograms and skew and kurtosis values for the PMOS, PSG, FFT and CQUIN measures.

Appendix 8 Scatterplots to assess assumptions of linearity and homoscedasticity.

Chapter 4

Appendix 9 An adaptation of the Manchester Patient Safety Framework (on disk)

Appendix 10 Field work diary guidance

Appendix 11 Focus group discussion guide

Appendix 12 Thematic framework of behavioural and cultural factors that facilitated high performance in patient safety

Chapter 5

Appendix 13 The probabilities of general practices within each latent class performing above and below the average adherence levels by clinical recommendation.

Appendix 14 Semi-structured interview schedule

Appendix 15 Observation guidance

Appendix 16 A brief synthesis of research that has assessed high performance within primary care

Appendix 1 PRISMA Checklist (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	Pg 17
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	N/A for thesis
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	Pg 17-19
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	Pg 19
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	Pg 20
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	Pg 20-21
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	Pg 20
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Appendix 2
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	Pg 20-21

Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	Pg 22 and appendix 3
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	Appendix 3
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	Pg 20-21
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	N/A (narrative synthesis)
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	Pg 22-23
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	Pg 21-22
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	Pg 23-24
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Table 2.2
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Table 2.2
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	N/A (Narrative synthesis)
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	Pg41-42

Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A (Narrative synthesis)
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	Pg 42-47
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	Pg 47
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	Pg 48
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	N/A for thesis

Appendix 2 Systematic review search strategy: results and a worked example (as applied to Web of Science)

Table A: Search results for all electronic databases searched

List of sources searched:	Start date of each database	End date of search	Total number of results found
PsycINFO	1806	9/1/14	88
		19/9/14	81
Medline	1946	9/1/14	114
		19/9/14	111
Web of Sci	1900	9/1/14	222
		19/9/14	249
Cochrane	2005	9/1/14	4 trials and 1 review
		19/9/14	7 trials and 1 review
Embase	1947	9/1/14	130
		19/9/14	151
CINAHL	1981	9/1/14	52
		19/9/14	66
Global healthcare	1910	9/1/14	66
		19/9/14	70
Science Direct	1995	9/1/14	298
		19/9/14	263
Totals (including duplicates)		**9/1/14**	**975**
		19/9/14	**783**

Search strategy as applied to Web of Science: " positive devian* "

Subscribed Databases:

Web of Science Core Collection (1900-present)

- Science Citation Index Expanded (1900-present)
- Social Sciences Citation Index (1900-present)
- Arts & Humanities Citation Index (1975-present)
- Conference Proceedings Citation Index- Science (1990-present)
- Conference Proceedings Citation Index- Social Science & Humanities (1990-present)
- Book Citation Index– Science (2005-present)
- Book Citation Index– Social Sciences & Humanities (2005-present)

BIOSIS Citation Index (1969-present)

BIOSIS Previews (1969-present)

Data Citation Index (1900-present)

- Science (1900-present)
- Social Sciences & Humanities (1900-present)

KCI-Korean Journal Database (1980-present)

MEDLINE (1950-present)

SciELO Citation Index (1997-present)

Appendix 3 Data extraction details

Below is a summary of the information extracted through the data extraction forms.

General Information:

- Quality assessment score
- Publication type
- Healthcare organisations or predictor of a healthcare organisation
- Context of within which positive deviance is used
- Location of research

Positive deviance topic

- Healthcare setting
- Behaviour or problem researched
- Study aims, objectives and /or hypotheses
- Key findings / conclusions
- Future research recommendations detailed in the paper
- Recommendations made regarding the positive deviance approach
- Resource required
- Generalizability of findings / methods used.

Definition of Positive Deviance

- Positive deviance definition given
- Positive deviance process used
- Positively deviant behaviours identified - were positively deviant strategies ‘deviant’ or ‘different’?

Stage 1: Identify positive deviants

- Study design
- Overall sample (not just details of the positive deviants)
- Method / data used
- Timing for identifying positive deviants
- Data analysis used to identify positive deviants
- Unit of analysis
- Community and researcher roles
- Strengths and weaknesses for this stage of the research

Stage 2: Generate hypotheses regarding positive deviance strategies

- Study design
- Sample for this stage of the research
- Method and procedure used
- Factors assessed
- Factors identified - Do factors identified relate to systems, processes or outcomes?
- Data analysis
- Comparison group used
- Unit of analysis
- Outcome of research
- Community and researcher roles
- Strengths and weaknesses

Stage 3: Test the positively deviant strategies in representative sample

- Study design
- Sample
- Method and procedure
- Data / Measures used
- Data analysis
- Unit of analysis
- Outcome of research
- Community and researcher roles
- Strengths and weaknesses

Stage 4: Disseminate the positively deviant strategies to the community

- Study design
- Sample
- Methods / procedure
- Intervention description
- Unit of analysis
- Analysis conducted regarding dissemination
- Community and researcher roles
- Strengths and weaknesses

Appendix 4 Ward rankings for each of the NHS ST measures.

Ranking	Ward blinding code	ST harmfree care performance [a]	New PUs [b]	Falls	New UTI	New VTE
1	4	92.68	1.01	0.36	0.00	1.36
2	7	91.48	0.00	0.74	0.40	0.74
3	17	91.40	0.58	0.60	0.29	0.60
4	36	90.97	2.55	0.32	0.30	0.00
5	31	90.14	2.09	1.53	0.31	0.30
6	15	88.97	1.16	0.00	0.00	0.00
7	32	88.70	2.21	1.09	0.36	2.93
8	29	88.48	2.09	0.79	1.20	1.20
9	35	88.19	1.65	0.82	0.27	1.65
10	16	88.01	1.14	1.16	0.57	2.27
11	25	87.90	1.15	1.75	1.15	1.99
12	6	87.72	1.51	0.60	0.30	1.80
13	8	87.46	1.11	0.00	1.67	0.56
14	33	87.28	1.99	1.19	0.00	1.14
15	24	86.52	0.00	1.31	1.33	1.32
16	2	85.87	0.66	0.69	0.65	1.97
17	23	85.71	0.00	1.13	0.58	0.84
18	10	85.68	3.32	0.83	0.83	0.28
19	3	85.57	2.22	1.42	0.00	0.27
20	5	85.17	1.44	2.11	0.36	0.00
21	12	85.14	3.05	2.25	1.70	0.00
22	27	84.06	0.60	4.57	1.21	0.30
23	19	83.90	1.58	1.52	0.95	1.91
24	11	83.81	3.99	2.20	0.29	0.58
25	22	83.04	1.79	0.60	0.60	0.60
26	20	81.83	4.42	5.98	0.00	0.43
27	18	81.45	2.15	0.79	0.32	1.13
28	1	81.20	2.74	1.62	0.93	1.63
29	34	80.42	2.50	1.25	2.50	3.75
30	13	79.91	3.52	1.14	2.08	0.84
31	30	77.95	0.58	2.09	5.65	0.88
32	26	76.28	0.89	6.32	2.41	3.92
33	28	74.69	4.70	1.03	2.67	3.27
34	14	70.56	8.02	1.13	5.14	2.01
Average		84.90	2.03	1.52	1.08	1.21

* PUs = pressure ulcers; UTI = urinary tract infections, VTE = venous thromboembolism

[a] The wards highlighted blue are positive deviants and the wards highlighted green are the matched comparison group.

[b] Performances for each individual harm are listed in columns 4-8. The top five performers are highlighted yellow.

Appendix 5 The survey used to assess patient perceptions of safety

Learning from successful wards to improve patient safety

PATIENT SURVEY

Ward:

Participant Identification Number:

Patient Measure of Organisational Safety (PMOS)

What is the survey about?

This survey aims to help us understand about patient safety from the patients' perspective and to identify areas of strengths and weakness within hospitals. It contains factors that have been identified by patients that may affect their **safety** whilst using NHS services.

Completing the survey

Please read each statement carefully, keeping in mind **your current** stay in hospital and circle **one** option for each question. If you have had **no experience** of, or **do not know** the answer to a statement, please circle N/A, "not applicable". This will take you around 15-20 minutes to complete.

Background Information

We would be grateful if you could provide us with some anonymous background information:

1. What is your date of birth? _____

2. Are you: ☐ Male ☐ Female (please tick one box)

3. How would you describe your ethnic group? (please tick one box)

White: ☐ British ☐ Irish ☐ Other background

Black or Black British: ☐ African ☐ Caribbean ☐ Other background

Asian or Asian British: ☐ Indian ☐ Pakistani ☐ Bangladeshi ☐ Other background

Chinese: ☐ Chinese

Mixed: ☐ White & Asian ☐ White & Black African ☐ White & Black Caribbean ☐ Other mixed background

Other: ☐ Other ethnic background - Please specify _____

☐ Don't know / Don't want to answer

4. What is your first language? _____

5. When were you admitted to hospital? _____

6. How many times have you been an inpatient at hospitals within the last 5 years?

7. Are you receiving on-going treatment elsewhere in the hospital?

☐ Yes ☐ No (please tick one box)

1. How likely are you to recommend this ward to your friends and family if they needed similar care or treatment?

☐	☐	☐	☐	☐
Extremely likely	**Likely**	**Neither likely or unlikely**	**Unlikely**	**Extremely unlikely**

Please indicate your level of agreement with the following statements.

	Strongly Disagree	**Disagree**	**Neither agree or disagree**	**Agree**	**Strongly Agree**	**Not Applicable**	**I prefer not to answer**	**Additional Comments**
2. I was always treated with dignity and respect	1	2	3	4	5	N/A		
3. I knew who to go to if I needed to ask a question	1	2	3	4	5	N/A		
4. The drugs I have been prescribed were always available in hospital	1	2	3	4	5	N/A		
5. I got answers to all the questions I had about my care	1	2	3	4	5	N/A		
6. Staff were always able to get advice from other teams about my care if needed	1	2	3	4	5	N/A		
7. A doctor changed my plan of care and other staff didn't know about it	1	2	3	4	5	N/A		
8. After a shift change staff did not appear to know important information about my care	1	2	3	4	5	N/A		

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	Not Applicable	I prefer not to answer	Additional Comments
9. I knew what the different roles of the people caring for me were	1	2	3	4	5	N/A		
10. On at least one occasion a member of staff was not able to use the necessary equipment	1	2	3	4	5	N/A		
11. My treatment/ procedure/ operation did not always happen on time	1	2	3	4	5	N/A		
The following aspects of the ward made it difficult for **staff** to do their jobs:								
12. Position of nurses' station	1	2	3	4	5	N/A		
13. Lighting levels	1	2	3	4	5	N/A		
14. Clutter & untidiness	1	2	3	4	5	N/A		
15. Lack of space	1	2	3	4	5	N/A		
16. I was on a ward that was not able to deal with my treatment needs	1	2	3	4	5	N/A		
17. Staff were prompt in answering my buzzer	1	2	3	4	5	N/A		
18. It was clear who was in charge of the staff	1	2	3	4	5	N/A		
19. Sometimes there was no-one available to deal with aspects of my care	1	2	3	4	5	N/A		

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	Not Applicable	I prefer not to answer	Additional Comments
20. On at least one occasion a member of staff was not able to carry out a task that they should have been able to do	1	2	3	4	5	N/A		
The following aspects of the ward made it uncomfortable for me:								
21. Noise levels	1	2	3	4	5	N/A		
22. Lighting levels	1	2	3	4	5	N/A		
23. Temperature	1	2	3	4	5	N/A		
24. Poor cleanliness	1	2	3	4	5	N/A		
25. Lack of space	1	2	3	4	5	N/A		
26. Other - Please specify								
27. I felt that the attitude of staff towards me was poor	1	2	3	4	5	N/A		
28. I knew which consultant was in charge of my care	1	2	3	4	5	N/A		
29. Staff always seemed to know what they were meant to be doing	1	2	3	4	5	N/A		
30. There were enough staff on the ward to get things done on time	1	2	3	4	5	N/A		
31. Staff gave me different information about my care	1	2	3	4	5	N/A		
32. Staff/patients waited a long time for porters to arrive	1	2	3	4	5	N/A		

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	Not Applicable	I prefer not to answer	Additional Comments
33. Staff did not work together as a team here	1	2	3	4	5	N/A		
34. There was equipment that staff found difficult to use (e.g. monitoring equipment, beds, hoists)	1	2	3	4	5	N/A		
35. I have needed treatment and there has been no-one available who was trained to do it	1	2	3	4	5	N/A		
36. Staff were kept waiting for my test results	1	2	3	4	5	N/A		
37. Nurses were always able to get help from other staff when they asked for it	1	2	3	4	5	N/A		
38. Equipment needed for my care was always working properly	1	2	3	4	5	N/A		
39. I always knew which nurse was responsible for my care	1	2	3	4	5	N/A		
40. Equipment and supplies were not always available when needed (e.g. hoists, bed pans, drugs)	1	2	3	4	5	N/A		
41. Staff always agreed about my treatment/care	1	2	3	4	5	N/A		
42. I always felt staff listened to me about my concerns	1	2	3	4	5	N/A		
43. Staff seemed to struggle to get help when they needed it	1	2	3	4	5	N/A		

	Strongly Disagree	Disagree	Neither agree or disagree	Agree	Strongly Agree	Not Applicable	I prefer not to answer	Additional Comments
44. When staff talked about my care with others the information they shared was correct	1	2	3	4	5	N/A		
45. Information about me that my health care team needed was always available (e.g. drug charts, medical notes, test results)	1	2	3	4	5	N/A		

46. Were you involved as much as you wanted to be in decisions about your care and treatment?

☐ Yes, definitely ☐ Yes, to some extent ☐ No

47. Did you find someone on the hospital staff to talk to about your worries and fears?

☐ Yes, definitely ☐ Yes, to some extent ☐ No ☐ I had no worries or fears

48. Were you given enough privacy when discussing your condition or treatment?

☐ Yes, always ☐ Yes, sometimes ☐ No

Thank you very much for participating!

Appendix 6 The survey used to assess staff perceptions of safety

Learning from successful wards to improve patient safety

STAFF SURVEY

Ward:

Job role:

Memorable date: _ _ / _ _ / _ _

(Please enter a unique identifier which will be used if you wish to withdraw from the study.)

Part 1: Patient Safety Grade

Please give your ward in this hospital an overall grade on patient safety.

☐	☐	☐	☐	☐
Excellent	Very Good	Acceptable	Poor	Failing

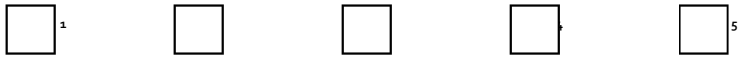
Part 2: Factors contributing to patient safety

Below are 19 different factors that are known to contribute to patient safety incidents within hospitals. Read the description for each factor and rate the extent to which it helps or hinders **your team** to deliver safe patient care on the ward.

1. **Communication systems:** The effectiveness of process and systems for exchanging and sharing information between staff, patients, groups, departments and services. This includes both written (e.g. documentation) and verbal (e.g. handover) communication systems.

☐ 1	☐	☐	☐ 4	☐ 5
Extremely **helps** delivery of		Neither helps nor hinders		Extremely **hinders** delivery

2. **Equipment and supplies:** The availability and functioning of equipment and supplies.



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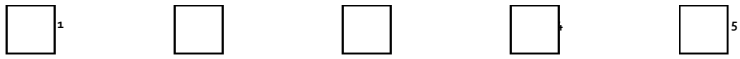
3. **External policy context:** Nationally driven policies / directives that impact on the level and quality of resources available to hospitals.



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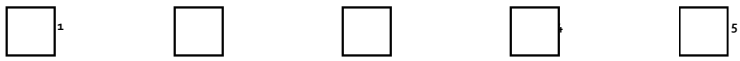
4. **Design of equipment of supplies:** The design of equipment and supplies to overcome physical and performance issues.



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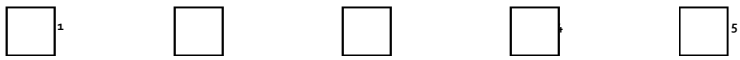
5. **Individual factors:** Characteristics of the person delivering care that may contribute in some way to errors. Examples of such factors include inexperience, stress, personality, attitudes.



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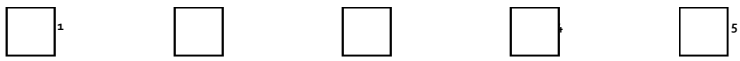
6. **Lines of responsibility:** Existence of clear lines of responsibility, clarifying accountability of staff members and defining the job role.



Extremely **helps** delivery of | Neither helps nor hinders | Extremely **hinders** delivery

7. **Management of staff and staffing levels:** The appropriate management and allocation of staff to ensure adequate skill mix and staffing levels for the volume of work.

☐ 1	☐	☐	☐ 4	☐ 5
Extremely **helps** delivery of		Neither helps nor hinders		Extremely **hinders** delivery

8. **Patient factors:** Features of the patient that make caring for them more difficult and therefore more prone to error. These might include abnormal physiology, language difficulties, personality characteristics (e.g. aggressiveness).

☐ 1	☐	☐	☐ 4	☐ 5
Extremely **helps** delivery of		Neither helps nor hinders		Extremely **hinders** delivery

9. **Physical environment:** Features of the physical environment that help or hinder safe practice. This refers to the layout of the unit, the fixtures and fittings and the level of noise, lighting, temperature etc.

☐ 1	☐	☐	☐ 4	☐ 5
Extremely **helps** delivery of		Neither helps nor hinders		Extremely **hinders** delivery

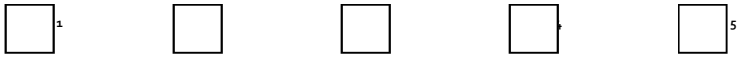
10. **Policy and procedures:** The existence of formal and written guidance for the appropriate conduct of work tasks and processes. This can also include situations where procedures are available but contradictory, incomprehensible or of otherwise poor quality.

☐ 1	☐	☐	☐ 4	☐ 5
Extremely **helps** delivery of		Neither helps nor hinders		Extremely **hinders** delivery

11. **Safety culture:** Organisational values, beliefs and practices surrounding the management of safety and learning from error.

☐ 1	☐	☐	☐ 4	☐ 5
Extremely **helps** delivery of		Neither helps nor hinders		Extremely **hinders** delivery

12. **Scheduling and bed management:** Adequate scheduling to manage patient throughput minimising delays and excessive workload.



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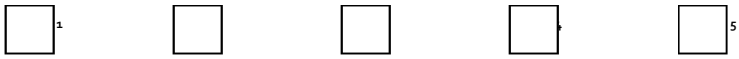
13. **Staff workload:** Level of activity and pressures on time during a shift.



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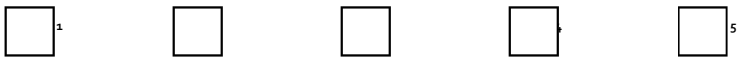
14. **Supervision and leadership:** The availability and quality of direct and local supervision and leadership.



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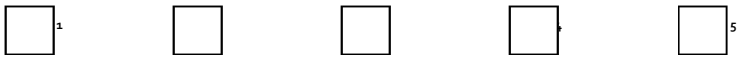
15. **Support from central functions:** Availability and adequacy of central services to support the functioning of wards. This might include support from Information Technology and Human Resources, portering services, estates or clinically related services such as radiology, phlebotomy, pharmacy.



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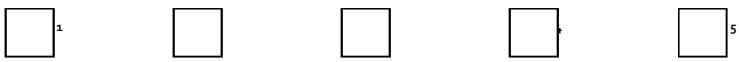
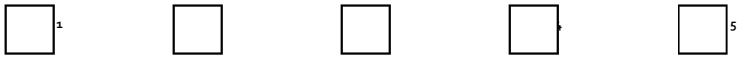
16. **Task characteristics:** Factors related to specific patient related tasks which may make individuals vulnerable to error.



Extremely **helps** delivery of | Neither helps nor hinders | Extremely **hinders** delivery

17. **Team factors:** The working of difference professionals within a group which could be changed to improve patient safety.

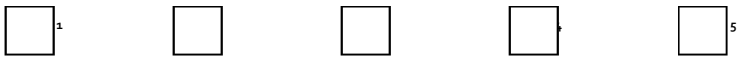


Extremely **helps** delivery of

Neither helps nor hinders

Extremely **hinders** delivery

18. **Training and education:** Access to correct, timely and appropriate training, both specific (e.g. task relates) and general (e.g. organisation related).



Extremely **helps** delivery of

Neither helps nor hinders

Extremely **hinders** delivery

Thank you for completing this survey.

Appendix 7 Histograms and skew and kurtosis values for the PMOS, PSG, FFT and CQUIN measures.

Data were assessed for normality at an individual level. Presented below are the skew and kurtosis values and histograms for each of the measure included in the staff and patient surveys.

Table B: Skew and kurtosis values for all measures within the patient and staff surveys.

Measure	**Skew** (SE)	**Kurtosis** (SE)
PMOS	-0.71 (0.18)	0.33 (0.36)
PSG	-1.22 (0.19)	2.48 (0.38)
FFT	-1.89 (0.18)	3.88 (0.35)
CQUIN	0.48 (0.18)	0.10 (0.36)

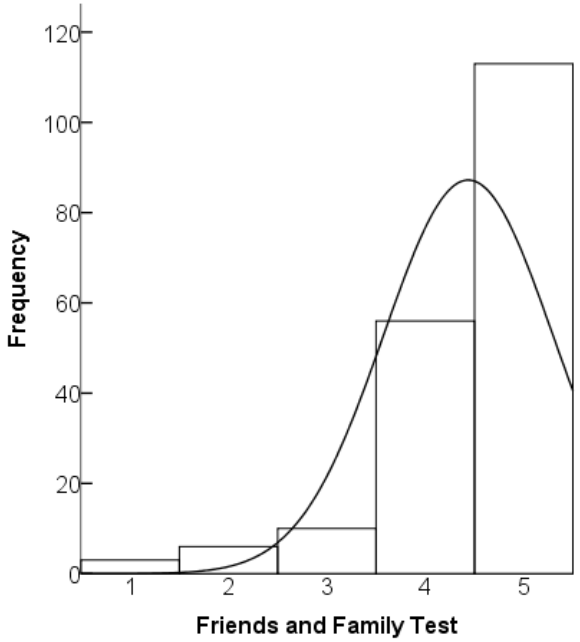


Figure A: The distribution of patient responses to the Friends and Family Test.

Patients answered the question ‘how likely are you to recommend this ward to your friends and family if they need similar care or treatment’ using a 5-point Likert scale ranging from 5 = ‘extremely likely’ to 1 = ‘extremely unlikely’. 188 patients responded with a mean response of 4.44 (Std Dev=0.86).

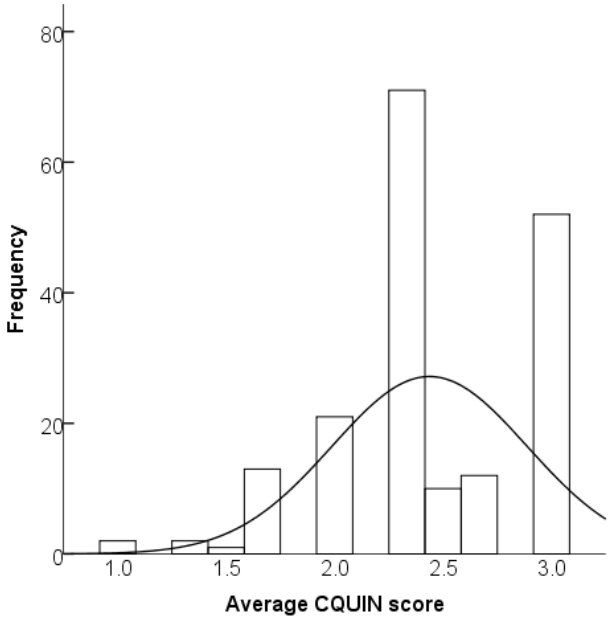


Figure B: The distribution of patient responses for the average CQUIN score.

Patients answered three CQUIN questions using 3-point Likert scale ranging from 3 = ‘yes definitely/always’ (positive response) to 1 = ‘no’ (negative response). 184 patients responded with a mean response of 2.44 (Std Dev=0.45).

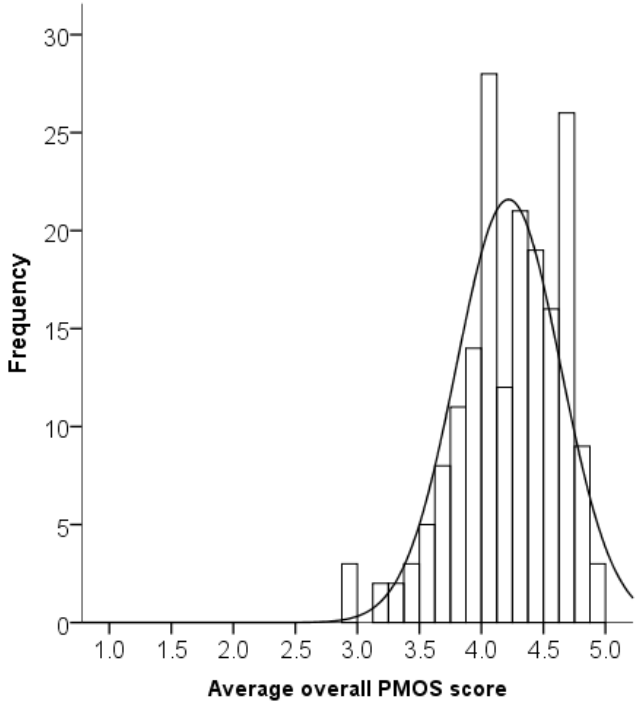


Figure C: The distribution of patient responses for the average overall PMOS score.

Patients answered 44 PMOS items using a 5-point Likert scale ranging from ranging from ‘strongly disagree’ to ‘strongly agree’. High overall PMOS scores represented positive responses. An overall PMOS score was calculated for 182 patients and the mean response was 4.22 (Std Dev=0.42).

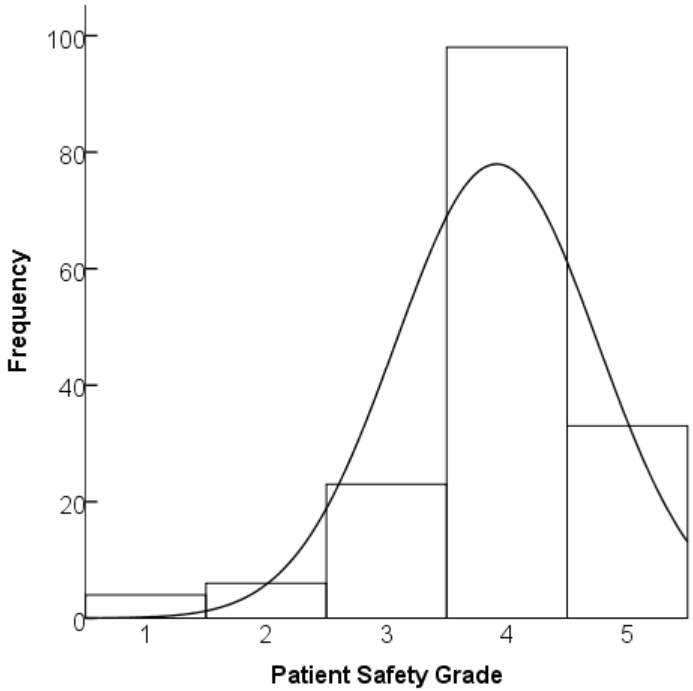


Figure D: The distribution of staff responses to the Patient Safety Grade

Staff graded their ward for overall patient safety using a 5-point Likert scale ranging from 5 = ‘excellent’ to 1 = ‘failing’. 164 staff responded with a mean response of 3.91 (Std Dev=0.84).

Appendix 8 Scatterplots to assess assumptions of linearity and homoscedasticity.

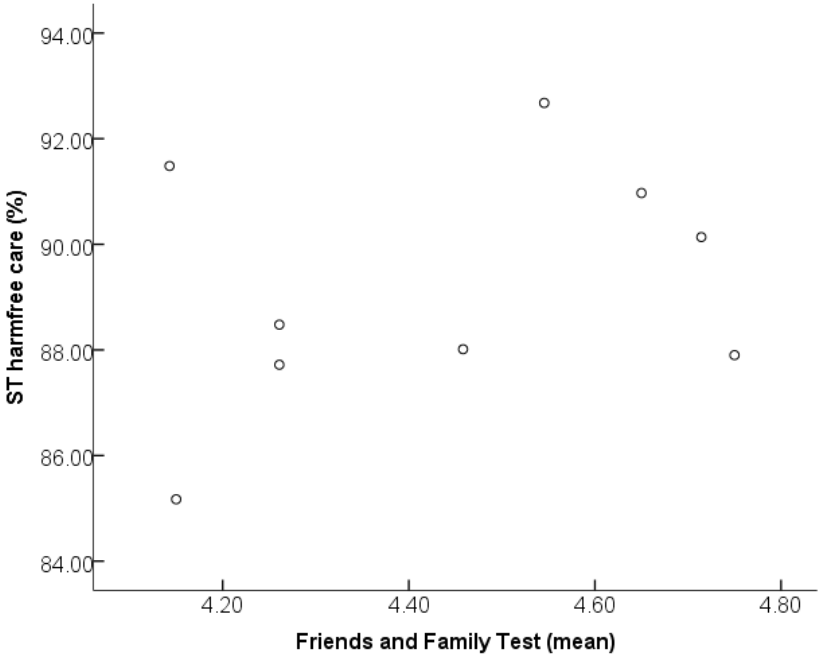


Figure E: The relationship between ward level Friends and Family Test scores and the NHS Safety Thermometer harm-free care measure.

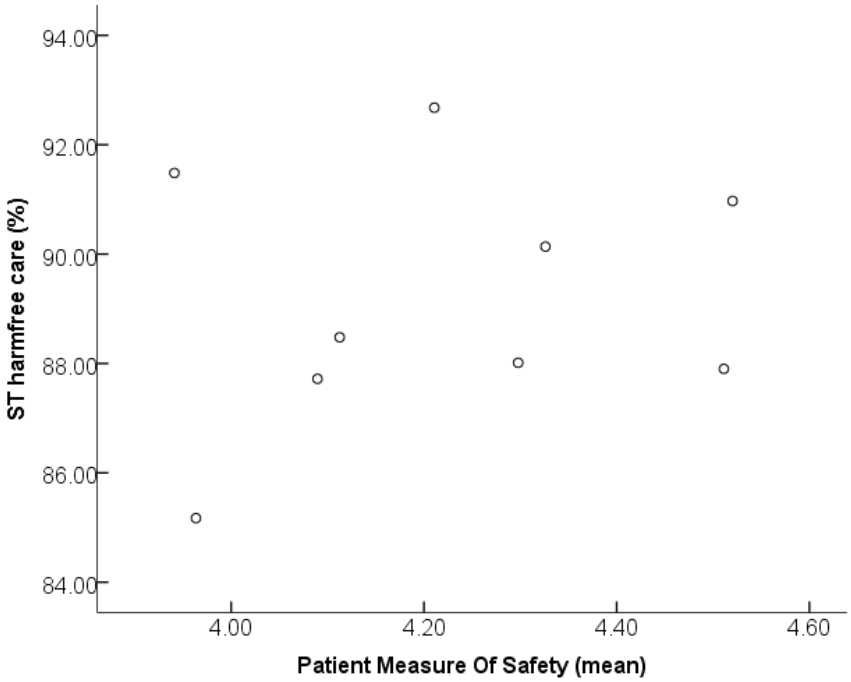


Figure F: The relationship between ward level PMOS scores and the NHS Safety Thermometer harm-free care measure.

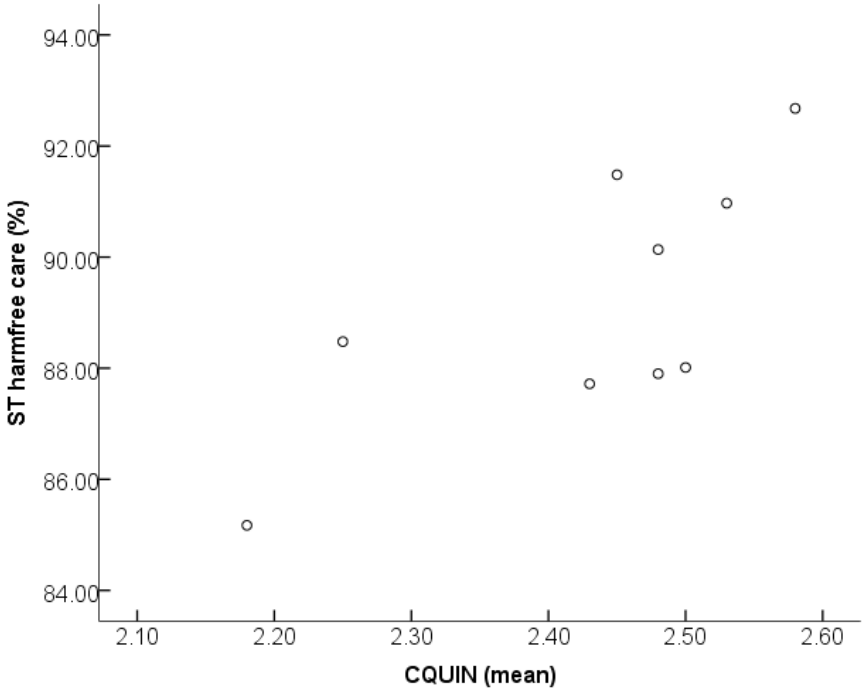


Figure G: The relationship between ward level CQUIN scores and the NHS Safety Thermometer harm-free care measure.

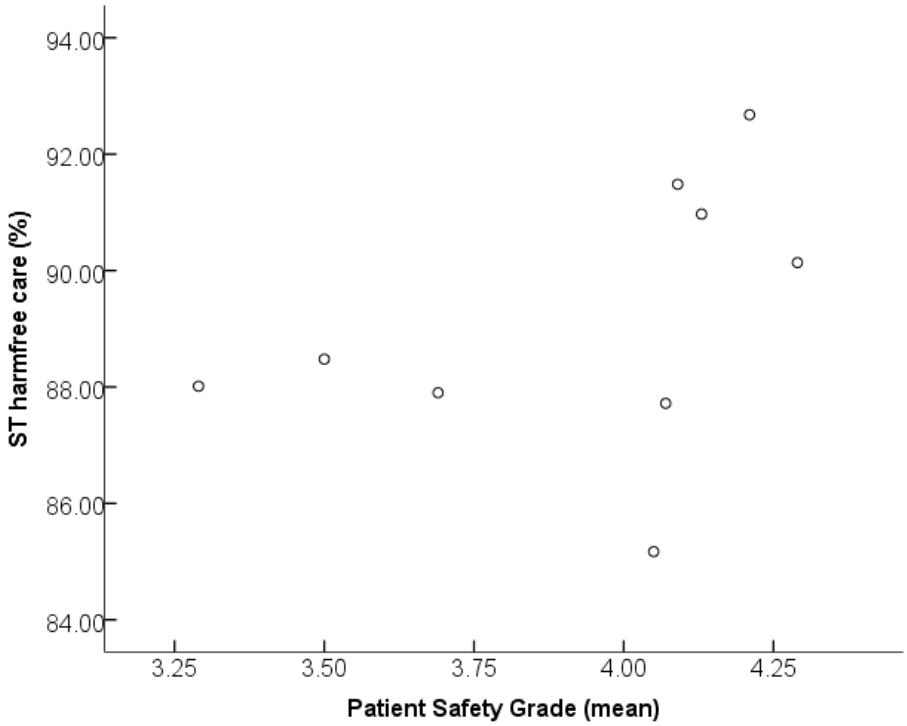


Figure F: The relationship between ward level Patient Safety Grade scores and the NHS Safety Thermometer harm-free care measure.

Appendix 9 An adaptation of the Manchester Patient Safety Framework

Please see disk insert.

Appendix 10 Field work diary guidance

Aim: The concrete strategies and behaviours that teams use to deliver safe patient care (e.g. a specific handover process) will be identified by staff through the focus groups. Field work diaries aim to build a qualitative picture of each ward. They will be used to identify some of the more abstract and contextual nuances of how team dynamics and ward culture contribute to the successful delivery of safe patient care.

Procedure: Field work diaries are to be completed following each visit or interaction with a ward (e.g. telephone correspondence). Whilst collecting surveys on each ward you will have an opportunity to observe how patient care is delivered and how the team interacts and communicates with each other, patients, visitors and the research team. At the end of each visit or interaction with the ward, please document your observations specifically in relation to the headings below. Field work diaries should also be completed after each focus group. Each record should be identified with the ward name and the date / time of the visit. An entry does not have to be written for every heading – please just document observations which appear most important.

Focus for observations:

Focus	Description
Communication	The quality and quantity of information exchanged by team members
Coordination	The management and timing of activities and tasks
Cooperation and backup	The assistance provided among members of the team, supporting others and correcting errors
Leadership	The provision of direction, assertiveness and support among team members
Monitoring and situational awareness	Team observation and awareness of ongoing processes
Staff - patient interactions	Staff responses to patients' feelings and needs (empathy). The degree of coherence in the interaction / conversation, verbal and non-verbal expression. Treatment of patients with dignity and respect.
Staffing levels and workload	Staffing levels on the ward, team composition, influences of hierarchy, stress levels and workload
Patient case mix	Patient case mix including frailty and dependence on staff
Engagement with the research	The ward team's awareness of the study and their interactions with the research team

Appendix 11 Focus group discussion guide

Materials:

Participant information sheets
Adapted MaPSaF
Blue-tack
Audio recorder
Food and drink
Consent forms
Flipchart paper and pens
Field work diary
Participant vouchers

Discussion guide	**Time / Materials**
Introduction **1.** Introduce myself and explain the purpose of the research Name, job and where I'm from. Name of the research study. Aim of focus group: to identify how your multi-disciplinary team successfully delivers safe patient care on the ward. What will happen: Individually you will each complete a safety culture assessment. As a group we will get consensus about which safety culture domains your ward performs the best on. We will then have a discussion to identify how, as a team, you manage to achieve this success. Rather than identifing vague, abstract things such as 'we communicate well at handovers' I'm going to really probe you to identify the specific concrete behaviours that you use. For example 'we follow a set process at handover where the nurse in charge does xxx and then the doctors contribute with yyy and the rest of the ward team do zzz'. If everyone is agreeable I will audio record the session. This is to help me transcribe and then analyse the data. No one other than myself and the research team will have access to this recording. Everything you say in this room is confidential and will be anonymised. The only circumstance under which I might have to break confidentiality is if I feel that there is an immediate threat to the safety of patients or others. But seeing as the focus of the conversation will be on how your team succeeds this should not be a problem! **2.** Are there any questions? **3.** Sign the consent forms **4.** Icebreaker – Please can everyone introduce themselves: their name and role	10 mins Information sheets Consent forms
MaPSaF **5.** Introduce MaPSaF We are now going to use an adapted version of the Manchester Patient Safety Framework. It is a well-established safety culture assessment developed for and used within the NHS. A safety culture is where staff have constant and active awareness of the potential for things to go wrong. It is open and fair and encourages staff to speak up about	15 minutes MaPSaF

mistakes. For the purpose of this study we have reduced the number of domains that are included at as we don't have very much time. Show the group the framework and point out the different domains, levels and descriptions. I would like each of you now to read through the framework thinking about patient safety on your ward. On the framework make a mark for each domain which level you think your ward sits within. You have just over 10 minutes to do this. **6.** Gain consensus for each MaPSaF domain. Going round the group ask people to say which level they have classed their ward as for each domain. Get consensus as to which domains the wards succeeds the most on. Overall it looks as though your ward preforms the best on the xxx domain. It doesn't matter if you disagree with this or rated it at a different level – the reasons you chose each level is what we want to try and discuss.	Flipchart paper and pens
Discussion questions Choose questions / expand on staff comments using the generic selection below. Choose questions which are focused on a specific domain of interest. **7. Introduction / general questions** What made you choose this level instead of the one above or below it? How does your team achieve this / this level? What examples can you give me? What does that look like in practice? Can you describe how the team would do xxx? What role does each of the team members play in xxx? What does xx do to help achieve that? What helps you achieve xxx? What hinders you? How does the team overcome that? A year ago would you have scored any of the domains differently? What has changed since then? What do you do differently now? What does this team do differently from other wards / places that you have worked? Tell me about staffing levels on the ward. Tell me about opportunities for training and education. **8. Commitment to overall continuous improvement** What auditing occurs on your ward? When do they occur? Who / what is involved? What are the outcomes? What role do protocols and policies have on your ward? When / how are they used? Who are they used by? How are they created? Tell me about some improvement work that has been conducted on your ward recently. How did it occur? Who was involved? What initiated the need for improvement?	

9. Priority given to safety What priority does safety have on your ward? Can you give me examples of this? How are risks to patient safety identified? Who is involved in this? When is patient safety promoted and discussed on the ward? **10. Recording, evaluating and learning from incidents and best practice** What happens when patient safety incidents occur? Can you tell me about your incident reporting system? How are incidents investigated and who is involved? What is the outcome of incident reporting? What types of incidents are reported? What happens to staff who are involved in incidents? What learning occurs after incidents have occurred? **11. Communication about safety issues** In relation to patient safety what communication systems are in place? What safety information is communicated between team members? Who is involved in communicating it? How is patient risk information communicated between team members? (verbal and written) How are patients involved in communicating safety information? **12. Team working** How is information shared between different members of the team? When does this work best? What facilitates team working on the ward? How does team work contribute to safe patient care on the ward? How are different professional groups involved in the delivery of care on the ward? (Pharmacy, Physio, SALT, OT, Dieticians). Day to day how do they interact with the core ward team? How do community services interact with the ward / hospital teams? Social Services, community / District Nursing, General Practice etc. **13. Ending Questions** From everything that we have discussed which single strategy or behaviour that your team uses to deliver safe patient care would you pin point as most important?	
Ending Thank the participants for their time and contribution. Ask if anyone has any questions. Distribute vouchers.	Vouchers

Appendix 12 Thematic framework of behavioural and cultural factors that facilitated high performance in patient safety

[a] Subthemes highlighted green are those that are classed as positively deviant success strategies – explicit differences exist between the positively deviant and comparison wards. Subthemes highlighted yellow are those where interesting (but not explicit) patterns were uncovered between the two performance groups.

Theme	Subtheme [a]	Subtheme description and illustrative quotes
Staff relationships	Knowing each other	Staff on positively deviant wards were passionate about the importance of team members knowing each other as this influenced the way in which they delivered safe patient care. Some staff highlighted this specifically in relation to their doctors and the effect that this has on reducing professional hierarchies. In contrast, staff from the two comparison wards that highlighted this subtheme were more superficial in their descriptions of 'knowing each other'. They referred to the benefits of simply knowing someone's name rather than having any deeper form of relationship. Positively deviant ward – when comparing themselves to other wards that don't perform so well - *Physiotherapist: […] And all of a sudden all of the things that probably make a very safe ward are lost because you don't know who the ward, like you know the name of the staff nurse but you don't know who she is and, and where she is in her career and what her passions and things are and, […]* One positively deviant ward considered this to be fundamental to their success and so have taken steps to encourage this. They now invite junior doctors to their monthly team meetings, and whenever someone new attends their safety briefing they incorporate 'formal introductions' to facilitate staff getting to know one another.
	Getting on well	Staff describe how they all 'get on well' and 'gel'. They refer to the deeper, social side of 'knowing each other'. Interestingly, doctors were more vocal about the importance of this subtheme, whereas nursing and allied health staff placed greater importance on staff 'knowing each other'. Comparison ward: *Consultant: I think we all get on well as people. Doctors are team members. And we go out and have a good laugh, and socialise and then it kind of carries through from you know outside of work.*
	Trust	Trust between team members enabled staff to more effectively gather information and work as a team to deliver patient care. Multidisciplinary staff listen to one another and trust each other's clinical judgements. The importance of trust was only discussed by two positively deviant wards. Positively deviant ward: *Doctor: And there's a lot of trust I think as well, so say, [OT] went to see one of the patients and said "actually [doctor] she's got loads of pain can you, you know, can you do something to try and help with that" and I'd be like "oh yeah of course" and then we'd do something*.

Joining the team	Staff are friendly and welcoming to new and rotating team members. Rotating staff easily join the team, they are supported, and settle in well. Pre-existing, good relationships may help new staff join a team. Comparison ward: *HCA: And, and I think we're very good with erm new staff that probably haven't, haven't got as much confidence. And I think we're very good at errm helping them and showing, and giving them support that they need. I know when people leave and what you know, the students say that they get a lot of, they, they learn a lot and they get a lot of support from here even at first when they get here and it's quite busy and errr hard for them.*
Reducing frustrations	Staff referred to the various ways in which they try to reduce frustrations for example through ways of working / processes (e.g. discharging when medically stable and avoiding extended hospital stays) or through specific tasks and actions (e.g. making sure things are reliably documented, meetings start on time etc). Frustrations tend to stem from work load or work based tasks, but they affect relationships with other team members / professional groups. Positively deviant ward: *Consultant: […] it used to be the case that you would just start the ward round and go from, like, one end to the other, you know, and that and then you would, like, find the sick patient at the end of the ward round and then you'd be really grumpy – like why has nobody told me about this sick patient – and that fostered a really negative relationship and that kind of was how things were for a long time. Not just on this ward but lots of places I've worked and actually talking about sick patients at the beginning of the day….* *HCA: You go straight to them don't you…* *Consultant: That's [the safety briefing] just completely eradicated that issue.*
Ward based AHPs	A number of wards reported that they have dedicated Allied Health Professionals (Physiotherapists, Occupational Therapists, or both) who do not have to work across a number of different wards. Staff perceived two benefits to this – one related to relationships and the other to the integration of the team. In relation to this theme, staff reported that having ward based AHPs helped to build relationships between team members, know who one another was, and it allowed the AHPs to feel more accepted within the team. In turn staff felt that this affected the approachability of team members. Positively deviant ward: *OT: I just feel like, from our point of view again, like from being based on the ward because I think on, like on the weekend I work on different wards and I'm not familiar with the staff, and you go on and you kind of, you bob on, you see them, you write in the notes and then you go and then you're gone but here, like you say you know, we write in the notes but then if we see that you're going to see them on the ward round oh when we went to see them, like that lady said, oh she got up, she's in a bit of pain can you just check, you know and you're kind of there and you're able to say it face to face. It's just so much better.*

Integrated teams	A multidisciplinary approach	Having a multidisciplinary approach and working collaboratively with staff from all professions was discussed extensively across all wards. However, staff on the positively deviant wards placed far more emphasis on its importance. They gave examples of how they involved and kept the multidisciplinary team informed of things, and discussed the benefits that this provided. Staff also accentuated the involvement of non-professional staff in the day to day ward based activities. Staff from comparison wards described their multidisciplinary approach in more generic and abstract terms. Positively deviant ward: *Ward Manager: […] But fundamentally, like I say, like I said at the beginning, it's all about an MDT approach and that's what it, because everybody's involved, everybody feels like they've got responsibility for every bit of the safety on the ward regardless of who it's about or who it is and that gets continued 24/7 because they know about it they think about it and then the information's passed on and disseminated throughout the MDT, so everybody has a responsibility to look after the patients and make sure it's a safe environment; which is fundamentally what we've been trying to do for the past 18 months.*
	Ward based AHPs	This is the second strand for this subtheme (also see the staff relationships theme). Staff on the positively deviant wards discussed the benefits associated with their ward based AHPs being more integrated into the team and they made links to many of the other subthemes within the 'integrated teams' theme. For example, being based on the ward enables AHPs to be more involved in discussions, work more closely with other staff and to feel like an important part of the team. Two positively deviant wards took direct action to increase the integration of AHPs on the ward. One ward created a dedicated space directly opposite the main nursing station for therapists to work from, and another ward a) turned the 'doctors' room into an MDT room facilitating a space for all staff to work alongside each other, and b) changed the pharmacists daily schedule so that they could attend daily safety briefings. The only comparison ward to mention this subtheme discussed the practical benefits associated with physically having an additional member of staff present on the ward. Positively deviant ward: *OT: I think that's one of the big things, I mean, when we moved over here very quickly we decided that we wanted to be in the ward rather than in an office round the back. Errm. So we actually took the table from here [day room] and moved it along [into the corridor] and it's great because it's right opposite the main nurses' station so you hear phone calls coming in and as [Staff Nurse] says we can say 'can you speak to Mrs So and So's family' and that really helps.*
	Feel part of the team	Staff reported to 'feel like a part of the team' with some participants giving relatively emotive and personal accounts about their place within the ward. This subtheme was most frequently mentioned by staff who were less often on the ward (AHPs or part time staff) and those who had recently joined. Positively deviant ward: *OT: I think that the same, like as an OT or as someone that not usually based on a ward like, I am now based on a ward, but I feel like I've been really well accepted, you know to the team and I think it's just, or everyone feeling like they're equal you know and playing an equal part in patients' care and I think that's a huge thing. Coz if you feel valued you step up to the mark you know.*

Working together	All positively deviant wards described an extremely integrated way of working which involved many different professional groups across all stages of the patients' care. The only comparison ward to discuss this subtheme simply referred to the interactions of senior nursing and medical staff rather than discussing the full multidisciplinary team across all grades and levels of experience. Positively deviant ward: *Nurse: Yes, in the past when I've worked, I've worked in an MDT errm within a [xx] unit, it's very much the nursing staff and then the physios and then the OT's and they only meet at team meetings and then they go back to their corners. Whereas here, you know, on Monday [OT] is taking somebody to the toilet so, it's you know, it's like "don't worry about it [Nurse] I'll take her to the toilet, I'm going to assess her anyway doing this" and then she comes back and tells me what's happened so you know I haven't got to do that myself. Errm. Whereas before, it would be, they would have done their assessment just for assessment purposes and it there wouldn't have been that I'll come back and let the nursing staff know what's happening because I'm an OT and I'm just doing my OT work and I think I could go up to you and tell you somebody's not dealt with the clothing very well, you know, its. And I think we just do that, we've done it for so long that it's just a conversation that we have and it's very organic.*
Respect others' roles	Staff respect the different roles that everyone has within the team. Staff tended to report this as a statement - they did not explain what respect looked of felt like to them. Comparison ward: *Ward Manager: […] we've been an open and honest team, again you know, you, you respect your colleagues, I feel that people are very well respected on here. Errm and it's a two way thing really isn't it.*
Understanding everyone's role	Staff have a good understanding of everyone's roles within the team. This enables them to see the bigger picture and means that they know who to approach for different things when needed. Positively deviant ward: *Physio: Yeah. I think all the staff here seem to be really aware of who to refer to to get the right thing done instead of just leaving it and hoping that someone will pick it up.*
It's not my job	Ward staff don't have an attitude of 'it's not my job' (or 'not my role, not my task' etc). Positively deviant ward: *Nurse: Everyone puts the patient as a priority. It's not, 'oh that's not my job, it's someone else's'. It is - something needs doing - who is around to do it. Which is why we aim to work as a team, coz it's not someone answering the buzzer and going 'oh no that's nurses job' or 'oh no that's healthcare'. 'I can't give you that wash, I'm the nurse, I'm in charge of your tablets. Healthcare will come and do that'. The nurses actually participate in doing the care and then go onto the medications and stuff.*
Everyone has a role to play	Staff described a culture whereby everyone's role, from the consultants through to the housekeepers, was considered equally important to keeping patients safe and to the effective running of the ward. Staff often particularly described this in relation to the unqualified staff (e.g. healthcare assistants and domestics). Positively deviant ward: *Ward Manager: […] But fundamentally, like I say, like I said at the beginning, it's all about an MDT approach and that's what it, because everybody's involved, everybody feels like they've got responsibility for every bit of the safety on the ward regardless of who it's about or who it is*

Approachability	Non-hierarchical	Staff perceived wards to be non-hierarchical which made them comfortable approaching other team members regardless of their professional role. This was considered to be important in maintaining safety. Positively deviant ward: *HCA: And nobody's like scared of talking to like doctors or owt and we all can get on can't we.* *Consultant: Yeah.* *Ward Manager: No. There's no real hierarchy is there*.
	Feeling able to ask questions or for help	Staff on positively deviant wards reported that they felt able to ask questions or for help from other team members and that this ensured that information was passed on without delay. This was apparent across different staff grades and professional groups. Staff emphasised the emotional aspects of this with regards to feeling comfortable about approaching other staff members and not feeling concerned about asking questions of anybody. One comparison ward mentioned this subtheme but the staff described more practical and task orientated situations in which they needed to ask others questions or for help. Positively deviant ward*: Nurse: Coz we are so approachable, any one that comes in can come to you and ask you for their help. And you make the effort to actually help. Coz you know that at the end that's what's best practice.* *Physio: Yeah. I think that massive. Because I rotated a couple of weeks ago. That's a massive thing I've thought on here. Everyone's really approachable. Because I think on some wards if, if you're seeing a patient and someone else asks you for something you sometimes don't want to go and ask a nurse or anyone to help you with it because you don't it to look like you are off loading to someone else. But everyone here, on here just wants to help so they don't mind, they don't accuse you of wanting to get rid of jobs. They all just want to help you out.*
	Feeling able to raise concerns	Staff feel able to raise concerns with other members of the team about a patient's care. Comparison ward: *Junior Sister: I mean any, any, member of staff would come and say, you know, they are concerned about a patient, Mr so and so is going home today. Can we put them in there or them there so that they are a bit more visible*
	Feeling able to challenge each other	Staff feel able to challenge one another about specific aspects of practice, the ward routine, or a patients care that they think is incorrect / not going to work. Comparison ward *OT: It does go back to being approachable though doesn't it. If something wasn't documented I feel like I'd be able to say in a nice way and no one would take offence. 'Oh this hasn't been documented'. And then, then it would, you know, act, action would happen,*

Supporting one another	Freeing up frontline staff	Staff reported ways in which frontline staff were 'freed up' to spend more time delivering patient care. Admin and leadership staff commonly completed specific tasks such as updating documentation / handover sheets, progressing involvement in certain initiatives and trust processes, filtering important information that staff need to know. Comparison ward: *Ward manager: [Deputy WM] and I have taken it on when the staff are really busy. Before we go home on a night to try and update that so it is errm. … You know it com, it combines with the ward round and everything that we've done that day.*
	Supporting those who are busy	Staff described how they would support each other when they recognised that another team member was particularly busy or struggling with something. Staff would help them with the particular task, or they would complete a different job for them to help ease their work load. On some wards, staff mentioned that this was done regardless of professional role. Positively deviant ward: *Doctor: I've noticed these guys, if one of their colleagues is busy with an ill patient or something and they'll, they'll move bays and help each other out to make sure that those are never missed.*
	Feeling backed up	Staff reported that they feel as though they are supported, listed to, and backed up by other staff members and/or the leaders of the ward. Positively deviant ward: *Nurse: Yes, like, because I'm only part time so I only do sort of 2 days a week, it's not really appropriate for me to just know, know loads about the discharge process because I don't know enough about the patients but like I can go to [CSOT], I can go to [OT], errm and they're so knowledgeable that I don't feel, I don't feel out on a limb because I'm part time, you know, I feel that there's, I'm always backed up to the hilt so that we can do the best for the patient*
	Going beyond professional roles	Staff discussed the ways in which team members will 'go beyond their professional roles' to help deliver safe patient care. They do more than what is expected of them, or they complete tasks which are not traditionally associated with their professional role. These actions made other staff member's jobs easier. This occurred within all staff groups including AHPs, unqualified staff and doctors. For example physiotherapists doctors and sometimes ward clerks telephone relatives or previous care providers to gather more information about an admission. Positively deviant ward: *Nurse: I think it's, it's good as well because yesterday physio went in with like the bed and like errm you went to put her right and said 'oh just be careful because her blood pressure might go low'. So I passed you the obs machine and you checked it. That saves me coming in to check it. And then when you put her back into bed you were like 'oh just letting you know she opened her bowels, it was this type. And I cleared it up'. And I went 'oh thank you'. [laughs].*
	Doing what you say you'll do	Staff referred to the importance of other staff members doing the things that they have said that they will do. This was a small subtheme mentioned by relatively few, but those who did mention it were passionate about its importance. Comparison ward: *OT: Or if I go 'oh there is not a night time assessment, we need a night time assessment', I'll then look the next day and it's been done, do you know what I mean. On other wards it's just like 'oh well, they don't need one'. [laughs]. 'Well they do!'*

Ward leadership	Backing initiatives	Ward leaders got involved and/or involved their wards in various trust, regional, or national level initiatives to improve patient safety. They supported and backed the work that was happening on the ward and they drove the improvement forward. Comparison ward: *Ward Manager: I volunteered us [laughs].* *Consultant: She says yes to everything.* *Ward Manager: I do, I put my hand up for everything*.
	Leadership	During the focus groups staff talked about the importance of having good and strong leadership on the ward. This subtheme was not emphasised as much as one would have expected, and staff struggled to define what they meant by good 'leadership'. Leadership was also classed as a high-order observation. Positively deviant ward: *Doctor: I think a lot of it comes from kind of top down leadership. You know I think both the nursing and medical side is certainly you know. I think Dr [xx] is a very approachable physician, he is very gentle. He is very concerned with all aspect of the patients' care you know from, he wants to know everything and he is even down to. He'll make sure we're writing in the notes in a legible fashion. You know he really is interested in that whole picture. And I think that sets the tone in terms of, that is what he expects from his team and I think it's exactly the same thing on the nursing side. You know you see these sisters are always out. They do clinical shifts. They are setting the standard, they are showing the example. And I think it comes from that.*
	Setting expectations	Positively deviant wards explicitly identified the facilitating effect of leaders setting expectations about how care should be delivered. In contrast, two comparison wards only referred to this indirectly. Clear expectations ensured that staff knew exactly what to do, how to do it, and they were considered to raise the team's performance to a higher level. Positively deviant ward: *Physio: […] And the senior sister on the ward has very high expectations and there are no excuses are there. =* *All: = [laughs and agreement]* *Physio: And when, when that is set, when those expectations are there and set and everyone is doing their bit you almost have to rise to them so almost the more that is expected of you the better you, you are. […]*
Ward atmosphere	Feel of the ward	Staff referred to there being a special 'feel' on the ward compared to others. Staff however didn't define what this feel was – they referred to it almost like a sense. This subtheme was not particularly dominant. Positively deviant ward: *Ward Manager: Because you know for a fact if you go on other wards there's a different atmosphere to when you come on here and that's just because, I think, of maybe the way that they look at things, the hierarchy for example, I don't know.*

	Calm and relaxed	Staff reported that their wards (and the team) have a relaxed and calming atmosphere. They rarely have the hectic sense of panic that other wards seem to have. Comparison ward: *OT: I'm not sure how you do it, coz like the patients are really poorly, but you come onto the ward and it, and even though everyone's really hectic and really busy it still feels quite calm and chilled and no one, like you don't get that sense of panic on like an acute ward. Whereas you go onto other wards and it just seems so hectic*
	It's very open	Teams are considered to be very open. Staff are honest and a blame culture does not exist within the team. Similar to the other subthemes within this theme, staff struggled to define what they meant by open. Comparison ward: *Ward Manager: I think it's about being honest and open is team working. You've got to be honest with your staff. I think you've got to keep them in the loop with everything that's going on, on, on the ward.*
	It's a pleasure to come to work	Staff on positively deviant wards were the only ones to report feeling like it was a pleasure to come to work. This was not discussed by any of the staff on the comparator wards. Positively deviant ward: *Nurse: I wouldn't have stayed if it hadn't had been fabulous, I've been known to leave jobs because of patient safety. My last, my last post I worked there for three months but they wouldn't listen to me so I handed my notice in because I just couldn't, I couldn't put my name to, I didn't want to put my name to the unit. I'd built a reputation of trying to be the best nurse I could be and they just weren't listening so I just thought I've got to go and I've been here six years; this is the longest job I've ever had as a nurse.*
Improving performance	Celebrating success	Ward teams do not only focus on the negative things that happen. They also celebrate the positives. Examples include sharing when things have gone well with patients' care, sharing the achievements that the ward have had (e.g. sharing data on falls etc.), and sharing positive feedback that the ward receives from patients / families. Some wards also explicitly celebrated performance during the focus group by recognising the teams / a professional groups hard work or achievements. Comparison ward: *Deputy Ward Manager: And equally sharing errm good feedback […] Errm so yeah I suppose we trying to get that balance of all, of bringing in the good things, good experience as well coz I think those of us that have been here a longer time know that it was always* *All: [laugh]* *JS: Yeah [laughs] it was always focusing on the negative and feeding back on that and learning which you do have to do. But I think equally when we've done something really well and had praise we need to be sharing that with each other. And you know a nice reminder that we're, you know it is appreciated.*

Internal self-awareness of performance	During the focus groups staff show awareness about how their wards were currently performing. This related to knowing how they performed on certain measures and metrics, having an awareness of where the ward excelled and what their areas for opportunity were, and having an awareness of where performance had recently changed. Positively deviant ward: *HCA: Before [Ward Manager] came along we had another Sister and she didn't let us know that we were failing and we didn't know what we were failing on or anything but now [Ward Manager] does let us know [laughs]*
External self-awareness of performance	External self awareness was slightly different to the subtheme above. This refers to the extent to which staff demonstrated wider awareness about how their wards performance levels compared to other wards. Staff compared their ward to others in a various different ways with some wards (more frequently the positively deviant wards) demonstrating a greater awareness of the broader picture than others. Comparison ward: *Junior Ward Manager: And certainly at ward level we don't compare ourselves to [ward name] for instance on how they're doing. I mean you'll [Ward Manager] get a lot of information through, don't you that, errm, compares things but I think that's … might be useful for staff on the ward.*
Measuring and monitoring performance	Staff discussed the importance of and various ways in which their wards measure and monitor performance. Various different methods are used - locally and nationally derived audits, involving other teams within the trust to support the measurement of improvement, and gaining support from regional improvement bodies to measure performance. Positively deviant wards appeared to be more enthusiastic about the need and importance of measuring and monitoring. Positively deviant ward: *Ward Manager: […] every month you collate your falls, your medication incidents, your complaints, errm what you call it staffing levels, staff sickness, everything, so on the dashboard so everything is displayed for everybody to see. So you can see where you're doing really well and where you're not doing so well or where you're doing really poor and you know, from this team's point of view, I mean they've gone from being in the red to now being one of the 19 wards out of 92 in the trust that has been highly successful, so there's a significant change. And I think the health checks helped with that because then you can, you can say to them look actually we were at 86% we need to improve and get to this so, that's, that's the bit about sharing information and about mistakes and, you know, things like that or errors and then working on it to improve it.*
Engaging with external resources and improvement methods	Staff discussed the ways in which the wards have previously or are currently engaging with external groups to conduct improvement activities. Staff describe the use of known improvement methods to make changes on the ward (e.g. Plan Do Study Act cycles and HAELO). Staff also described different initiatives that they were trialled on their wards. Positively deviant ward: *Consultant: But then the bigger team, so it's definitely been since July last year and safety briefing so it was really the Improvement Academy work that started it all off rather than HAELO, HAELO came after but we started working with the Improvement Academy and they did some team culture surveys and things like that and that kind of got us moving forward really with working together more as a team.*

Staff training	Staff described how training had been used to improve the delivery of safe patient care. Some wards referred to providing mandatory training but others provided ward specific training e.g. for dementia care. Comparison ward: *Consultant: I have seen a change in the dementia culture, the way I think, there has been a lot of training around dementia and a lot of awareness. And I personally feel that the nurses understand it. Every, every nurse, every healthcare worker working on the ward has changed since that training. The way they deal with the patients on a day to day basis has changed.*
Completing incident forms	Three subthemes emerged regarding the benefits of incident reporting in helping to deliver safe patient care: completing incident reports, investigating the incidents and learning from them. With regards to completing the incident reports there were two aspects: some staff explained that they report everything that happens on the ward (including near misses on certain wards), and other wards identified that they have an open culture and were encouraged to report incidents. Positively deviant ward: *Ward Manager: Well as I found out today we report all falls, even if it's down to behaviour or something like that, whereas errm I think some of the wards aren't, are possibly not doing that. So we report all incidents of falls.* *Consultant: I think we're good at reporting erm medicines and pharmacy things because you've encouraged that and pharmacy have encouraged that.*
Investigating incidents	Senior staff on the wards tend to investigate incidents that have occurred, however, some wards involved other ward staff in helping to collate the information required. Comparison ward: *Ward Manager: We've had errm two [incidents] which we've learnt from, investigated and moved on from and the girls have been brilliant at collecting the information for them, the RCAs for that.*
Learning from incidents	Regardless of performance group, learning from incidents was generally considered an extremely difficult thing to do. Although two comparison wards highlighted the frustrations that staff felt when incident forms were completed but nothing was done or was changed as a result, two of the positively deviant wards also discussed the ways in which their ward had try to overcome this and share learning among staff members. Positively deviant ward: *Ward Manager: I mean the Trust talk about when there's learning from incidents - things that goes on the Trust website, but very few people access it; just because they don't have time or access to it. From our point of view we feedback – errm depends on what it is really. If it's secondary to fall it's an RCA and we feedback back RCA - the outcomes of the RCA to staff. Things like we can print them out, we can feedback at board round, safety briefings, team meetings and things like that. Errm if its medication incidents then its individual then and we can speak to the individual. If it's something that's consistent - like when we first started the health check we used to have a problem with VTE assessments on drug charts and you just keep, you know, enforcing the need for to be done.*

Communication enablers	Accessible information	Information which staff regularly need to deliver safe patient care is readily accessible when they need it. Staff don't have to go elsewhere or search patients' full medical notes for information. There are two strands to this - a) assessment documents, charts and paperwork which require regular checking and/or completing are easily accessible to staff; b) patient information about their condition, admission, or wider circumstances is readily accessible from formal sources of documentation e.g. Physios write in the medical notes or staff have printed handover sheets etc. Positively deviant ward: *Physio: Physios have just started writing in the medical notes which for this trust is something new. So originally we used to have our own physio folder with physio documentation in which I've always had to say to other people 'oh you know, if you want to read my notes go to the folder' but actually now we write in the medical notes*
	Visual prompts	Staff find that various visual prompts on the ward help: a) staff or patients / relatives to complete actions e.g. signs to check things before relatives leave or coloured crockery / signs to signal dementia and prompt actions such as moving call buzzers closer and offering a drink; and/or b) communicate specific information e.g. signs to communicate safety risks, bedside boards containing information about a patients status or 'turning clocks' to prevent pressure ulcers. Comparison ward: *Nurse: Any visual aid you've got is always helpful for patient safety.*
	Complete and up to date documentation	Staff reported that having complete and up to date documentation and information about patients was extremely helpful in delivering safe patient care. Some wards reported that they were getting better at doing this whereas others reported this was a challenge for them. Positively deviant ward: *Nurse: Your board is filled out as well which is something I've never seen before. [laughs]* *Ward Manager: Yeah [laughs]* *Researcher: Your board for the board round?* *Ward Manager: Yeah.* *Researcher: It's actually filled? Yeah [laughs]. Yeah where I used to work it never used to be properly filled!* *Ward Manager: I don't think it is in a lot of places.*
	Verbally communicating documented information	On some wards, when staff carry out aspects of patient care / tasks and document it in their notes they will also find another staff member in order to verbally handover the information as well. Positively deviant ward: *OT: […] we write in the notes but then if we see that you're going to see them on the ward round 'oh when we went to see them, like that lady said, oh she got up, she's in a bit of pain can you just check', you know and you're kind of there and you're able to say it face to face. It's just so much better.*

	Double checking	Staff on two wards reported that they double check information either with other team members or by going back to a patient's documentation. Comparison ward: *Ward Manager: And err when [Nurse] said about the trolley I think we said well if we're going to do it you know, let's get two people checking it. You know you read all these articles about errm about insulin errors and we just didn't want it on here so you know. We like it, it's safe practice. Errm and like you say, we are actually now giving people their insulin when they should be having it, prior to having breakfast.*
	In the moment communication	Staff on all wards considered this subtheme to be important. Staff relying on the informal conversations that they have with one another to share the information necessary to deliver safe patient care. These conversations occur in between structured meetings and formal documentation (e.g. handovers and board rounds / safety meetings), and they enable staff to get the most up to date information about a patient. Positively deviant ward: *OT: I think that's one of the big things, I mean, when we moved over here very quickly we decided that we wanted to be on the ward rather than in an office round the back. Errm. So we actually took the table from here [day room] and moved it along [into corridor] and it's great because it's right opposite the main nurses' station so you hear phone calls coming in and as [SN] say we can say 'can you speak to Mrs So and So's family' and that really helps.*
	Ward routine	The importance of having a structured daily routine where meetings routinely take place and start on time was discussed on three wards. Meetings happen as planned rather than being pushed back / forward depending on daily circumstances or pressures. Staff felt that this structure enables effective communication between one another. Comparison ward: *OT: I think the structure to this ward is really good though, coz we know what time safety briefing is, we know what time board round is and we know what time MDT is every week. And I think a lot of wards don't have a strict time and like they just do it ad hoc, whenever, which is =* *Physio: = Or if they do it ..* *OT: = Or yeah, they don't do it at all. Well it's just, it such a massive breakdown in communication. And that to me is the, there is no respect*
Patient centred care	Knowing your patients	None of the subthemes within this patient centred care theme were as dominant as had been expected. Staff on two wards refer to the fact that they know their patients extremely well. This is not only in terms of the details surrounding their care and admission, but also the patients' likes and dislikes etc. Positively deviant ward: *Doctor: You know, you guys, the nursing and everyone you know, know your patients on here better than a lot of the ward do. So if you ask other ward staff, you know, do you know where this patient has come from, what are their arrangements, they can rarely tell you. Whereas on here, the majority of the time, you guys would say own home, care package, from this home, from that home.*

Putting patients first	Staff on a few of the wards describe how the patient is put at the centre of everything and that the patient's best interests are engrained in everything the staff do. Positively deviant ward: *Nurse:* Just goes back to that ethos about the patient is at the centre of it all and you try to maintain the sort of care within the ward. …
Keeping patients and relatives informed	Staff on the comparison wards described taking a proactive approach to keeping patients and relatives informed so that they are kept up to date and concerns can be addressed as they arise. They used various strategies to proactively address and deescalate relatives concerns, either informally while relatives are on the wards or formally by arranging MDT meetings with them. In contrast, staff on positively deviant wards described more passive strategies such as displaying posters and information by the bedside. Comparison ward: *Nurse: We also give feedback to the relatives as well. What, on the ward round what happened, on doctors round, they you know. So that they are aware, updating them with information.* *All: [agreement]* *Consultant: And we do that proactively. Rather than waiting for them to say 'what's happening with [inaudible] now'. So when they are doing the nursing as well 'by the way the doctors been round, this is the plan'*
Involving patients and relatives in maintaining safety	Staff described various ways in which they involve patients and their relatives in maintaining and promoting safety on the ward. These included having signs and posters for relatives, informing people about being a falls risks, and encouraging relatives to participate in patient care e.g. feeding and supporting to the toilet. Comparison ward: *Ward Manager: We do encourage family to participate in all the cares. So if they want to walk them to the toilet, as long as they are walking them in the right way and we are ensuring that they are using the correct equipment. Even down to feeding and stuff like that. We don't like have protected meal times because we encourage our visitors to, to be with their patients. And that works particularly well when, when they are confused and, and, wander. So we tend to find that's obviously settles them down a bit. So that then reduces the risk of falls as well.*
Gathering information from patients & relatives	Ward staff gather different and previously unknown information from patients, relatives, and previous care providers in order to inform and improve the care that they deliver. Wards can use both passive and active mechanisms to gather information. Positively deviant ward: *Nurse: I think that relatives are encouraged to, to, tell us about their, their relatives and how they are at home, what, what they can do for themselves, what they can't do. And whether, you know, they've been safe doing things at home. I think it's err we do promote that, definitely.* *Ward Manager: And that's all disciplines as well isn't it.* *Nurse: Yeah* *Ward Manager: Coz even doctors will ring up relatives' wont they.*

Staffing	Using existing staff differently	Staffing, or a lack of staffing was not a particularly prominent theme throughout the focus groups. Staff describe the ways in which they use their existing ward staff differently either to overcome long term staffing / workload problems or to overcome short term pressure points. Strategies include: grouping patients together in a communal area for activities / to watch TV; training a Healthcare Assistant up to be a Band 3; adopting a back off approach to dementia care which means patients don't require 1-1s; rotating band 5 nurses each month into a dedicated 'discharge nurse' role; restructuring the early morning routines for nurses and healthcare assistants to ensure that a) patients are safe and attended to, and b) staff feel supported completing their tasks and are not distracted. Comparison ward: *Ward Manager: So we will look where the workload is and we assess it accordingly, errm re-group and re-jig what we've got. And we do that on a regular basis.*
	Acquiring additional staff	This positively deviant success strategy related to the attitudes held toward acquiring additional staff to alleviate temporary shortages (e.g. agency staff). Although the researchers noted that agency staff were used on many of the participating wards, staff on the positively deviant wards did not appear to consider this to be a facilitating factor in the delivery of exceptionally safe patient care. Positively deviant ward: *Nurse: It were one of the first, one of the first things that I said to you when I come down here weren't it. Nobody's being one to oned,* *Ward Manager: Yeah coz other wards repeatedly ask for one to ones for their patients. 'We need a one to one'. I don't think we, we wouldn't even ask for one, would we.* *Deputy Ward Manager: [laughs] No.* *All: [agreement]*
	Stable and static teams	Positively deviant teams were the only ones to discuss the importance of stable and static staffing. Staff considered their well established, longstanding teams with low turnover and sickness rates to be a facilitating factor in the delivery of safe patient care. Positively deviant ward: *Doctor: I think a part of that urrm, long term training that we seem to be talking about is that there seems to be very low turnover of staff on here. A very minimal dependency on agency staff. I think for all the medical wards I've visited this is the one that has the largest number of permanent staff that are here long term and I think, you know, that reflects that they want to be here, it's a good team to work in.*
	Motivated and passionate staff	Staff described how motivation and passion enables safe patient care in two ways: a) specific individuals within the team are highly motivated or passionate about a specific aspect of care and so push this forward; b) as a team they are all highly motivated to deliver good quality, safe patient care. Comparison ward: *Ward Manager: A true vision for staff and for patients and I think that passion, of us as band 7s and managers, seeing that visible, visibility. We believe that and we've restored that faith and them values. So I think us as band 7 and leaders have taken that and been allowed to be passionate, being supported with that passion. You know and I think then that is fed through the teams, as we're hearing today,*

	Involving other services and teams	Staff described ways in which they interact and work with other NHS care providers or other teams within the trust to ensure that patient care is joined up, coordinated, and safe. Comparison ward: *Consultant: And all the people, mental health nurses are present. They are, I think they contribute heavily to a lot of what we do given the confusion, err confused aspects and er, and err. The integrated discharge team also, and the nurses, both liaise with the safeguarding teams as well.*
Delivering care	Prioritising and allocating tasks	Staff use various mechanisms (mainly safety briefings or board rounds) to prioritise different tasks associated with patient care. On some wards tasks are allocated out to specific individuals Comparison ward: *Physio: The board round it's good for sort of certain, certainly for me for sort of setting my priorities. Which may end up changing but generally you know you at least you set out with your priorities.*
	Providing timely care	Staff discussed the importance of, and ways in which, they deliver timely patient care and they made observations about how processes are conducted quicker on their wards than on others. Various mechanisms are used to improve the delivery of timely patient care e.g. altering the way paperwork is processed for discharge; allowing healthcare assistants to update certain documents e.g. handover sheets; having ward based AHPs.; and talking about sick patients at the beginning of the day e.g. through safety briefing meetings. On some wards providing speedy and timely care seemed to be an established way of working. Positively deviant ward: *Doctor: And also compared to other wards I've worked at in different hospitals it's much, it's all just much quicker and much more available so there's a lot of pressure on the medical team to, you know, organise a lot of the things that the physio's and the therapists do for us now, you know, calling family, discussing with them how it was, all that kind of thing, which is an extra job that we have to do on top of all our other things and actually sharing out, that has helped a lot as well, I think you're getting people - jobs are done quicker and getting people out of hospital quicker as well.*
	Being proactive	Staff proactively implement things or addressing things which aren't working on the ward. They are proactive in delivering care to the patients. Comparison ward: *Nurse: We also give feedback to the relatives as well. What, on the ward round what happened, on doctors round, they you know. So that they are aware, updating them with information.* *All: [agreement]* *Consultant: And we do that proactively. Rather than waiting for them to say 'what's happening with [inaudible] now'. So when they are doing the nursing as well 'by the way the doctors been round, this is the plan'*

	Focus on discharge	Positively deviant wards were particularly focused getting patients home/out of hospital as soon as possible. These staff were the only participants to discuss the ways in which patient discharge was engrained within the team's day to day activities and roles. Staff identified the benefits that this focus on discharge had to patient safety in terms of improving patient flow and reducing the risk of safety incidents while waiting for discharge. Staff described a number of different strategies that supported the timely discharge of patients including the use of the Discharge to Assess model, a discharge nurse, a social worker attending board rounds, and holding lunchtime MDT meetings. Positively deviant ward: [regarding the ward's use of the Discharge to Assess Model] *OT: So it's speeded up the discharge, it's improved patient flow so hopefully we can clear beds quicker – when it works well – and that goes right back up to trying to reduce the delay on like errm A&E frailty unit.*
	Embedding behaviours	During the focus groups staff referred to how things have become engrained in their ways of working. Some wards referred to specific tasks and jobs that they carry out, and others referred to broader attitudes and cultures on the ward. Positively deviant ward: *Therapy Assistant: I've really enjoyed listening to these guys because it just comes across, it's embedded in them. They always =* *Nurse: = Even from a, from a domestic point of view, we've got domestics coming up and they're very aware that these are very vulnerable people, just because of their multi-sensory disabilities through their age, and, I agree with [ThA] it's, you know, everybody's, we're - it's like we've got another sense that's just safety, looking for patient safety.*
	Getting the basics right	Staff from a few of the wards acknowledged that one of the reasons they succeed is because they have got the basics right and the ward is already running at a good level. Positively deviant ward: *Doctor: Coz I, we get requests to sedate patients on other ward who are as agitated or less agitated than a lot of our patient are on here. And you just think you know, if this patient was on [this ward], this would just be sorted out with good nursing care.*
Organisational influences	Directorate support	Staff on comparison wards were the only ones to consider the support given by directorate colleagues to be a facilitating factor in the delivery of safe patient care. Staff on positively deviant wards did not mention this factor at all. Comparison ward: Ward Manager: = It's better yeah [smaller directorate]. You work closely with your matron, you work closely with your nurse director. The [previous directorate] nurse director, I knew her coz she interviewed me but she never helped me investigate any SUIs or 'owt like that because obviously she'd probably got too many to get involved in. But the nurse director for [current directorate] comes and helps me investigate them, and comes and looks at them, and walks round wards and things. Deputy Ward Manager: She's very good 'int she.

	Engagement with trust initiatives	This subtheme relates to the attitudes that multidisciplinary ward teams hold towards trust level quality and safety initiatives that are imposed onto wards. Staff on certain wards referred to making a bad situation better by adapting an initiative which they initially considered frustrating, time consuming, or ineffective. Positively deviant ward: *Nurse: Yes, you know, and I know a lot of people were very resistant to the intentional rounding document – and I would think that people still are – but it's cut out, it's cut out replicating information.* *Researcher: So what was the resistance?* *Nurse: Just the fact that we've got every 2 hours we've got to write something. [….]* *Nurse: Yeah, but I think it's a document that does actually work, I do like it.*
	Pushing back against the trust	Staff on some of the wards discussed the ways in which their teams have challenged or pushed back against things that the trust have tried to impose on them. This included opposing ward moves, demonstrating the need for processes to change, demonstrating how trials have improved care, and changing job roles to integrate team members into the MDT. Comparison ward: *Ward Manager: And I think like the staffing where they've introduced extra staffing on a night, it's because we've continually filled in Datixs to say how, how staffing levels have been so poor on nights and this is contributing to incidents*
High-order observations	Shared mental models	There appeared to be greater evidence of staff within the positively deviant wards sharing mental models - sharing similar thought processes about the ways in which safety was maintained without conflicting perceptions about how things were conducted.
	Perception of safety	Across all wards safety was predominantly discussed in terms of preventing patient falls, however, staff on the positively deviant wards tended to have a slightly broader perception of what safety might encompass.
	Positive outlook	Across all ward the majority of staff were extremely positive in their tone and topics of discussion. Although staff were able to recognise their limitations and areas for improvement, they didn't change the focus of the conversations into the challenges they face / reasons they can't achieve things etc.
	Pride	Staff on the wards demonstrated pride in their achievements / successes and the care that they deliver to patients.
	Cohesion within the team	Through the way in which staff interacted and behaved they seemed to be very comfortable with one another. They appeared to be able to 'have a laugh', were 'jokey', and were at ease with each other regardless of professional background, role or grade.
	Leadership	Across all wards the researcher made observations about the organisation of the ward leaders, their engagement with the research project, and the extent to which they dominated focus group conversations to the inclusion or exclusion or other, especially more junior, staff members (where applicable). The only potential difference between positively deviant and comparison wards was the way in which the leaders on positively deviant ward had developed internally whether this be nurses stepping up into junior and senior sister positions or registrars being promoted into consultant positions.

Appendix 13 The probability of general practices within each latent class performing above and below the average adherence levels by clinical recommendation.

Clinical Recommendation	Latent class	Probability below average adherence	Probability of above average adherence
Type II diabetes: outcomes	Class 1	0.71	0.29
	Class 2	0.40	0.61
	Class 3	0.76	0.24
	Class 4	0.00	1.00
	Class 5	0.41	0.59
	Class 6	0.55	0.45
	Class 7	0.00	1.00
High risk prescribing	Class 1	1.00	0.00
	Class 2	0.00	1.00
	Class 3	0.38	0.62
	Class 4	0.00	1.00
	Class 5	1.00	0.00
	Class 6	0.31	0.69
	Class 7	0.00	1.00
Type II diabetes: processes	Class 1	1.00	0.00
	Class 2	1.00	0.00
	Class 3	0.00	1.00
	Class 4	1.00	0.00
	Class 5	0.36	0.64
	Class 6	1.00	0.00
	Class 7	0.00	1.00
Myocardial infarction	Class 1	0.31	0.69
	Class 2	0.00	1.00
	Class 3	0.52	0.48
	Class 4	1.00	0.00
	Class 5	0.68	0.32
	Class 6	0.81	0.19
	Class 7	0.18	0.82
Chronic Kidney Disease	Class 1	1.00	0.00
	Class 2	0.23	0.77
	Class 3	1.00	0.00
	Class 4	0.00	1.00
	Class 5	0.00	1.00
	Class 6	0.58	0.42
	Class 7	0.00	1.00
Hypertension	Class 1	0.52	0.48
	Class 2	0.34	0.66
	Class 3	0.71	0.29
	Class 4	0.00	1.00
	Class 5	0.26	0.74
	Class 6	1.00	0.00
	Class 7	0.00	1.00
Atrial Fibrillation	Class 1	0.83	0.17
	Class 2	1.00	0.00
	Class 3	0.33	0.67
	Class 4	0.00	1.00
	Class 5	0.54	0.46
	Class 6	0.26	0.74
	Class 7	0.46	0.55

Appendix 14 Semi-structured interview schedule

Learning from exceptional General Practices to improve quality of care: Interview schedule

Informed consent: 5 mins
Provide the participant with the information sheet and consent form. Discuss the following information:

- Purpose of the study and interviews – looking for different or deviant factors that facilitate the delivery of evidence based care
- What we mean by evidence based care
- Voluntary participation / right to withdraw
- Confidentiality and anonymity
- Audio-recording
- Interviews are not a test of your knowledge
- Ask if there are any questions

Questions:

Can you describe the roles staff play in delivering evidence based care?

- *Doctors*
- *Practice manager*
- *Nurses*
- *HCAs*
- *Administrative staff*

How does your practice discuss and promote clinical guidelines and evidence based care?

- When is evidence based care discussed?
- How do you find out about new clinical evidence and/or guidelines?
- In what ways do you think this might be deviant or different from other practices?
- How long have your team / your practice been doing this / done things this way?

Can you describe what happens when staff are unsure of the most appropriate way of treating or managing a patient?

- How do you decide when it is or isn't appropriate to follow clinical guidelines or recommendations?
- In what ways do you think this might be deviant or different from other practices?

What challenges do you face when delivering evidence based care to patients? How do you and the team overcome these?

- In what ways do you think this might be deviant or different from other practices?
- How long have your team / your practice been doing this / done things this way?

Within your practice what helps you and your team deliver evidence based care?

- Systems or processes you have in place? (Electronic / IT systems / internal procedures followed)
- Team factors and culture – mission and values, leadership, team working, communication,
- Formal influences – disseminating clinical guidelines, education / training / learning
- Patient involvement – education and involvement in their care
- External influences – how your practice links to CCG, other healthcare agencies
- How long have your team / your practice been doing this / done things this way?

We specifically came to your practice because routinely collected data indicated that it was one of the best within West Yorkshire for adhering to various evidence based clinical recommendations.

- How do you think your practice compares to others in the region for delivering evidence based patient care?
- Can you describe how and why your practice might perform so much better than others?
- In what ways do you think this might be deviant or different from other practices?
- How long have your team / your practice been doing this / done things this way?

The classic study on positive deviance found that mothers in Vietnam reduced childhood malnutrition by feeding their children shrimps and crabs which, within that culture, were considered to be inappropriate for children to eat. The mothers were therefore going against the normal 'rules' of their society.

- Does anything or anyone within your practice stand out as being particularly positively deviant or passionate about delivering evidence based care?

Potential follow up questions:
Who is involved in that?
Can you describe how that happens?
What helps that to happen?
How does that benefit you?
Tell me more about …

What? Where? Who? When? How? Why?

Appendix 15 Observation guidance

Learning from exceptional general practices to improve quality of care: Observation fieldwork guidance

The researcher will conduct non-participant observation of approximately three team meetings (or equivalent) within each practice. Field notes will be made about the more objective factors listed below, although observations are not limited to this. In addition the researcher will record their inferences and personal observations, reflections and emotional reactions. These subjective comments will be recorded separately from the objective observations.

Key factor to observe (not limited to):

- Leadership – at an organisational and individual level
- Patient centred care
- Staff centred focus – empowerment, job roles, workload, skills
- Culture
- Clinical governance
- Multi professional team working
- Communication – formal and informal channels of communication
- Education and training
- Process improvement / performance monitoring
- Information and IT systems
- Incentives and rewards – including pay for performance
- Organisational governance – organisational structure and planning
- Change and change management – continuous improvement work
- CCG / external factors – macro support for the practice

Appendix 16 A brief synthesis of research that has assessed high performance within primary care

Influencing factors	Crossland 2014	Beaulieu 2013	Nelson 2002	Campbell 2001	McMurchy 2009	Beaulieu 2014	Bodenheimer 2014	Orzano 2011	Baker 2008	Feifer 2007
Patient centred	■		■		■	■	■			■
Leadership	■		■		■		■	■	■	
Staff centred	■		■			■				■
Clinical governance	■				■		■		■	■
Multi professional teams	■	■	■			■	■	■		
Communication	■						■	■	■	
Education and training	■	■	■		■				■	
Process improvement	■									
Performance results	■		■		■					■
Information and IT	■	■	■		■		■		■	■
Incentives and rewards	■									
Organisational governance	■	■		■	■	■	■		■	
Change and change management	■		■						■	
Culture			■	■	■	■		■	■	
CCG factors			■		■					
Patient safety			■							