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Executive summary

This report summarises learning from the evaluation of the Situation Awareness For Everyone (SAFE) programme, conducted in paediatric settings in 12 hospitals across England, comprising of 18 wards in total.

The aims of the SAFE programme were to:

1. Reduce avoidable error and harm to acutely sick children by 2016
2. Improve communication between all healthcare professionals involved in a child’s care, as well as with families, to ensure that treatment is consistent and of the same high standard regardless of postcode or socioeconomic status
3. Close the disparity in health outcomes for children in England versus other countries, as well as between child and adult care
4. Encourage parents, children, and young people to be better involved in their children’s/own care.

The aim of the evaluation was to address the following overarching research question: under what circumstances, by what means, and in what ways does increasing situation awareness lead to improved safety, experience, and other elements of quality for children under inpatient care?

A realistic evaluation framework was used to address this overarching research question. This is a theory-driven framework that aims to explore ‘what works, for whom, in what context, and to what extent’. A mixed methods design was used as part of this framework, combining quantitative and qualitative evaluation approaches. Within the quantitative component of the evaluation, multiple types of outcome data were collected at all participating wards. These included:

- Safety indicators (number of cardiac and respiratory arrests on the ward, and number of transfers to a higher level of care and the Intensive Care Unit; ICU)
- Staff safety climate survey
- Parent perceptions of safety questionnaire
- Parent and patient experience of care questionnaires.

These outcomes were either collected on a monthly basis (safety indicators, parent perceptions of safety questionnaire, and parent and child experience of care questionnaires), or at three time points (staff safety climate survey) across the two-year period of the project (start of implementation, mid-implementation, and late implementation). The qualitative component of the evaluation aimed to explore what the implementation of huddles (the core component of SAFE)
looked like, staff perceptions of implementing SAFE, and parents’ and patients’ experiences of care on four of the participating wards. The qualitative data were collected at the three time points through huddle observations and interviews with staff. Interviews with parents and patients were also conducted on an ongoing basis.

The discussion of the findings in this report has been structured according to several key sub research questions, all of which relate to the overarching research question given above. The following is a summary of our key findings relating to each sub research question.

**Research questions 1 and 2**

What does the implementation of huddles and other safety improvement initiatives look like in different contexts? What are parents’ and patients’ views on and experiences of huddles?

**Method**

This research question was addressed drawing on data collected at the four qualitative evaluation sites and it provides a) descriptions of what the huddle looked like on each of the four qualitative evaluation wards, based on semi-structured interviews with staff \((N=122)\) and huddle observations \((N=30)\) across all three time points; b) descriptions of what the huddle looked like in early implementation (Time 1), based on an in-depth conversation analysis of observations of huddle meetings \((N=16)\); c) perspectives on the huddle given in semi-structured interviews with parents and patients \((N=23)\).

**Key findings**

- Huddles tended to be brief, on average lasting up to around 10 minutes, tended to take place around the patient board, and tended to have a clear leader.
- Professionals attending the huddle across the wards varied greatly in terms of their seniority and job roles; however, a ward manager, consultant, and senior nursing staff member (ward manager/matron) tended to be consistently present.
- Huddles at certain times of the day may be more irregular and infrequent than others, especially if taking place in the evening or at night.
- Half of the parent and patient interviewees were aware of the huddle (although none had actually participated in a huddle), most of whom understood its content and purpose. In general, parents and patients had positive views about the huddle.

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1 Use the hyperlinks to go directly to the chapters that explore each research question in more detail.
Research question 3

Are huddles and other safety improvement initiatives associated with improvements in safety indicators and patient-reported experience of care?

Method

This research question was addressed using both the quantitative and qualitative datasets. The quantitative dataset included: the safety indicators reported from April 2014 to June 2016; the parent and patient experience of care questionnaires (N=893); the parent perceptions of safety questionnaire (N=773); the staff safety climate survey (N=1513). The qualitative dataset included: the semi-structured interviews with parents and patients on the four qualitative evaluation wards (N=23), which aimed to gather parents’ and patients’ views on their experiences of care, and their perceptions of safety on the wards; the semi-structured interviews with staff members on the four wards (N=122), which sought to explore the potential impact of the SAFE project (primarily the huddle) on patients and parents, from the staff members’ perspectives.

Key findings

- There was an increase during the winter months in the average monthly number of unplanned transfers to ICU at the specialist children’s hospitals (SCH) and the average monthly number of respiratory arrests at the district general hospitals (DGH).
- There was an increase in the average monthly number of unplanned transfers to a higher level of care within the DGH at mid- to late-implementation. However, this gradually decreased again at late implementation. No significant differences over time were found.
- The staff and parents/patients measures showed highly positive perceptions of safety and, in particular, satisfaction with care throughout all three time points. No significant differences over time were found.
- The benefits of the huddle for patients and parents, as reported by the staff members in their interviews, were: (1) earlier anticipation of deterioration leading to the prevention of more serious incidents; (2) improved patient flow and quicker patient discharge; (3) improved continuity of patient care; (4) reassurance for parents and patients.

Research question 4

What mechanisms explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes?

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2 The amount of missing data was below 1% among the specialist children’s hospitals in our overall sample and around 10% among the district general hospitals.
Method
This research question was addressed through the semi-structured interviews ($N=122$) conducted at all three time points with staff members at the four qualitative evaluation sites.

Key findings
Drawing on the staff members’ perspectives, the mechanisms that could explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes included:

- The provision of a place and an opportunity for staff members to raise awareness of issues and concerns among the wider staff group
- Increased teamwork and communication between staff members (including the nursing and medical staff groups)
- Increased anticipation, planning, and efficiency among staff.

Research question 5
What are the barriers and facilitators to the implementation of huddles and other safety improvement initiatives?

Method
This research question was addressed through the semi-structured interviews ($N=122$) conducted at all three time points with staff members at the four qualitative evaluation sites.

Key findings
Drawing on the staff members’ perspectives, facilitators to the implementation of huddles and other safety improvement initiatives included:

- Senior medical and nursing leadership
- The need for the initiative to blend in with and enhance existing ward practices
- Having the time and capacity to implement the initiative
- Staff members perceiving the benefits of the initiative
- Staff members having enthusiasm towards and awareness of the initiative, how it works, and its rationale
- Practice and adaption of the methodology to suit the needs and interests of staff and the ward
- Support from the national implementation team.

Drawing on the staff members’ perspectives, barriers to the implementation of huddles and other safety improvement initiatives included:
• Lack of perceived relevance or ‘good fit’ of the initiative with staff members’ job roles and priorities, and with ward practices
• Resistance to change
• Lack of staff
• Lack of time
• Other competing duties or responsibilities.

**Research question 6**

What are the barriers and facilitators to the positive impact of the huddle?

**Methods**

This research question was addressed through the semi-structured interviews (N=122) conducted at all three time points with staff members at the four qualitative evaluation sites.

**Key findings**

Drawing on the staff members’ perspectives, the factors moderating the positive impact of the huddle were:

- Identification of a clear huddle leader
- Use of a script or a standardised approach to ensure a structured and concise exchange of information
- Ensuring that the information raised and discussed in the huddle was then translated or had continuation into ward practice
- The huddle being flexible and adaptable to each ward’s needs and daily schedule
- The level of dependency of patient care
- The degree to which the huddle was implemented effectively.

**Research question 7**

To what degree has the huddle been embedded on each ward and spread to other wards at each site, and what are the barriers and facilitators to the sustainability of the intervention?

**Method**

This study was based on a qualitative analysis of the semi-structured staff interviews (N=23) conducted at the four qualitative evaluation sites towards the end of the programme (Time 3).

**Key findings**

- The huddle has been well embedded on the majority of the wards, and most wards have spread these practices, or are in the process of spreading them, to other wards.
• The factors affecting the embedding and spread of the huddle were the need to: (1) ensure that the huddle fits into existing practices and is relevant in addressing the needs and problems on the ward; (2) ensure that everyone is aware of the benefits of the huddle (as a ‘selling’ point); (3) get commitment from all staff members at the outset and, in particular, making sure both the nursing staff and medical staff teams are on board; (4) have support from executive leadership and senior staff, as well as nominating a ‘champion’ responsible for disseminating the innovation.

• Whereas contextual and process factors appeared to be of greater importance for the spread of the huddle than for its embedding, innovation and leadership were reported to be equally important for both the embedding and spread of huddles.

**Research question 8**

What were the approaches to implementation and evaluation at the Wave 2/3 sites, and how do they compare with Wave 1?

**Methods**

The sites in our sample represented Wave 1 of the SAFE programme. This research question was informed by a pragmatic information-gathering exercise, which was completed with the Wave 2 and 3 sites to ascertain what implementation looked like at these later joining sites, as compared to at the Wave 1 sites; what the anticipated outcomes were from the perspectives of the staff members at these sites; and whether any changes in culture or safety outcomes had been observed to date. To do this, we drew on information collected through discussions with staff at workshops, staff completion of logic diagrams and intervention description templates for their sites, as well as poster and other dissemination materials created by the sites. We also drew on field notes from a research interview with the implementation team lead.

**Key findings**

The Wave 2 and 3 sites, in comparison with the Wave 1 sites, appeared to make more rapid progress in the early stages of their delivery of SAFE. These differences may be due to:

• Differential levels of motivation to participate and embed practices
• Particularly strong clinical leaders among the Wave 2/3 sites, who took a very active role in delivery and who were particularly committed to sustaining the programme
• Advantages stemming from the fact that the roll-out of SAFE at the Wave 2/3 sites drew on the momentum and learning from the first wave of the programme.
Reflections and conclusions

Given the dearth of published evidence about the implementation and impact of the huddle and allied approaches, the information discussed in this report provides much needed learning around what implementation looks like, key barriers and facilitators, and the potential effects on ward safety culture and patient deterioration. While no clear pattern in our more distal outcome measures, such as cardiac arrests and transfers to ICU, could be discerned, staff could give clear examples of the benefits of implementation, particularly in terms of staff communication and teamwork, organisation and efficiency, and awareness of patient risk and safety issues. The picture was not universally positive; some sites continued to report challenges in implementation towards the end of the programme, particularly around a lack of involvement of junior nursing staff members, and there was some variation in how embedded the huddle methodology was across the sites towards the end of the project. Commonly cited barriers to this included a lack of leadership and ownership of the methodology, and a lack of perceived fit between the methodology and the way that the ward worked.

However, there was a clear will among the sites to continue to embed and spread SAFE practices after the completion of the programme. Many teams were also confident that evidence of the benefits of SAFE were emerging from their own locally collected improvement data, particularly when the outcome was locally defined and its operationalisation had been developed over time. The early, rapid spread in SAFE practices within and beyond the original hospital sites, as evidenced by Wave 2/3 of the project, are testament to its popularity and the perceived benefits of the programme. As a result of the SAFE programme, a clearer model for implementation has now emerged for the use of huddles in paediatric settings in the United Kingdom (UK). The evaluation and improvement tools developed through the programme, together with the learning described here, provide useful indications for future implementation of huddles and allied approaches to improving situation awareness.

Chapter I: Background

Evidence suggests that health outcomes for hospitalised children in the United Kingdom (UK) are poorer compared to other countries in Europe, with an
estimated 1,500 preventable deaths in UK hospitals each year (Sidebotham, Fraser, Fleming, Ward-Platt, & Hain, 2014; Wolfe et al., 2011). Inconsistent and suboptimal standards of delivered care across hospitals have been proposed as a potentially critical underlying cause (Wolfe et al., 2011).

There are multiple and complex causes of inconsistent standards of care, including incorrect prioritisation of needs, diffusion of responsibility, delayed recognition or misdiagnosis of deterioration, and poor communication between professionals and with patients (National Advisory Group on the Safety of Patients in England, 2013). Proposed solutions to address these identifiable risks are often restricted by fragmented approaches that fail to build capacity across hospitals, focusing predominantly on technical solutions as opposed to learning and cultural solutions (Batalden & Davidoff, 2007).

To provide safe and effective care, health professionals need to be able to assess in real time all of the relevant factors around the child, environment, parent and patient engagement, staff, and the tasks required. Such an approach to healthcare delivery requires a dynamic system that places emphasis on a proactive rather than reactive assessment of risk, with anticipation of what might happen and containment of possible risks to children’s health and their care while in hospital. This is an issue highlighted by the UK National Audit Office who state that “the safety culture within trusts is improving […] However, trusts are still predominately reactive in response to patient safety issues and parts of some organisations still operate a blame culture” (National Audit Office, 2005, p. 2). The Situation Awareness for Everyone (SAFE) programme aimed to facilitate the development of a proactive approach to the assessment of risk.

**Situation awareness and the huddle**

Situation awareness is defined as “the perception of elements in the environment within a volume of time and space, the comprehension of their meaning, and the projection of their status in the near future” (Endsley, 1988, p. 97). Originally a military concept, it has become a core aspect of safety in the aviation industry (Endsley, 1995), and has recently been translated into healthcare (Brady et al., 2013; Goldenhar, Brady, Sutcliffe, & Muething, 2013). At the most basic level, situation awareness is simply understanding what is happening around you. It involves extracting relevant information from the environment in order to anticipate future events (Wright & Endsley, 2008). In a healthcare setting, situation awareness involves redirecting the ‘clinical gaze’ (Foucault, 1973) to encompass a range of prospective indicators of patient risk and deterioration, including clinical indicators and staff and parent concerns, so that healthcare professionals can review the relevant information and act on it as required to mitigate such risk or deterioration. Crucially, the approach emphasises the importance of drawing relevant information from multiple sources including monitoring systems (paper and electronic), team members and
healthcare providers and others (Wright & Endsley, 2008). This is because any person involved in the care of the patient could have a piece of information that is critical for understanding the future state of the child. This could include multiple perspectives from consultants (attendings), trainees (residents), nurses, allied health professionals, and support staff, in addition to patients and their families. Achieving Situation Awareness includes three key components: first perceiving the crucial factors from this range of sources, comprehension of the meaning underlying them, and making projections about what will happen next in order to be proactive rather than reactive in the context of risk (Wright & Endsley, 2008).

The mechanism that the SAFE programme employed to augment team situation awareness around the hospitalised child, and to support a ward culture that proactively identifies, mitigates, and escalates risk (Brady et al., 2013), was the use of ‘huddles’. Huddles are multidisciplinary rapid briefings that are “designed to give frontline staff and bedside caregivers opportunities to stay informed, review events, [and] make and share plans for ensuring well-coordinated patient care” (Goldenhar, et al., 2013, p. 1). Essentially, huddles provide a space where patient risks can be identified and where mitigation plans can be made, in order to prevent patient deterioration. The aim is to contribute to a change in ward culture and to create environments where staff of all levels and, occasionally, members of a patient’s family, are able to comfortably and confidently raise concerns. As originally conceptualised, huddles involve two core processes:

1. A healthcare professional identifying patient risks using standardised tools (e.g., paediatric early warning system scores: PEWS; Gold, Mihalov, & Cohen, 2014)
2. The ward team evaluating patients with identified risks and planning accordingly.

Interventions that aim to improve the quality of hospitals’ handovers emphasise similar factors in improving quality and efficiency of information exchange, and note associations between poor quality handovers and adverse events (Northway et al., 2015). In many respects these studies identify similar important tools for consistent and effective information sharing, including the use of mnemonics such as SBAR to improve reliability of reporting (Nasarwanji, Badir, & Gurses, 2016) and more proactive questioning as part of the exchange (Rayo et al., 2013). Interventions to improve handovers have provided some evidence for improvements in information transfer and staff satisfaction and limited evidence of associated improvements in adverse patient events (Robertson, Morgan, Bird, Catchpole, & McCulloch, 2014).

However, the remit of a handover is much wider than that of a huddle, including coverage of all current inpatients, accepted/referred patients due to be assessed, patients with deteriorating early warning scores, outstanding tasks
from the previous shift, operational matters such as bed availability, equipment problems, staffing and agency staff presence (BMA, 2005) (Farhan, Brown, Woloshynowycz, & Vincent, 2012). This wider remit can risk safety priorities being lost in the wider agenda. The representation in handovers is also often limited to a narrow range of hospital staff. In practice, the huddle is a rapid structured case review on the ward, which ensures that communication exchanges are focused only on information that is essential to promote patient safety. Guiding principles of huddles are as follows (Brady, et al., 2013; Goldenhar, et al., 2013; “S.A.F.E Programme”, n.d., para. 3; RCPCH, 2016):

- Rapid
- Regular
- Inclusive – of all those with information about a patient
- Non-hierarchical – so that all are ‘free’ to speak or even challenge decisions or diagnoses
- Involve the anticipation of risks to patients/looking ahead and the mitigation of such risks.

The developers of huddles in a healthcare setting propose three potential levels at which a huddle can occur (Brady, et al., 2013; Goldenhar, et al., 2013):

1. The bedside: a nurse (or doctor) identifies patient risks using standardised tools and clinical judgement
2. The ward: the ward team evaluates patients with identified risks in a unit huddle
3. The hospital level: nurses from different wards meet with a safety/quality officer in an inpatient huddle to review any unresolved patient risks on their wards.

The theory of change for huddles proposes that their effectiveness is achieved through increasing collaborative and efficient information exchanges, fostering a shared clinical view of the current health state of a patient, promoting increased situation awareness, and providing opportunities to identify plans to minimise risk and, therefore, prevent patient deterioration. Potentially, huddles could change the way that people communicate with one another within healthcare environments, fostering a sense of responsibility amongst individual staff members and levelling existing hierarchies. It is thought that huddles could offer "a communication vehicle [...] a fast, focused, and highly collaborative process" (Cooper & Meara, 2002, p. 12).

Two key studies provide evidence for the approach taken by the SAFE programme. The first study is an observational study reporting the implementation of huddles over a 2–3 year period and the associated change in
UNSAFE transfers\(^3\) (Brady et al., 2013). Not only does this study report the only quantitative evidence suggesting links between the implementation of huddles to improve situation awareness and improvements in patient safety outcomes, it also provides a detailed description of the situation approach used by Cincinnati Children's Hospital that most closely corresponds to the approach taken by the SAFE programme (see Figure 1). While models used in the SAFE programme were adapted and tailored to local context, the core principles of the huddles remain the same and the emphasis on proactive assessment of risk is key. The emphasis here is on developing and embedding systems which facilitate routine discussion of risk, and those potentially at risk, and which don’t wait for marked further deterioration before action is taken. Time series data from this study revealed an association between the onset of implementation and a corresponding decrease by approximately 50% in UNSAFE transfers.

\(^3\) Defined as "the transfer of patients from the acute care floor to the intensive care unit (ICU) where the patient received tracheal intubation, initiation of vasoactive medications for hemodynamic support, or ≥3 fluid boluses in the first 60 minutes of ICU care or before arrival in the ICU" (Brady et al., 2013).
The second study provides qualitative evidence from hospital staff from Cincinnati Children’s Hospital Medical Center regarding the perceived beneficial outcomes of the implementation of huddles (Goldenhar, et al., 2013). Four key themes regarding perceived benefits emerged: 1) improved efficiencies and better quality of information sharing, and the facilitation of shared language to discuss concerns; 2) empowerment, particularly of bedside nurses who reported feeling more able to speak out or to express disagreement with those further up the hospital hierarchy; 3) a greater sense of community, described as a clearer understanding of the ‘hospital-wide view’ with respect to patient safety; and 4) a culture of collaboration in which staff were less competitive and more likely to offer guidance and support to those from other floors/departments. These benefits were perceived to work together to increase staff members’ quality of awareness and facilitate staff members’ capacity to enhance patient safety. A small number of challenges to implementation were also acknowledged. These primarily related to the time and resources required to ensure attendance at huddles, including concerns about leaving deteriorating patients’ bedsides.

Both studies are crucial to establishing the case for the approach taken by the SAFE project. However, it is important to note that neither study used a design that allowed for causal relations between huddle implementation and safety outcomes to be established. The qualitative study gives important insight to the perceived benefits as described by staff implementing the approach, though the snowball sampling may be susceptible to bias and the relationship between staff perceptions of improvements in safety culture and safety outcomes for patients was not established. The observational study monitored a precise safety outcome (UNSAFE transfers) but, as with all observational studies, it is possible that changes in this measure may have been due to other co-occurring events. Notwithstanding these limitations, both studies provide some theoretical underpinning for the SAFE programme.

**SAFE programme aims**

The aims of the SAFE programme were to:

1. Reduce avoidable error and harm to acutely sick children
2. Improve communication between all healthcare professionals involved in a child’s care, as well as families, to ensure that treatment is consistent and of the same high standard regardless of postcode or socioeconomic status
3. Close the disparity in health outcomes for children in England versus other countries, as well as between child and adult care
4. Encourage parents, children, and young people to be better involved in their children’s/own care.

The overarching aim of the evaluation of the SAFE programme was to understand how the SAFE approach was developed and adapted at each site,
and to understand whether it had an impact on outcomes for patients, parents, and staff. Accordingly, the overarching research question that the SAFE evaluation sought to answer was: under what circumstances, by what means, and in what ways might increasing situation awareness, as a result of the implementation of huddles and other allied practices, lead to improved safety, experience, and other elements of quality for children under inpatient care?
Chapter II: Design and methodology of the SAFE evaluation

While the design of the SAFE programme drew on the existing research outlined in the previous chapter, (Rycroft-Malone, 2004) implementation of huddles as part of SAFE also followed quality improvement methodologies, given the evidence on the importance of tailoring implementation to local context in a healthcare setting (Rycroft-Malone, 2004). Specifically, each participating site was encouraged to trial and tailor the approach to their local context, while monitoring corresponding changes in safety practices and outcomes. Through supported learning sets and localised Plan-Do-Study-Act cycles (PDSA; more information available here), each site developed their own bespoke version of huddles with allied practices to improve situation awareness. This meant that the huddle format and range of attendees differed between wards and hospitals, as the method was adapted to reflect local needs and resources. Yet the shared aim across the sites remained the same, in the sense that the huddle should provide a non-hierarchical space where patient risks can be identified and mitigation plans can be made so as to prevent patient deterioration.

Theory of change

A realistic evaluation framework informed the evaluation of the SAFE programme. This is a theory-driven framework that aims to explore ‘what works, for whom, in what context, and to what extent’ (Pawson & Tilley, 1997). It focuses on the ways that the context (i.e., settings) of a social intervention interact with a mechanism of action (i.e., underlying processes or structures) to produce outcomes. In line with this approach, we used multiple methods and data sources in our evaluation of the SAFE programme, to help us to understand what mechanisms for change were triggered by an intervention and how they impacted on the existing social processes sustaining the behaviour or circumstances that were being targeted for change, over a two-year period.

Figure 2 shows the SAFE programme theory of change, which the evaluation aimed to assess. There were four components to the SAFE programme theory of change – input, mechanisms, context, and outcomes. Each component of the theory of change informed the development of specific research questions for the evaluation to explore (all of which aimed to address our overarching research question detailed in the previous chapter). The research questions were addressed through the use of both quantitative and qualitative assessment methods, broadly categorised as evaluation domains (see Table 1), which in turn corresponded to the components of the proposed theory of change.
Figure 2. SAFE programme theory of change

**Input.** As indicated in Figure 2, the SAFE evaluation aimed to describe comprehensively the implementation of huddles and site-specific safety improvement initiatives and how this was experienced by members of staff and patients/parents in different hospital settings. To do this, we drew on quantitative (descriptive) data, qualitative observational data of huddles, and qualitative interview data from ward staff and parents/patients. The research questions relevant to this component were:

1. What does the implementation of huddles and other safety improvement initiatives look like in different contexts?
2. What are parents’ and patients’ views on and experiences of huddles?
3. What are the barriers and facilitators to the implementation of huddles and other safety improvement initiatives?

**Mechanisms.** The mechanisms that we aimed to explore through the evaluation were changes in safety culture and improved situation awareness. Descriptive and inferential statistics were used to examine change over time within wards and differences between wards. Additional factors of particular relevance, such as increased awareness and better anticipation of risk among ward staff members, were captured through the interviews with staff. The research questions relevant to this component were:

1. What mechanisms explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes?
2. What are the barriers and facilitators to the positive impact of the huddle?

**Context.** As shown in Figure 2, the context included the range of different conditions within each hospital or ward hypothesised to determine the extent to which input and mechanisms affected outcomes. Contextual data were primarily
derived from routinely collected data at sites, e.g., hospital and ward type, staffing, and patient throughput, as well as from quantitative data relating to staff perceptions of safety on the different wards, qualitative interviews with staff and parents/patients, and ethnographic field notes taken at site visits by the SAFE implementation team. Contextual data have been presented where relevant throughout this report.

**Outcomes.** Change in patient safety outcomes, in terms of incidents of harm, was the high-level outcome of SAFE. Analysis of run charts spanning pre- and post-implementation time periods was carried out to identify any potential patterns (e.g., shifts, trends, and runs; Perla, Provost, & Murray, 2011) in incidents of harm that might be associated with SAFE implementation. Analysis was considered at individual ward level and as an aggregate across wards. Similarly, patient- and parent-reported measures were used for group-level comparisons of perceived care between wards within time points, individual wards over time, and aggregated across wards over time. The qualitative interviews with staff members also captured the perceived impact of huddles and other safety improvement techniques associated with SAFE on the ward environment and on patient safety. The research question relevant to this component was:

1. Are huddles and other safety improvement initiatives associated with improvements in safety indicators and patient-reported experience of care?

**Secondary research questions**

Secondary research questions also arose over the course of the evaluation; for example, as a result of the expansion of the programme to additional sites and wards. These research questions were as follows:

1. To what degree has the huddle been embedded on each ward and spread to other wards at each site? What are the barriers and facilitators to the sustainability of the intervention?
2. What were the approaches to implementation and evaluation at the Wave 2/3 sites? How do they compare with Wave 1?

**Evaluation framework**

The methodological framework used for our evaluation of the SAFE programme can be seen in Table 1. Details about the sample in our evaluation can be seen in Table 2. Ethical approval for the evaluation was granted by the Dulwich Research Ethics Committee (REC reference: 14/LO/0875).
Table 1. Evaluation domains, assessment method used, data collection schedule, and sample.

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<th>Schedule</th>
<th>Sample</th>
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<td>3 time points: early, mid-, and late implementation</td>
<td>4 selected wards (within 4 hospitals)†</td>
</tr>
<tr>
<td></td>
<td>Staff interviews</td>
<td>3 time points: early, mid-, and late implementation</td>
<td>4 selected wards (within 4 hospitals)</td>
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<td></td>
<td>Parent and child interviews</td>
<td>Rolling basis, throughout the programme</td>
<td>4 selected wards (within 4 hospitals)</td>
</tr>
<tr>
<td>Changes to safety culture</td>
<td>Staff safety climate survey</td>
<td>3 time points: early, mid-, and late implementation</td>
<td>15 wards (within 10 hospitals)† †</td>
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<tr>
<td></td>
<td>Staff interviews</td>
<td>3 time points: early, mid-, and late implementation</td>
<td>4 selected wards (within 4 hospitals)</td>
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<td></td>
<td>Parent perceptions of safety questionnaire</td>
<td>Rolling basis, throughout the programme</td>
<td>15 wards (within 10 hospitals)</td>
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<td>Changes to situation awareness</td>
<td>Staff interviews</td>
<td>3 time points: early, mid-, and late implementation</td>
<td>4 selected wards (within 4 hospitals)</td>
</tr>
<tr>
<td>Safety indicators</td>
<td>Number of cardiac arrests on the ward</td>
<td>Recorded daily, collated monthly</td>
<td>15 wards (within 10 hospitals) † †</td>
</tr>
<tr>
<td></td>
<td>Number of respiratory arrests on the ward</td>
<td>Recorded daily, collated monthly</td>
<td>15 wards (within 10 hospitals) † †</td>
</tr>
<tr>
<td>Quality indicators</td>
<td>Transfers to ICU</td>
<td>Recorded daily, collated monthly</td>
<td>15 wards (within 10 hospitals) † †</td>
</tr>
<tr>
<td></td>
<td>Transfers to higher levels of care</td>
<td>Recorded daily, collated monthly</td>
<td>15 wards (within 10 hospitals) † †</td>
</tr>
<tr>
<td>Experience outcomes</td>
<td>Parent and child experience of care questionnaires</td>
<td>Rolling basis, throughout the programme</td>
<td>15 wards (within 10 hospitals)</td>
</tr>
<tr>
<td></td>
<td>Parent and child interviews</td>
<td>Rolling basis, throughout the programme</td>
<td>4 selected wards (within 4 hospitals)</td>
</tr>
</tbody>
</table>

† At Time 1 materials from observations at only two wards (within 2 hospitals) were used due to poor quality of recordings.
†† One hospital was excluded from the pooled analyses due to the amount of missing safety indicators data and the absence of
Parent/patient surveys collected at this site. In addition, this hospital experienced delays in their collection of the staff safety climate survey, which meant that, unlike at the other sites, data for this measure at this site were not collected at the three time points that the data were supposed to be collected at.

Table 2. Characteristics of participating hospitals and wards.

<table>
<thead>
<tr>
<th>Ward</th>
<th>Type of ward</th>
<th>Number of beds</th>
<th>Median length of stay</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Specialist Children’s Hospitals:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Royal Manchester Children’s Hospital</td>
<td>Ward 78 Mixed specialties</td>
<td>32</td>
<td>4–6 days</td>
</tr>
<tr>
<td></td>
<td>Ward 85 Mixed specialties</td>
<td>25</td>
<td>1–2 weeks</td>
</tr>
<tr>
<td>Sheffield Children’s Hospital</td>
<td>M1 Medical general</td>
<td>20</td>
<td>2–4 days</td>
</tr>
<tr>
<td>Alder Hey Children’s Hospital</td>
<td>HDU High Dependency Unit</td>
<td>15</td>
<td>2–4 days</td>
</tr>
<tr>
<td>Birmingham Children’s Hospital</td>
<td>PAU Paediatric Admissions Unit</td>
<td>19</td>
<td>1–2 days</td>
</tr>
<tr>
<td>Evelina London Children's Hospital</td>
<td>Mountain Mixed medical and surgical</td>
<td>42</td>
<td>2–4 days</td>
</tr>
<tr>
<td>Great Ormond Street Hospital</td>
<td>Bumblebee Mixed specialties</td>
<td>21</td>
<td>1 month</td>
</tr>
<tr>
<td></td>
<td>Butterfly Mixed specialties</td>
<td>20</td>
<td>1 month</td>
</tr>
<tr>
<td><strong>District General Hospitals:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Luton and Dunstable University Hospital</td>
<td>Ward 24 Mixed medical and surgical</td>
<td>17</td>
<td>1–2 days</td>
</tr>
<tr>
<td></td>
<td>Ward 25 Mixed medical and surgical</td>
<td>17</td>
<td>1–2 days</td>
</tr>
<tr>
<td>North Middlesex Hospital</td>
<td>Rainbow Mixed medical and surgical</td>
<td>25</td>
<td>1–2 days</td>
</tr>
<tr>
<td></td>
<td>Sunrise Neonatal</td>
<td>22</td>
<td>1–2 weeks</td>
</tr>
<tr>
<td>Royal Free Hospital</td>
<td>North 6 Mixed medical and surgical</td>
<td>20</td>
<td>1–2 days</td>
</tr>
<tr>
<td>Royal London Hospital</td>
<td>7E Respiratory Respiratory unit</td>
<td>12</td>
<td>1–2 days</td>
</tr>
<tr>
<td></td>
<td>7C PASSU Paediatric Assessment and Short Stay Unit</td>
<td>12</td>
<td>1–2 days</td>
</tr>
<tr>
<td></td>
<td>Floor</td>
<td>Service Type</td>
<td>Ward No</td>
</tr>
<tr>
<td>----------</td>
<td>-------</td>
<td>-------------------------------</td>
<td>---------</td>
</tr>
<tr>
<td>Watford General Hospital</td>
<td>7F</td>
<td>Medical general</td>
<td>13</td>
</tr>
<tr>
<td>Whittington Hospital</td>
<td>Starfish</td>
<td>Medical general</td>
<td>20</td>
</tr>
<tr>
<td>Whittington Hospital</td>
<td>Ifor</td>
<td>Medical general &amp; High Dependency Unit</td>
<td>23</td>
</tr>
</tbody>
</table>
Quantitative component of the evaluation

The initial sample (i.e., those sites who participated in Wave 1 of the SAFE programme) included 12 hospitals (see Table 2). However, one hospital dropped out at a very early stage in implementation, thus this site was not included in the evaluation. The reasons for this hospital dropping out are explored in Chapter VI (notably, this hospital later participated in Wave 2 of the SAFE programme). Another hospital was also excluded from the analyses. This was due to the amount of missing safety indicators data and the absence of parent/patient surveys collected at this site. In addition, this hospital experienced delays in their collection of the staff safety climate survey, which meant that, unlike at the other sites, data for this measure at this site were not collected at the three time points that they were supposed to be collected at.

Thus, the final sample included in our quantitative analyses for the evaluation comprised 15 wards (out of an initial 17) across 10 hospitals (out of an initial 12); five specialist children’s hospitals (SCH), including six wards, and five district general hospitals (DGH), including nine wards. The dominant type of ward among participating sites was mixed medical and surgical (N=5), followed by medical general wards (N=3), and mixed specialties wards (N=2). Other types of wards participating were Paediatric Admissions Unit/Paediatric Assessment and Short Stay Unit (N=2), High Dependency Unit (HDU; N=1), neonatal (N=1), and respiratory (N=1).

Safety indicators. A list of safety indicators to assess at the sites was initially identified in collaboration with the SAFE implementation lead. Subsequently, the listed indicators were discussed with the sites in terms of their relevance and obtainability. Based on consultation with sites, four main safety indicators were chosen: cardiac arrests, respiratory arrests, unplanned transfers to a higher level of care, and unplanned transfers to ICU. The definitions of all of the safety indicators are presented in Table 3. It is important to note that the definition of unplanned transfers to a higher level of care served as a general guide and was adapted by each of the sites as necessary.
Table 3. Ward level safety indicators and associated definitions

<table>
<thead>
<tr>
<th>Ward level safety indicators</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cardiac arrests</td>
<td>Any cardiac arrests occurring on ward defined as staff having to use chest compression or a defibrillator on a patient</td>
</tr>
<tr>
<td>Respiratory arrests</td>
<td>Any respiratory arrests occurring on ward defined as staff having to use a positive pressure ventilator on a patient</td>
</tr>
<tr>
<td>Unplanned transfers to a higher level of care</td>
<td>Any change in allocation (upwards)/escalation of care including: transfers to HDU, any increase in level of observation and any increase in staffing ratios for that patient</td>
</tr>
<tr>
<td>Unplanned transfers to ICU</td>
<td>Includes all transfers: To ICU, except via surgery (elective) To HDU or ICU where the patient received tracheal intubation, initiation of vasoactive medications for hemodynamic support, or three fluid boluses in the first 60 minutes of ICU care or before arrival</td>
</tr>
</tbody>
</table>

All participating hospitals collected safety indicators data, beginning from the 1 October 2014. Sites also provided us with historic data relating to the period six months prior to this (April 2014—September 2014 inclusive).

The safety indicators data were routinely collected from all of the sites in three different ways (according to each site’s preference):

- **Safety Crosses** (see Appendix D). Resembling a monthly calendar, this tool allowed ward staff to record the days on which an incident took place. Ward staff then emailed this to the evaluation team at the end of each month.

- **Data systems used by the National Health Service (NHS) and provided in a table.** Some of the sites used internal systems to collect the safety indicators on a routine basis. At the end of each month, a spreadsheet was populated and emailed to the evaluation team.

- **Institute for Health Improvement Extranet.** This tool, developed partway through the implementation of the programme, allowed the sites to enter their data directly into a secure online system, providing immediate feedback in the form of run charts. Members of the evaluation team could retrieve the data directly from the system.

**Parent/patient perceptions and experiences.** The overall perception of safety subscale of the adapted version of the Hospital Survey on Patient Safety
Culture (HSOPSC) questionnaire was used as part of our evaluation to assess parent perceptions of ward safety (Cox et al., 2013). It contains four items (e.g., “It is just by chance that more serious mistakes do not happen in this ward”; “The procedures and systems in this ward are good at preventing errors from happening”). Agreement with the statements is indicated on a 5-point Likert response scale ("strongly disagree" to "strongly agree").

In order to shorten the length of the survey, the demographic section of the survey was limited to information on ethnicity, length of stay in the hospital up to the moment of survey completion, and age of the child. The items were translated into Arabic, Bengali, Bulgarian, French, Punjabi (Indian), Romanian, Somali, Turkish, and Urdu by professional translation services with experience in translation for research purposes.

The survey was initially designed for use with hospital staff and the overall perceptions of patient safety subscale showed a good Cronbach’s Alpha reliability of 0.74 (Sorra & Dyer, 2010). The version of the questionnaire adapted for parents also showed strong reliability through tau-equivalence testing (Cox, et al., 2013).

Experience of care from the perspectives of parents and patients was assessed drawing on a subset of five items from the Experience of Service Questionnaire (Attride-Stirling, 2002). The questionnaire was administered in two versions, one for parents and one for patients aged 9–18. Both versions covered the same content. However, there were differences between the versions in the way that the items are phrased, and in terms of response format and options used. In the child version, the questions are asked about the patients’ own experiences (e.g., “Did the people who saw you listen to you?”). In the parent version, statements are used rather than questions, which still relate to ‘my child’, but it is the parent who is the focus of this experience (e.g., “I feel that the people who have seen my child listened to me”). While the parent version used the rating scale “not true” – “partly true” – “certainly true”, the child version included “yes”- “only a little” – “not really” options. Both versions have demonstrated robust psychometric properties (Brown, Ford, Deighton, & Wolpert, 2014).
As shown in Table 4, the mean age of children whose parents completed the parent surveys was 3.96 years old ($SD=4.79$). The mean age of the patients who completed the survey themselves was 12.31 years old ($SD=2.47$). The median length of stay was 3 days ranging from 1 hour to 168 days. Nearly half of the participants were British, in terms of both those who completed the parent surveys (46.7%, $N=361$) and patient surveys (45.0%, $N=120$). Other highly prevalent ethnic groups participating in the survey were Bangladeshi (parent survey: 8.8%, $N=68$; patient survey: 16.7%, $N=20$), African (parent survey: 8.9%, $N=69$; patient survey: 4.2%, $N=5$) and other White (parent survey: 6.7%, $N=52$; patient survey: 6.7%, $N=8$).
Table 4. Demographic characteristics of the participants in parent/patient surveys.

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Parent surveys (N=773)</th>
<th>Patient survey (N=120)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age of patients in years:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>3.96 (4.79)</td>
<td>12.31 (2.47)</td>
</tr>
<tr>
<td>Length of stay in days:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median (range)</td>
<td>3 (0.04 – 168)</td>
<td>N/A</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>British</td>
<td>361</td>
<td>54</td>
</tr>
<tr>
<td>%</td>
<td>46.7</td>
<td>45.0</td>
</tr>
<tr>
<td>Irish</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>1.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Any other White background</td>
<td>52</td>
<td>8</td>
</tr>
<tr>
<td>%</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>White and Black African</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>White and Asian</td>
<td>9</td>
<td>5</td>
</tr>
<tr>
<td>%</td>
<td>1.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Any other mixed background</td>
<td>8</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>1.0</td>
<td>3.3</td>
</tr>
<tr>
<td>Indian</td>
<td>25</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>3.2</td>
<td>3.3</td>
</tr>
<tr>
<td>Pakistani</td>
<td>43</td>
<td>4</td>
</tr>
<tr>
<td>%</td>
<td>5.6</td>
<td>3.3</td>
</tr>
<tr>
<td>Bangladeshi</td>
<td>68</td>
<td>20</td>
</tr>
<tr>
<td>%</td>
<td>8.8</td>
<td>16.7</td>
</tr>
<tr>
<td>Any other Asian background</td>
<td>13</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>1.7</td>
<td>0.8</td>
</tr>
<tr>
<td>Caribbean</td>
<td>24</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>3.1</td>
<td>0.8</td>
</tr>
<tr>
<td>African</td>
<td>69</td>
<td>5</td>
</tr>
<tr>
<td>%</td>
<td>8.9</td>
<td>4.2</td>
</tr>
<tr>
<td>Any other Black background</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>%</td>
<td>0.8</td>
<td>2.5</td>
</tr>
<tr>
<td>Chinese</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Any other ethnic group</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>1.0</td>
<td>0.8</td>
</tr>
<tr>
<td>Arab</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>%</td>
<td>0.1</td>
<td>0.8</td>
</tr>
<tr>
<td>Not stated/missing</td>
<td>57</td>
<td>6</td>
</tr>
<tr>
<td>%</td>
<td>7.4</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Note. SD = standard deviation; N/A = not applicable.

The collection of both types of the parent/patient surveys (see Appendix F) begun at most sites in February 2015 and continued until the end of the evaluation (June 2016). Prior to providing sites with the surveys, staff at the sites were asked to review the process maps that explained the course of data collection. Any changes to the process maps suggested by staff members were made to ensure that the surveys were collected using a procedure suitable for each participating ward. Most sites handed out the surveys to parents/carers and patients at discharge of the patient; however, the procedure varied across the sites. For instance, some of the wards administered the survey while a patient was still receiving care, whereas other wards would place the surveys at the waiting areas with a poster informing patients about the purpose of the study. After completion, parents/patients had several options for how to return the surveys. These included handing the survey in a sealed envelope back to ward staff, putting the survey into a box that was placed in the reception area or waiting areas, or posting the survey directly to the researchers using enclosed prepaid envelopes.

Surveys included a paragraph explaining the purpose of the study. Members of staff who were administering the survey were also asked to read out the
provided script, assuring the confidentiality of the responses and further explaining how the data were going to be used. Some of the participating hospitals enclosed the script with the surveys. An implicit consent was used indicated by completion of the survey.

**Staff safety culture.** The safety climate survey (SCS) is a tool originally developed by Sexton and colleagues and endorsed by the Institute for Healthcare Improvement in the USA (IHI; Sexton, Helmreich, & Pronovost, 2003). The instrument enables measurement of the safety climate.

Safety culture is defined as "the product of individual and group values, attitudes, competencies and patterns of behaviour that determine the commitment to, and the style and proficiency of, an organisation’s health and safety programmes" (Health and Safety Executive (HSE), 1993, p. 23). A positive safety culture is reflected through "communications founded on mutual trust, by shared perceptions of the importance of safety, and by confidence in the efficacy of preventive measure" (Health and Safety Executive (HSE), 1993, p. 23).

The SCS aims to measure key concepts within the safety climate, such as attitudes to safety within own team; capacity to learn from errors (e.g., "I receive appropriate feedback about my performance"); overall confidence in the safety of organisation (e.g., "I would feel safe being treated as a patient in this service"); perceptions of management’s attitudes to safety (e.g., "Leadership is driving us to be a safety centred organisation"); quality of teamwork (e.g., "Where I work, it is difficult to discuss errors").

Members of staff respond using a 5-point Likert scale ranging from "strongly disagree" (0) to "strongly agree" (4), with "not applicable" as a further option to choose from. The survey used in our evaluation included 19 items from the original instrument (Sexton, et al., 2003) with an additional two items from the Safety Attitudes Questionnaire (Sexton et al., 2006). The questionnaire was completed anonymously and individual scores were aggregated to provide a ‘snapshot’ of the safety climate at the ward level.

The instrument has been found to be psychometrically robust, demonstrating satisfactory to good internal consistency, with a Cronbach’s alpha of 0.69 or above across all factors (Hutchinson et al., 2006), and almost perfect inter-rater reliability (Cohen’s Kappa = 0.92; Kho, Carbone, Lucas, & Cook, 2005).
As presented in **Table 5**, the greatest proportion of the overall sample consisted of individuals younger than 30 years old (*N*=551, 36.4%), with a greater proportion of participants in this age population at Time 2 compared to at Time 1 (40.3%, *N*=213 vs 31.8%, *N*=161). Approximately half of the participants were classified as nursing staff (*N*=769; 50.8%), mainly band 5 (*N*=401). One fourth of the participants were members of the medical staff (*N*=381, 25.1%), mainly consultants (*N*=139, 36.5%). The proportion of consultants in the sample was substantially greater at Time 1 (46.1%, *N*=70), compared to Time 2 (29.8%, *N*=39) and Time 3 (30.6%, *N*=30).

Participants’ experience in their current position and speciality varied greatly, with the largest percentage of the participants being in their position/specialty between 3 and 7 years (position *N*=341, 22.6%; specialty *N*=371, 24.5%) and the lowest percentage being in their position/specialty for over 21 years (position *N*=60, 4.0%; specialty *N*=73, 4.8%).

**Table 5. Demographic characteristics of the staff safety climate survey sample.**

<table>
<thead>
<tr>
<th>Age category</th>
<th>Overall (N = 1513)</th>
<th>Time 1 (N = 507)</th>
<th>Time 2 (N = 529)</th>
<th>Time 3 (N = 470)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
<td>N (%)</td>
</tr>
<tr>
<td>&lt; 30</td>
<td>551 (36.4)</td>
<td>161 (31.8)</td>
<td>213 (40.3)</td>
<td>177 (37.7)</td>
</tr>
<tr>
<td>30–34</td>
<td>253 (16.7)</td>
<td>85 (16.8)</td>
<td>84 (15.9)</td>
<td>84 (17.9)</td>
</tr>
<tr>
<td>35–39</td>
<td>209 (13.8)</td>
<td>79 (15.6)</td>
<td>71 (13.4)</td>
<td>59 (12.6)</td>
</tr>
<tr>
<td>40–44</td>
<td>151 (10.0)</td>
<td>58 (11.4)</td>
<td>51 (9.6)</td>
<td>42 (8.9)</td>
</tr>
<tr>
<td>45–49</td>
<td>91 (6.0)</td>
<td>35 (6.9)</td>
<td>32 (6.1)</td>
<td>24 (5.1)</td>
</tr>
<tr>
<td>50+</td>
<td>137 (9.1)</td>
<td>52 (10.3)</td>
<td>45 (8.5)</td>
<td>40 (8.5)</td>
</tr>
<tr>
<td>Missing</td>
<td>121 (8.0)</td>
<td>37 (7.3)</td>
<td>33 (6.2)</td>
<td>44 (9.4)</td>
</tr>
<tr>
<td>Job position</td>
<td>Overall (N = 1513)</td>
<td>Time 1 (N = 507)</td>
<td>Time 2 (N = 529)</td>
<td>Time 3 (N = 470)</td>
</tr>
<tr>
<td>Medical staff</td>
<td>381 (25.2)</td>
<td>152 (30.0)</td>
<td>131 (24.8)</td>
<td>98 (20.9)</td>
</tr>
<tr>
<td>Career grade</td>
<td>FY1</td>
<td>7 (1.8)</td>
<td>4 (2.6)</td>
<td>2 (1.5)</td>
</tr>
<tr>
<td></td>
<td>FY2</td>
<td>21 (5.5)</td>
<td>8 (5.3)</td>
<td>10 (7.6)</td>
</tr>
<tr>
<td></td>
<td>StR 1–3</td>
<td>95 (24.9)</td>
<td>31 (20.4)</td>
<td>42 (32.1)</td>
</tr>
<tr>
<td></td>
<td>StR 4–8</td>
<td>93 (24.4)</td>
<td>29 (19.1)</td>
<td>32 (24.4)</td>
</tr>
<tr>
<td>Consultant</td>
<td>139 (36.5)</td>
<td>70 (46.1)</td>
<td>39 (29.8)</td>
<td>30 (30.6)</td>
</tr>
<tr>
<td>LAS</td>
<td>5 (1.3)</td>
<td>4 (2.6)</td>
<td>3 (2.3)</td>
<td>1 (1.0)</td>
</tr>
<tr>
<td>Academic Clinical Fellow</td>
<td>7 (1.8)</td>
<td>1 (0.7)</td>
<td>3 (2.3)</td>
<td>3 (3.1)</td>
</tr>
<tr>
<td>Clinical Fellow</td>
<td>7 (1.8)</td>
<td>3 (2.0)</td>
<td>2 (1.5)</td>
<td>2 (2.0)</td>
</tr>
<tr>
<td>Educational Fellow</td>
<td>2 (0.5)</td>
<td>0 (0)</td>
<td>2 (1.5)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Missing</td>
<td>5 (1.3)</td>
<td>2 (1.3)</td>
<td>4 (3.1)</td>
<td>4 (4.1)</td>
</tr>
<tr>
<td>Nursing staff</td>
<td>769 (50.8)</td>
<td>268 (52.9)</td>
<td>276 (52.2)</td>
<td>225 (47.9)</td>
</tr>
<tr>
<td>Pharmacy staff</td>
<td>16 (1.1)</td>
<td>1 (0.2)</td>
<td>5 (1.0)</td>
<td>10 (2.1)</td>
</tr>
<tr>
<td>Healthcare Assistant/Support Worker</td>
<td>126 (8.3)</td>
<td>43 (8.5)</td>
<td>41 (7.8)</td>
<td>42 (8.9)</td>
</tr>
<tr>
<td>Other Direct Care Staff</td>
<td>45 (3.0)</td>
<td>11 (2.2)</td>
<td>20 (3.8)</td>
<td>14 (3.0)</td>
</tr>
<tr>
<td>Administrative/Support Staff</td>
<td>47 (3.1)</td>
<td>9 (1.8)</td>
<td>13 (2.5)</td>
<td>25 (5.3)</td>
</tr>
<tr>
<td>Other – please specify</td>
<td>75 (5.0)</td>
<td>5 (1.0)</td>
<td>27 (5.1)</td>
<td>43 (9.2)</td>
</tr>
<tr>
<td>Missing</td>
<td>54 (3.6)</td>
<td>18 (3.6)</td>
<td>16 (3.0)</td>
<td>13 (2.8)</td>
</tr>
</tbody>
</table>

**Note.** FY1/2 = Foundation doctor; StR 1–3/4–8 = Specialty registrar.
The SCS (see Appendix E) was collected at three time points on each participating ward (early implementation, mid-implementation, and late implementation). The target response rate on each ward was at least 40%. The data collection period was planned to be 30 days for each time point. However, this turned out not to be feasible due to a variety of contextual factors, such as high staff turnover (particularly among junior doctors), seasonal heavy workload, structural changes (e.g., moving to new facilities), or changes in programme teams in hospitals. Hence, the duration of the collection period ranged from 5 to 133 days at Time 1, 11 to 79 days at Time 2, and 1 to 92 at Time 3. The gap between collections ranged from 3 to 8 months for Time 1 and Time 2, and between 3 and 7 months for Time 2 and Time 3. The average response rate was 48% at Time 1 (range 23% – 85%), 50% at Time 2 (range 36% – 70%), and 45% for Time 3 (range 33% – 68%).

The key contact on each participating ward (e.g., ward manager, clinical lead, nurse in charge) was instructed to hand out the survey to all members of staff working at least 0.5 full-time (FTE) equivalent on the ward. The survey was also launched online, using SurveyMonkey, in order to best respond to the needs of sites, as feedback suggested that online surveys would be preferable to staff members. At Times 2 and 3, the distribution of the surveys was also supported by members of the evaluation team. Hospital staff were approached, the purpose of the survey was explained to them, and they were asked if they worked on the ward a minimum of 0.5 FTE.

The survey included a paragraph explaining the purpose of the study and assuring participants of the anonymity of their responses. Members of staff who were administering the survey were also asked to read out the provided script, assuring the confidentiality of survey responses and further explaining how the data were going to be used. Some of the participating hospitals enclosed the script with the surveys. An implicit consent was used indicated by completion the survey.

Qualitative interviews with staff members

Participants. Semi-structured interviews were conducted at three time points (early implementation, February–April 2015; mid-implementation, September–November 2015; late implementation, April–May 2016) with staff members on four of the paediatric wards participating in the SAFE programme, including two DGH and two SCH. These hospitals were selected to allow for variation in geographical regions across England and size/type of ward. Three of the wards were paediatric inpatient wards encompassing a range of specialities (one also contained a HDU), and the fourth ward was a HDU. The number of beds on each ward ranged from 15–25. Exclusion criteria were wards that only treated patients <8 years of age, due to interviewing considerations.
76 interviews were conducted with staff members at Time 1 across the four paediatric wards, with 16-22 interviews conducted at each site. The staff members were recruited using a combination of sampling techniques. An opportunistic sampling technique was employed to recruit staff members who were available during the evaluation team’s site visits and who could be temporarily excused from the ward. Alongside this, a purposive sampling technique was used to ensure that staff members representing a range of occupations and levels of seniority were recruited at each of the four sites. Finally, to maximise participant recruitment potential, a snowball sampling technique was used to recruit additional staff members, which involved staff members suggesting other staff members who might be interested in participating. The final sample at Time 1 consisted of a range of staff members at each site, including consultants (N=7), registrars and junior doctors (N=5), sisters (N=11), nurses (N=35), administration and housekeeping staff (N=3), ward managers and matrons (N=3), healthcare assistants (N=2), and specialisms such as physiotherapists, play therapists, and school staff (N=10).

23 interviews were conducted with staff members at Time 2 across the four paediatric wards, with 5-7 interviews conducted at each site. The same sampling techniques were employed at Time 2 to recruit new interviewees; however, where possible, follow-up interviews were conducted with Time 1 interviewees to explore possible changes in staff members’ experiences over time. 12 follow-up interviews were conducted in total at Time 2, with 2-4 conducted at each site. The final sample at Time 2 consisted of a range of staff members at each site, including consultants (N=3), registrars and junior doctors (N=1), sisters (N=6), nurses (N=6), administration and housekeeping staff (N=3), ward managers and matrons (N=2), and specialisms such as physiotherapists, play therapists, and school staff (N=2).

23 interviews were conducted with staff members at Time 3 across the four paediatric wards, with 4-7 interviews conducted at each site. The same sampling techniques were employed at Time 3 to recruit interviewees. 11 follow-up interviews were conducted in total at Time 3, with 2-4 conducted at each site. All follow-up interviewees had previously been interviewed at either Time 1 or Time 2, or at both time points. The final sample at Time 3 consisted of a range of staff members at each site, including consultants (N=3), registrars and junior doctors (N=1), sisters (N=4), nurses (N=6), administration and housekeeping staff (N=1), ward managers and matrons (N=2), and specialisms such as physiotherapists, play therapists, and school staff (N=6).

Informed consent was obtained from all participants. Participants were given an information sheet outlining the rationale for and purpose of the study. It was made clear that interview audio recordings and transcripts would be kept confidential and only accessed by the evaluation team. It was also made clear that anonymised quotations from the interviews could be used in the writing up
of the evaluation. Participants were then asked to sign a consent form. To protect participants' identities and maintain confidentiality, any identifiable details given during interviews were anonymised or disguised in interview transcripts.

**Data collection.** The aim of the semi-structured interview schedule used at each time point (see Appendix B) was to gather staff members’ views on and experiences of implementing SAFE at each of the four sites, with a particular focus on huddles. The interview schedules covered several topics, including staff members’ perceptions, understanding, and experiences of implementing huddles and other safety improvement initiatives on the ward, the impact of the implementation of the SAFE programme on the ward, and barriers and facilitators to implementation. The interviews were either conducted face-to-face at the sites, usually during the staff members’ shifts, or over the telephone by the evaluation team. All interviews were audio recorded and transcribed verbatim. The interviews ranged from 7–52 minutes in length at Time 1, 7–32 minutes in length at Time 2, and 12–41 minutes in length at Time 3.

**Qualitative interviews with parents/patients**

**Participants.** Semi-structured interviews were conducted over a 12-month period with parents and patients who had received care on the four paediatric wards described in the previous section. The number of interviews conducted with parents and patients from each site ranged between 4 and 9. 19 interviews were conducted with parents across the sites, 4 interviews were conducted with patients, and 2 joint interviews were conducted with parents and patients together. 19 of the parents were mothers and 2 of the parents were fathers. The patients’ ages ranged from 10–16 years old (M=13.2). 4 of the patients were female and 2 were male. Parents (or patients if they were over 16) completed an expression of interest form while on the ward, which was given to them by ward staff, to state that they were happy to be contacted by the SAFE research team potentially to take part in an interview about their experiences of care on the ward.

Informed consent was obtained from all participants. Parents and patients were given an information sheet outlining the rationale for and purpose of the study. It was made clear that interview audio recordings and transcripts would be kept confidential and only accessed by the evaluation team. It was also made clear that anonymised quotations from the interviews could be used in the writing up of the evaluation. Parents were then asked to sign a consent form in relation to their own participation and that of their child (if their child was under 16 years of age). Patients under 16 were also asked to sign an assent form and patients over 16 were asked to sign a consent form. To protect participants’ identities and maintain confidentiality, any identifiable details given during interviews were anonymised or disguised in interview transcripts.
Data collection. The research team collected the expression of interest forms from the sites and then contacted the parents (and patients if they were over 16) to invite them to take part in an interview. The interviews took place at participants’ homes, on the ward, in a community building, or over the telephone. Separate interview schedules were used to interview the parents and patients (see Appendix C). For the patients, one interview schedule was designed to be used with 8–11 year olds and another interview schedule was designed to be used with 12–18 year olds. The aims of the interview schedules were to gather parents’ and patients’ perspectives on their experiences of care on the ward (what went well and what did not go so well), and their experiences of communicating with staff on the ward. The parents and patients were also asked about their perspective on the huddle, as a safety improvement initiative, and whether they had noticed the huddle taking place on the ward. All interviews were audio recorded and transcribed verbatim. The interviews ranged from 10–50 minutes in length.

Huddle observations

All huddle meetings that took place over a 2-day period at the chosen qualitative sites at all three time points defined above were recorded. The daily frequency of huddles ranged from 1–3 across the four wards. The resulting sample was:

- Ward 1: 6 huddles
- Ward 2: 4 huddles
- Ward 3: 4 huddles
- Ward 4: 2 huddles

This provided a total of 16 huddle meetings in the corpus. The meetings ranged from 1.40 to 10 minutes in length.

The huddles were audio recorded by four non-participant observers from the evaluation team, with two on each ward at any one time. Huddle recordings were then transcribed. The non-participant observers wrote ethnographic field notes as they watched the huddles and recorded the order of speakers to aid transcription. The observers also completed the Huddle Observation Tool during the huddles.

Huddle Observation Tool. This instrument was developed by the evaluation team (see Appendix A for further information about the development and use of the Huddle Observation Tool). It was developed specifically to help capture how the huddles were carried out during the evaluation team’s observations of the huddles at the subset of wards participating in the qualitative arm of the evaluation. It comprised four domains, each of which had one item rated on a 5-point scale, from 1 (“strongly disagree”) to 5 (“strongly agree”), with free text response sections for notes: ‘Risk management’ (“Were there opportunities to identify risks and come up with concrete plans for these risks?”), ‘Structure’ (“Did the huddle have a clear structure?”), ‘Collaborative culture’ (“Did everyone
have the opportunity to contribute and were all points of view respected?”), and ‘Environment’ (“Was the huddle free from distractions?”).
Chapter III: What does the implementation of huddles and other safety improvement initiatives look like in different contexts? What are parents’ and patients’ views on and experiences of huddles?

Key findings from the current chapter can be seen here

To answer the questions above, this chapter includes data collected at the four qualitative sites and it provides a) descriptions of the huddle on the qualitative wards, based on staff interviews and huddle observation data across all three time points; b) descriptions of the huddle in early implementation based on an in-depth conversation analysis of the Time 1 huddle observation audio recordings; c) parents’ and patients’ perceptions of the huddle given during their interviews. This chapter is relevant to the ‘input’ and ‘context’ components of the theory of change (see Figure 2), i.e., as part of the SAFE evaluation we aimed to comprehensively describe implementation of the programme, primarily huddles, and how this was experienced by members of staff and patients/parents in different hospital settings.

Descriptive data from staff interviews and huddle observations

Table 6 provides details about the huddle location, attendees, time, length, and content, from the perspectives of the staff members interviewed at Times 1, 2, and 3 as part of the evaluation. Table 7 provides further details, drawing on the Huddle Observation Tools completed at each huddle observation by the evaluation team at Times 1, 2, and 3, about whether ‘watchers’ were mentioned as part of the huddle (specific terminology denoting at-risk patients), whether any tools (such as the patient list) were used in the huddle, whether a clear leader of the huddle was identified, attendees at the huddle, and time of the huddle.
Table 6. Details about the main features of the huddle and other safety improvement initiatives being used at the four qualitative sites at Times 1, 2, and 3, from the perspectives of the staff interviewees.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Time point</th>
<th>DGH 1</th>
<th>DGH 2</th>
<th>SCH 1</th>
<th>SCH 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Location of the huddle</strong></td>
<td></td>
<td><strong>Time 1</strong> At the patient board; in the middle of the ward by the nurses’ station</td>
<td><strong>Time 1</strong> At the patient board; in a private room just off the ward</td>
<td><strong>Time 1</strong> At the patient board; in the middle of the ward by the nurses’ station</td>
<td><strong>Time 1</strong> At the patient board; in the middle of the ward by the nurses’ station</td>
</tr>
<tr>
<td><strong>Time 2</strong> No change</td>
<td></td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td><strong>Time 3</strong> No change</td>
<td></td>
<td>No change</td>
<td>Now in a private room just off the ward</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td><strong>Staff present at the huddle</strong></td>
<td>Time 1</td>
<td>Led by a consultant, nurse in charge, or matron; also attended by sisters and other senior nursing staff, doctors (e.g., junior doctors and registrars), housekeeping staff, administrative staff, students, dieticians, and pharmacists; only a small number of junior nursing staff members (if any) attend</td>
<td>Led by a consultant, nurse in charge, or matron; also attended by sisters and other senior nursing staff, doctors (e.g., junior doctors and registrars), housekeeping staff, administrative staff, students, play specialists, and school staff members; all junior nursing staff members attend</td>
<td>Led by a consultant, nurse in charge, or matron; also attended by sisters (although only if they are in charge of the ward or are a band 6) and other senior nursing staff, doctors (e.g., junior doctors and registrars), and medical staff representatives from a particular speciality team; only a small number of junior nursing staff members (if any) attend</td>
<td>Led by a consultant, nurse in charge, or matron; also attended by sisters and other senior nursing staff, doctors (e.g., junior doctors and registrars), and medical staff representatives from a particular speciality team; only a small number of junior nursing staff members (if any) attend</td>
</tr>
<tr>
<td><strong>Time 2</strong> No change</td>
<td></td>
<td>Pharmacists now also attend</td>
<td>On-call medical staff from the night shift now attend the morning huddle</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td><strong>Time 3</strong> No change</td>
<td></td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td>Feature</td>
<td>Time point</td>
<td>DGH 1</td>
<td>DGH 2</td>
<td>SCH 1</td>
<td>SCH 2</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
<td>-------</td>
</tr>
<tr>
<td>Time of the huddle</td>
<td><strong>Time 1</strong></td>
<td>Morning (prior to the ward round); occurs at least twice a day; takes place at set times</td>
<td>Morning (prior to the ward round); occurs at least twice a day; takes place at set times; no difference in huddle occurrence on weekdays or at weekends</td>
<td>Morning (prior to the ward round); occurs at least twice a day; takes place at set times; more variable huddle occurrence at weekends and in the evening</td>
<td>Morning (prior to the ward round); occurs once a day takes place at set times</td>
</tr>
<tr>
<td></td>
<td><strong>Time 2</strong></td>
<td>No change</td>
<td>The afternoon huddle has not been feasible due to competing staff responsibilities at this time, but the huddle still happens regularly in the morning and evening</td>
<td>The morning huddle time has been moved forward by 15 minutes to enable the on-call medical staff from the night shift to attend</td>
<td>More variable timing now as it depends on when the medical staff are free (a set time for the huddle has not been feasible due to the medical staff members’ schedules)</td>
</tr>
<tr>
<td></td>
<td><strong>Time 3</strong></td>
<td>The evening huddle happens less regularly than the earlier huddles due to competing staff responsibilities at this time</td>
<td>No change</td>
<td>No change</td>
<td>Now takes place once in the day on a few days a week (rather than every day)</td>
</tr>
<tr>
<td>Length of the huddle</td>
<td><strong>Time 1</strong></td>
<td>5-15 minutes or less (typical), but it can last up to 30 minutes (atypical)</td>
<td>5-15 minutes or less (typical)</td>
<td>5-15 minutes or less (typical), but it can last up to 30 minutes (atypical)</td>
<td>5-15 minutes or less (typical), but it can last up to 30 minutes (atypical)</td>
</tr>
<tr>
<td></td>
<td><strong>Time 2</strong></td>
<td>No change</td>
<td>Now consistently quick and time efficient</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td><strong>Time 3</strong></td>
<td>Now consistently quick and efficient</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
</tbody>
</table>
Table 6. Continuation.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Time point</th>
<th>DGH 1</th>
<th>DGH 2</th>
<th>SCH 1</th>
<th>SCH 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Use of a checklist or script format to ensure that all necessary topics are covered; use of the patient board; use of PEWS scores</td>
<td>Use of a checklist or script format to ensure that all necessary topics are covered; use of the patient board; use of PEWS scores</td>
<td>Use of a checklist or script format to ensure that all necessary topics are covered; use of the patient board; use of PEWS scores</td>
<td>Use of a checklist or script format to ensure that all necessary topics are covered; use of the patient board; use of PEWS scores</td>
</tr>
<tr>
<td></td>
<td>Time 1</td>
<td>Discussion points: all patients on the ward and the most unwell or high risk patients are identified; safeguarding issues and social issues; patients with similar names; high risk therapies; patient admissions, discharges, and transfers; availability of beds; staffing issues; issues raised by parents</td>
<td>Discussion points: all patients on the ward and the most unwell or high risk patients are identified; safeguarding issues and social issues; absconding risks; patient admissions, discharges, and transfers; staffing issues; issues raised by parents</td>
<td>Discussion points: all patients on the ward are discussed and the most unwell or high risk patients ('watchers') are identified; patient admissions, discharges, and transfers; availability of beds; staffing issues; issues raised by parents</td>
<td>Discussion points: all patients on the ward are discussed and the most unwell or high risk patients ('watchers') are identified; patient admissions, discharges, and transfers; availability of beds; issues raised by parents</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Make action plans to mitigate identified issues and review these plans during later huddles</td>
<td>Make action plans to mitigate identified issues and review these plans during later huddles</td>
<td>Make action plans to mitigate identified issues and review these plans during later huddles</td>
<td>Make action plans to mitigate identified issues and review these plans during later huddles</td>
</tr>
<tr>
<td></td>
<td>Time 2</td>
<td>No change</td>
<td>Clinical issues are no longer spoken about in depth (if there are no concerns for a patient then nothing else about that patient is discussed in the huddle)</td>
<td>No change</td>
<td>No change</td>
</tr>
<tr>
<td></td>
<td>Time 3</td>
<td>A script is no longer used, as staff have found it easier to just discuss each patient one by one in the order that they are in on the patient board; issues are no longer spoken about in depth (if there are</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
</tr>
</tbody>
</table>
no concerns for a patient then nothing else about that patient is discussed in the huddle)
### Table 6. Continuation.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Time point</th>
<th>DGH 1</th>
<th>DGH 2</th>
<th>SCH 1</th>
<th>SCH 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other initiatives in use</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Time 1</strong></td>
<td>PEWS scores were already in use prior to SAFE; SBAR was introduced as part of SAFE</td>
<td>PEWS scores were already in use prior to SAFE; SBAR was already in use prior to SAFE</td>
<td>PEWS scores were already in use prior to SAFE; SBAR was already in use prior to SAFE; a dedicated ward consultant or ‘consultant of the week’ was introduced and an advanced nurse practitioner (ANP) was appointed on the ward around the same time that SAFE began</td>
<td>PEWS scores were already in use prior to SAFE; SBAR was already in use prior to SAFE; the nursing staff team also have a ‘core huddle’ at least twice a day (during which falls risks, infection risks, patients with similar names, safeguarding concerns, and staffing issues are discussed), which was already being implemented prior to SAFE</td>
<td></td>
</tr>
<tr>
<td><strong>Time 2</strong></td>
<td>A safety briefing has been introduced in the mornings and evenings (which involves the nurse in charge briefly updating the nurses about the plan for and any issues surrounding each patient following the doctors’ morning or evening handover)</td>
<td>No change</td>
<td>No change</td>
<td>No change</td>
<td></td>
</tr>
<tr>
<td><strong>Time 3</strong></td>
<td>Initiatives to better involve patients and parents in their care (e.g., bedside whiteboards detailing each patient’s plan of care and PEWS scores) have been introduced as a result of the implementation of SAFE; have begun implementing Schwartz Rounds, which are a structured forum where all staff meet together regularly to discuss and reflect on the emotional and social aspects of their work</td>
<td>Initiatives to better involve patients and parents in their care (e.g., bedside whiteboards detailing each patient’s plan of care) have been introduced as a result of the implementation of SAFE</td>
<td>No change</td>
<td>No change</td>
<td></td>
</tr>
</tbody>
</table>

*Note. PEWS = A Paediatric Early Warning System score is a tool aiding the assessment, measuring, and monitoring of a child’s vital signs; SBAR = Situation, Background, Assessment, and Recommendation is a tool aiming to standardise communication within healthcare systems.*
Table 7. Huddle characteristics across the sites and time points of data collection, as recorded with the Huddle Observation Tool.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Time point</th>
<th>DGH 1</th>
<th>DGH 2</th>
<th>SCH 1</th>
<th>SCH 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><em><em>Watchers</em> identified in the huddle</em>*</td>
<td>Time 1</td>
<td>75.0% (N=6)</td>
<td>16.7% (N=2)</td>
<td>100.0% (N=8)</td>
<td>25.0% (N=1)</td>
</tr>
<tr>
<td></td>
<td>Time 2</td>
<td>100.0% (N=15)</td>
<td>75.0% (N=9)</td>
<td>75.0% (N=9)</td>
<td>66.7% (N=4)</td>
</tr>
<tr>
<td></td>
<td>Time 3</td>
<td>100.0% (N=9)</td>
<td>66.7% (N=8)</td>
<td>83.3% (N=10)</td>
<td>100.0% (N=3)</td>
</tr>
<tr>
<td><strong>Tools used in the huddle</strong></td>
<td>Time 1</td>
<td>87.5% (N=7)</td>
<td>83.3% (N=10)</td>
<td>87.5% (N=7)</td>
<td>75.0% (N=3)</td>
</tr>
<tr>
<td></td>
<td>Time 2</td>
<td>100.0% (N=15)</td>
<td>100.0% (N=12)</td>
<td>83.3% (N=10)</td>
<td>100.0% (N=6)</td>
</tr>
<tr>
<td></td>
<td>Time 3</td>
<td>100.0% (N=9)</td>
<td>100.0% (N=12)</td>
<td>75.0% (N=9)</td>
<td>100.0% (N=3)</td>
</tr>
<tr>
<td><strong>Clear leader of the huddle identified</strong></td>
<td>Time 1</td>
<td>100.0% (N=8)</td>
<td>41.7% (N=5)</td>
<td>62.5% (N=5)</td>
<td>50.0% (N=2)</td>
</tr>
<tr>
<td></td>
<td>Time 2</td>
<td>100.0% (N=15)</td>
<td>100.0% (N=12)</td>
<td>50.0% (N=6)</td>
<td>100.0% (N=6)</td>
</tr>
<tr>
<td></td>
<td>Time 3</td>
<td>100.0% (N=9)</td>
<td>100.0% (N=12)</td>
<td>75.0% (N=9)</td>
<td>100.0% (N=3)</td>
</tr>
<tr>
<td><strong>Staff present at the huddle</strong></td>
<td>[Median (range): job roles of attendees]</td>
<td>8 (4 - 7): ward manager/matron, sister/staff nurse, health care assistant, consultant, registrar, junior doctor</td>
<td>7 (3 – 16): ward manager/matron, sister/staff nurse, health care assistant, consultant, registrar, junior doctor, student, three specialist allied health professionals of different disciplines</td>
<td>3 (3 – 7): ward manager/matron, sister/staff nurse, consultant, junior doctor</td>
<td>3 (2 - 4): ward manager/matron, sister/staff nurse, consultant</td>
</tr>
<tr>
<td></td>
<td>Time 2</td>
<td>4 (3 – 6): ward manager/matron, sister/staff nurse, consultant, registrar, junior doctor</td>
<td>7 (7 – 8): ward manager/matron, sister/staff nurse, health care assistant, consultant, junior doctor, specialist staff, housekeeping, student, eating disorders sister, physician assistant, play specialist</td>
<td>5 (4 – 7): ward manager/matron, sister/staff nurse, consultant, registrar, junior doctor, microbiologist</td>
<td>5 (5): ward manager/matron, sister/staff nurse, consultant, junior doctor,</td>
</tr>
<tr>
<td></td>
<td>Time 3</td>
<td>5 (5 – 6): ward manager/matron, sister/staff nurse, healthcare assistant, consultant, registrar, junior doctor, student</td>
<td>10.5 (7 – 20): ward manager, sister/nurse in charge, other nursing staff (e.g., band 5), health care assistant, consultant, registrar, junior doctor, specialist staff, housekeeping, student, pharmacist, play specialist, school rep, music therapist</td>
<td>6.5 (5 – 8): ward manager/matron, sister/staff nurse, consultant, registrar, junior doctor</td>
<td>3 (3): ward manager/matron, sister/staff nurse, consultant</td>
</tr>
<tr>
<td>Feature</td>
<td>Time point</td>
<td>DGH 1</td>
<td>DGH 2</td>
<td>SCH 1</td>
<td>SCH 2</td>
</tr>
<tr>
<td>------------------------------</td>
<td>------------</td>
<td>--------------------------------------------</td>
<td>--------------------------------------------</td>
<td>--------------------------------------------</td>
<td>--------------------------------------------</td>
</tr>
<tr>
<td>Time of the huddle</td>
<td><strong>Time 1</strong></td>
<td>Morning: 9:30 / 9:45</td>
<td>Morning: 9:30</td>
<td>Morning: 9:00</td>
<td>Morning: 9:30 / 10:20</td>
</tr>
<tr>
<td></td>
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<td>Evening: 17:05</td>
<td>Afternoon: 12:45</td>
</tr>
<tr>
<td>Length of the huddle in minutes [Mean (range)]</td>
<td><strong>Time 1</strong></td>
<td>5.25 (3 – 8)</td>
<td>4.00 (2 – 5)</td>
<td>8.50 (6 – 11)</td>
<td>2.00 (2)</td>
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<tr>
<td></td>
<td><strong>Time 2</strong></td>
<td>2.60 (2 – 3)</td>
<td>4.75 (4 – 5)</td>
<td>6.25 (5 – 10)</td>
<td>3.00 (3)</td>
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<tr>
<td></td>
<td><strong>Time 3</strong></td>
<td>6.44 (4 – 10)</td>
<td>9.18 (7 – 11)</td>
<td>6.25 (5 – 7)</td>
<td>2.00 (2)</td>
</tr>
</tbody>
</table>

*Note. % refers to the percentage of huddles in which a given feature was present; N refers to the number of huddles in which a given feature was present.
* At risk patients
** E.g., patient list.
Table 6 shows that the huddle took place at the same location at three of the sites (by the nurses’ station in the middle of the ward), but notably took place in a private room just off the ward at one of the sites. This was the case across all three time points, apart from for one site whose huddle had moved location to a private room just off the ward by Time 3. As recorded with the Huddle Observation Tool (Table 7), consistently across the wards and time points visual tools were used to facilitate the discussion in the huddle. The most commonly used tool was a large board comprising of information about all patients, which helped to guide discussion about individual patients whom staff noted potential risks to or concerns about.

Table 6 also shows that, from the staff interviewees’ perspectives, similar staff members attended the huddle at each site across Times 1, 2, and 3, although there was variation in how many junior nursing staff members attended the huddle, with only a small number of junior nursing staff members (if any) attending the huddle at three of the sites, yet the entire junior nursing staff team attending the huddle at one of the sites. As indicated by the Huddle Observation Tool (Table 7), the number of staff participating in the huddle ranged from 3 to 16 at Time 1, with DGH1 and DGH2 having on average a greater number of staff involved than SCH1 and SCH2. At Time 2, the differences in the numbers of participating staff diminished, with wards having on average between 4 and 7 participants. At Time 3, again the differences between sites became more prominent with DGH2 having a median of 10.5 (range 7-20) staff per huddle, DGH1 having a median of 5 (range 5-6), SCH1 having a median of 6.5 (range 5-8), and SCH2 having a median of only 3. Professionals who were most commonly participating in the huddle, according to the completed Huddle Observation Tools, were the ward manager/matron, sister/staff nurse, and consultant. There was substantial variability across the wards, but not across the time points, in terms of other participating professional groups. For instance, SCH1 also tended to have junior doctor and registrars involved and sporadically a microbiologist, whereas at DGH1 healthcare assistants, junior doctors (e.g., SHO), and students also took part. Huddles tended to have clear leaders, with the exception of SCH1 where leaders could only be clearly identified between 50.0% and 75.0% of the time.

While the huddle took place at set times at all four sites at Time 1, as Table 6 and Table 7 indicate, by Times 2 and 3 the huddle timing was more variable and infrequent at one of the sites (SCH2) according to the staff interviewees.

The length of the huddle was typically relatively short at all sites across all time points, although with some variation; however, as Table 6 shows, by Time 2 and Time 3 the huddle was noted as being consistently quick and time efficient at two of the sites. The completed Huddle Observation Tools (as detailed in Table 7) indicated that the huddles were shortest at SCH2, where they lasted on average between 2 and 3 minutes across all three time points of data.
The length of the huddle varied slightly at SCH1 across the time points where at Time 1 the length averaged 8.50 minutes (range 6-11) and then reduced to 6.25 minutes at Time 2 (range 4-10) and 6.25 minutes (range 5-7) at Time 3. The length of the huddle increased over the time at DGH2 starting with 4 minutes at Time 1 (range 2-5), through 4.75 (range 4-5) at Time 2 up to 9.18 (range 7-11) at Time 3. Finally, at DGH1 the length of huddle fluctuated between 2.60 minutes (range 2-3 minutes) at Time 2, through 5.25 (range 3-8) at Time 2, and the longest being at Time 3 (6.44, range 4-10).

Table 6 indicates that the content of the huddle was relatively consistent between sites and across time points, although by Time 2 or Time 3 staff members at two of the sites felt that patient issues were no longer discussed in any great depth in the huddle (as the huddle is not the place for this, it is purely a place for bringing concerns to staff attention), which contributes to its efficiency. The completed Huddle Observation Tools (Table 7) also showed that one of the most commonly discussed issues in the huddle were patients who need closer attention due to their condition (“watchers”), who were consistently identified across the wards across and three time points. An exception was DGH2 at Time 1, where watchers were identified only in 16.7% (N=2) instances and SCH2 at Time 1 with watchers being identified 25.0% of the time (N=1).

Table 6 also highlights the other safety improvement initiatives, according to the staff members, that were already being implemented at the sites prior to SAFE or which were introduced at a similar time or as a result of the SAFE programme. For instance, at one of the sites, a ‘consultant of the week’ model (i.e. a weekly dedicated ward consultant) was introduced on the ward around the same time as SAFE. Moreover, at two of the sites at Time 3, initiatives aiming to involve patients and parents more in their care had been introduced.

A conversation analysis of the Time 1 huddle audio recordings

**Background.** A huddle is a unique form of conversation with the goal of improving safety for patients. Exactly how this conversation takes place – what is said, who by, and at what point of the huddle - is the focus of this section, as a further way of addressing the research question that is the focus of this chapter:

Conversation analysis has been used previously to highlight important social-interactional moves in the accomplishment of medical tasks (Dooley, Bailey, & McCabe, 2015; Heritage & Maynard, 2006; Heritage & Robinson, 2006). For example, Robinson (2006) studied how doctors opened GP consultations. It was found that the way that opening questions were designed resulted in particular answers from patients that displayed an understanding that they were either being asked about a new problem or an existing condition. Moreover, patients held doctors accountable when they asked opening questions that were
inappropriate for their particular health issues. The implications, as Maynard and Heritage (2005) conclude, are that doctors “can learn how their practices for soliciting concerns and problems have consequences for patients’ perceptions of doctors’ competence and credibility” and ultimately, patient satisfaction (Maynard & Heritage, 2005, p. 431). In paediatric consultations, Stivers (2002) showed how through silence, questions, and refusal to engage in shared laughter, parents resisted the treatment proposals of doctors who recommended against the use of antibiotics for viral infections. Furthermore, these parental responses were linked to doctors reversing such recommendations. These enquiries demonstrate vividly the action properties inherent in communication, as what is said, or not said, at particular moments in medical conversations can influence the treatment a patient ultimately receives. As Ong, Haes, Hoos and Lammes (1995) note, “while sophisticated technologies may be used for medical diagnosis and treatment, interpersonal communication is the primary tool by which the physician and patient exchange information” (p. 903).

A recent discourse analysis of doctors’ shift handovers investigated how medical professionals speak to one another. These are the encounters that take place when one doctor finishes a shift and another arrives to take over, and involves a summary of what has happened on the ward on the outgoing shift. This analysis, by Eggins and Slade (2012) demonstrated the interdependence between the informational and interactional elements of effective handovers.

In other words, to improve safety, it is not just what is said, but how it is said and how others receive this information that makes a handover effective or otherwise. Huddles, in theory, share many features with handovers as they involve information sharing across a ward team aiming for continuity of care and, at times, a transfer of accountability, when taking place at the end of a shift. Furthermore, the time pressures involved in both situations make effective communication imperative. However, huddles are theoretically different in so far as they involve all of those caring for a child (rather than doctors only) and only focus on particularly concerning patients and situations with a future orientation towards mitigating risks (as opposed to summarising what has taken place). We might hypothesise that the huddles involve a more dialogic form of communication than the traditional handover, involving some ‘reporting’ to others but also discussion and decision making.

Looking at the way that the conversation in huddles is executed is particularly relevant given that the participating hospitals have not been provided with a script, or model for how to run these meetings. Wards have instead been given a set of principles (see above), and as we shall see, these have been implemented in different ways. Huddles were developed in a very different healthcare context to that of the NHS in the UK and the participating SAFE wards face different routine clinical realities. An overall evaluation priority is to understand how context affects huddle practice. This can both aid the reflection of current
huddlers in terms of the best way they can achieve this in their own working context and also aid transferability to new wards. It is especially important to understand the specifics of SAFE Implementation given the fact that rates of success of new initiatives decline rapidly as they are rolled out across different working environments (Parry, Carson-Stevens, Luff, McPherson, & Goldmann, 2013). The conversation analytic method takes as its premise that an understanding of the contextual features that ‘members’ (in this case, the medical staff) themselves orient to, and shape. This is vital for understanding social phenomena, in this case, huddles. The aim of this article is to begin to map how this conversation takes place.

**Recording and transcription.** Huddle meetings were audio-recorded using two recorders at opposite sides of the huddle space. They were transcribed by the observers present on the ward using simplified conversation analytic conventions (Jefferson, 2004).

**Data analysis and results.** Four sites were analysed but due to poor-quality audio, only huddles from two sites were intelligible for >90% of the interaction. These two sites formed the core of the analysis but the other two sites were used only from sections where the transcript was complete enough to be intelligible. A senior researcher who was not present at data collection analysed material using conversation analysis. This first-pass analysis was taken to three data sessions with an advisor to the programme and another senior researcher in which analytic disagreements were discussed and resolved. Analysis was initially guided by the broad evaluation question: What does increased situation awareness look like? The answer, given by an initial reading of the data noting the recurrent interactional and linguistic features, was that increased situation awareness involves *the careful conversational negotiation of ‘concerns’*. This led to the specific research questions detailed below.

**How are at-risk patients identified in huddles?**

Across the four wards, huddlers employed a remarkable variety of ways in which to identify at-risk patients. Our analysis revealed that there were in fact seven separate processes that huddlers used. These processes tended to be ward-specific, but some wards used more than one process.

The processes may be summarised as follows:

1. One member topicalises at risk-patients → another member summarises them (Wards 2, 3, and 4)
2. One member makes an assessment (‘we are not concerned’) → the same member then accounts for this assessment (Ward 2)
3. One member asks a question about who is at-risk today → huddle members generate a shortlist of candidates → huddle members choose a final list of at-risk patients (Wards 2 and 3)
Members go through all of the patients on the ward → they are categorised as ‘concerns/no concerns’ → ‘concerns’ are discussed (Ward 1)

One member identifies ‘deteriorating patients’ by listing them → the same member says whether they are ‘concerned’ or not about this shortlist (Ward 4)

One member asks about ‘incidents’ → a patient incident is raised → the patient is identified as a ‘watcher’ (at-risk) → a general shift handover ensues → all ‘watchers’ are then summarised (Ward 3)

No explicit identification is made about whether there are at-risk patients or not (Ward 2)

Most methods were therefore fairly idiosyncratic to particular wards and seemed to be in response to the specific local settings that the huddles were situated within.

Ordinary concerns and acute concerns

What was particularly interesting was the ways in which huddlers were categorising patients. For example, Ward 1 used the binary categories ‘concerns/no concerns’ to display whether a case warranted further attention. However, the interactional space also allowed this binary to be subtly resisted and new categories produced:

Extract 1, Ward 1, day 2, evening

1. WARD MANAGER: Ok, start again
2. NURSE 1: ( ) no concerns (. ) PEWSing one. heart rate’s a bit up.
3. DOCTOR: ok.
4. (3.0)
5. _____ (patient name)?
6. (2.0)
7. NURSE 1: no concerns
8. DOCTOR: Ok (. )
9. NUMEROUS: Six-teen
10. WARD MANAGER: Sixteen?
11. NURSE 2: He’s had (a) fever since he’s been with us (. ) he could do with a review (. ) Dad’s insisting he wants to be seen (. ) so:::
12. NURSE 1: Concerns or no [concerns?]  
13. NURSE 2: [>No concerns] at the moment<
14. WARD MANAGER: Nineteen?
15. NURSE 3: No concern::ns:
16. WARD MANAGER: Twenty::?
In extract 1, after the ward manager opens the meeting, Nurse 1 self-selects and takes the floor. The doctor then prompts the next turn, which also prompts the phrase "no concerns" (line 7). That the ward has established a routine is evident from this turn-taking structure and from the fact that many in the room coordinate at lines 8 and 9 to prompt the next speaker. Nurse 2 then deviates slightly from this format. Rather than beginning with "no concerns" she provides an expansion, starting to describe the patient’s situation. Nurse 1’s closed question at line 12 implies that this lack of categorisation is problematic. Is this a concern, or not? The question suggests that the detail is irrelevant, but also that Nurse 2 is uniquely placed to make this assessment. Questions warrant answers, and Nurse 2 categorises the patient as not a concern, but qualifies this with "at the moment" (line 14). This phrasing highlights the time-bound nature of the concerns that are being discussed – in the ‘moment’ of this huddle, they are not a concern, but this hints that change is possible. Arguably, it introduces a third category of ‘patient’ into the conversation – the concerns/the no concerns/and the ones that are somewhere between the two. If concerns are anticipations of risk or deterioration, then this third category could be regarded as an anticipation of concerns – these might be termed ‘pre-concerns’. It could be argued that this is a superordinate level of SA. But whether this level has a place here, is for the huddle to decide. Indeed, the continuation from line 15 of their typical turn-taking indicates that this is enough discussion of this patient for now.

This brief exchange highlights something important about how turn-taking occurred at Ward 1. In theory, huddles are places where potential risks and concerns are discussed, but in a ‘rapid exchange’. There is a necessary tension between looking ahead, and expediency and efficiency – Nurses 1 and 2 personify this tension here. Moreover, in theory, huddles are also meetings where concerns about patients from everyone, including non-medical staff such as parents, are to be taken seriously. In this particular huddle, Nurse 2’s handover of a request from a parent is not treated as relevant to the business of the huddle, and does not lead to a plan of action.

Extract 1 is a typical example of how the conversation unfolded at Ward 1. At Ward 2, staff sometimes used the similar language of ‘concern’ (extract 2, line 14), but the process through which patients were identified was quite different.

**Extract 2, Ward 2, day 1, morning**

9. **Consultant:** (Shall we do the) board huddle?
10. (3.0)
11. **Staff nurse:** Okay: so: we’ve (.). ehm, [we’re not]
12. **Consultant:** [(        )]
13. **Staff nurse:** concerned about anybody.
14. **Consultant:** Ok=ehr=
15. **Staff nurse:** =we’ve got- one HDU patient, __ (patient’s name) who
16. is Pewing at four [(        )]
17. **Consultant:** [So it’s now four] okay
18. **Staff nurse:** Yeah
19. **Consultant:** So we had six in the morning, so it’s now four [so it’s improving]
20. **Staff nurse:** [Hmm yes]

In this extract, after the consultant opens the meeting (extract 2, line 10), the nurse gives a general gloss about all of the patients: “we’re not concerned about anybody” (lines 12-14). She then unpacks this for those present, curiously demonstrating her lack of concern by discussing a patient who has scored 4 on the ‘PEWS’ chart, which is in the ‘amber’ range. The PEWs, or Paediatric Early Warning System scores, is a standardised measure of risk to patients – patients are rated on cardiovascular, respiratory and behavioural signs and given a score – the score equates to a green, amber or red range, and anything above 5 is in the ‘red’ range requiring urgent response from the whole medical team. A score of 4 would therefore indicate an already significant risk to the patient. However, in this huddle, the score is not worrying - the consultant’s addition of “it’s now four” (line 18), introduces a timeframe to this information about the score, which he shows as being relative to the previous score of 6 – therefore an improvement. This highlights a general feature of the huddles in this sample – the concerns raised could not necessarily be defined as a set of abstract criteria, separate from the context in which they arose. Concerns about patients in particular were often temporally relative to the last huddle that took place. They were also directional – the key question being: What way is this patient moving – towards stability or towards instability? After all, assessing deterioration requires a starting point and a definition of what normal is. For ill patients, this baseline would not be the same as a healthy population. This highlights a general point across of all the hospitals - huddlers understood risk with reference to:

1. The normal happenings on their ward and whether a situation was outside such procedural and institutional norms – their ‘business as usual’
2. Relative to the patient’s status in their last huddle meeting

Nurse 2’s response in extract 1 demonstrated that despite the primacy of the dichotomy between concern/not a concern on Ward 1, it was sometimes subtly resisted and variations on this system were also possible. Nurse 2 did this by
emphasising the time-limited nature of her assessment – but there were other ways that people did this too. These ‘gradings’ of concern were not solely medical in purpose but also served interactional functions:

Extract 3: Ward 1, day 1, morning

78. BANK NURSE: <Err tw-enty-four:::, err:: pad is still (.) itching. (.)
     because=of
80.?: (inaudible)
81. (door creaks, opening and child crying can be loudly heard until door shuts))
82. BANK NURSE: So I would say that the PEW is one, I’m waiting to give
83. medicine this morning (inaudible) but if-
84. DOCTOR: ->we should
     just
85. check on::: them in terms of scoring<(.erm er::: but
     >we’ll
86. review on the ward round anyway but I don’t think
87. we’ve got
88. any acute concerns<

88. BANK NURSE: No, no, no concerns.

At line 78, the bank nurse opens her turn not by saying whether or not she has a concern but by giving details about the patient. By making the itching relevant at this point in the huddle, the implication is that this is a potential concern. The speaker then makes her assessment of the patient and then displays the action that she will take (lines 82-83). At this point, she is cut off by the doctor, who initiates a plan. The language is collaborative - "we” (line 84) should check the score and "we’ll review” (line 85) - though the timing of his interjection is an assertive claim to the floor. The addition of "anyway” (line 86) indicates that the plan is a concession and that action is not necessary. The framing of this plan as an extra precaution rather than a necessity, as also indicated in the subsequent assessment “but I don’t think we’ve got any acute concerns” (line 86-87). The lexical choice here is notable – the doctor does not say that this situation is not concerning – if he did so this might be dismissive of the bank nurse who has raised the point as relevant to the meeting. This is particularly important in light of the fact that huddles in theory are places where anyone can feel comfortable to raise a worry that they have about a patient. However, the doctor does need to find a way of showing to the others that this is not his priority, and to find a way of giving over the floor to the next topic. The use of “acute concern” here saves the face of the nurse who has raised this while offering a closing of the discussion. The bank nurse’s turn is more like a handover in style (see Eggins and Slade, 2012), and the doctor’s turn also gently redefines the conversation as about ‘acute concerns’ rather than the ‘ordinary concerns’/ business of the ward.
The bank nurse shows emphatic agreement on line 87 by using the original term "concern" and confirming that the topic is dealt with. The doctor’s turn in this sequence (line 86-87), although more indirect, in fact serves the same pragmatic function as nurse 1’s question above (extract 1, line 13): it is read as an invitation by the nurse responsible to make an assessment using the language of concern. Ward 1’s meetings then worked to an implicit rule that only once this categorisation concern/no concern is made explicitly, by the assigned nurse, can the topic shift to another patient. The negotiation of concerns is thus a collaborative enterprise in so far as the bedside nurse has the final say on a patient. However, as we have seen, this does not mean that his or her concerns, or pre-concerns, are necessarily treated by others as relevant, or discussed and ‘thrashed-out’ between all of those present.

**The one to watch**

At Ward 2, as well as talking of concerns, or lack of, staff members also used other terms. The next extract shows a sequence toward the beginning of a huddle, where the senior nurse, who is the assigned huddle leader, is ‘interviewing’ the consultant about the risks that he perceives. It is an example of a type 1 process, as identified above:

**Extract 4: Ward 2, day 2, afternoon**

17. **Senior nurse:** So:: (.>) anyone we’re worried about<
18. (0.6)
19. >at the moment?<
20. **Consultant:** At the moment, so the only one which is now in an MRI,
21. yes?, this boy err:: three one.
22. **Senior nurse:** Yes.
23. (8 lines omitted)
24. **Consultant:** So this is the one (.) and the other one I mean the er er girl to watch is the girl wi- on oxygen, yes?=
25. **Senior nurse:** =Yes=
26. **Consultant:** =three
27. **Senior nurse:** Yeah.
28. **Consultant:** (Said) that she`s well, just the oxygen y::: she was off
29. oxygen but she`s back to oxygen.
30. **Senior nurse:** Gone back=on=it, so she`s not going anywhere today
31. [is she?]
32. **Consultant:** [She`s not], she’s not.
33. **Senior nurse:** No
36. **Consultant:** Err:::=but so she`s the one to watch.
37. **Senior nurse:** Ok, cool=
38. **Consultant:** =Er=otherwise we have er I mean regarding
39. HDUs we don`t have any other concerns

Here, unlike Ward 1, the source of information about risks is the most senior member of the team – the consultant. The senior nurse opens with her question about who “we’re worried about?” (line 17). This frames it as a shared worry but it is clear from the ensuing turns that it is the consultant’s worries that are the ones to be shared - there are two other doctors present but it is the consultant who answers, and this huddle proceeds as an exchange between the senior nurse and the consultant, with no ‘slots’ provided to other members of the team to relay information (see Chatwin et al., 2014, on medical staff providing ‘narrative slots’ for patients to provide new information about potentially serious symptoms). The consultant responds to the senior nurse’s opening question by talking about two patients. The first, he gives brief details about their current location (in an MRI scan), their gender, and their bed number. He initially marks this patient as "the only one" (line 20) that they are worried about, but then this "one" is joined by another patient at line 24. He makes salient that this second patient is "the girl to watch". So there is one boy to watch, and one girl to watch. This phrase, which uses the infinitive form of the verb "to watch" (line 36) alongside the subject ("the one") locates this quality of risk within the patient rather than in the feelings (i.e. ‘concerns’) of the clinician. It also has a plan embedded within it – ‘to watch’ them, to be more aware of them. Using the infinitive form frames this as a general instruction to all at this huddle – it is not an instruction for one person, or even a subset of people (such as the nurses), but an instruction for a ‘shared gaze’. The senior nurse accepts this instruction at line 37 with the “ok, cool” but there is no verbal input from the others present.

In this huddle, it is very clear who the ‘at-risk’ patients are and the meeting is rapid and tightly focused around them. There is no ‘noise’ to filter about non-risks. However, this tight focus seems to be at the expense of collaboration, in the sense that all of the meetings at Ward 2 are organised around one person’s perception of risk – those of the most senior members of staff in the room.

At Cincinnati Children’s Hospital, where huddles in paediatric care were originally conceived, staff used the phrase ‘watcher’ as a noun, to discuss at-risk patients (Provost et al., 2015). We have seen how Ward 2 used a variation of this (the instruction – ‘the one to watch’) to categorise their patients. The original term, "watcher”, was used at Wards 3 and 4:

**Extract 5: Ward 4, day 1, morning**
26. **Nurse:** No cardiac arrests respiratory arrests, PICU admissions. Erm, h=watchers,
27. is ______ (patient name) we’re keeping an eye out, and then bed 24

The nurse here uses "watchers" (line 26) in a similar way as "the one to watch" was used at Ward 2, insofar as it quickly designates a patient as needing extra attention. However, this is more a report for the doctor that she is speaking to (this is a two person huddle) than an instruction – "we’re keeping an eye out" (line 27) suggests that the matter is already in hand. So the term ‘watcher’ locates the quality of risk within an individual patient, unlike the terms ‘concern’ or ‘worry’, which foreground the feelings of a clinician as indicative of risk. However, what all these terms have in common in terms of their function is that they are quick ways of directing the ‘gaze’ of the ward – such streamlining of language seemed inherent to all huddles in the sample.

‘Watchers’ was used the most in Ward 3 and appeared in three out of the four huddles. It was used in much the same way as Ward 4 but occasionally received an upgrade, as the following example shows:

**Extract 6, Ward 3, day 2, evening**

1. **NURSE CONSULTANT:** okay are we ready to start
2. **SENIOR NURSE 1:** yeah
3. **NURSE CONSULTANT:** yep okay have we had any incidents to day (.)
4. anything (.)
5. **SENIOR NURSE 1:** er:- [the]
6. **NURSE CONSULTANT:** [at all?]
7. **SENIOR NURSE 1:** erm (0.8) _____ (child’s name) in we did talk to
8. the [( ])
9. **NURSE CONSULTANT:** [okay]
10. **SENIOR NURSE 1:** erm:, at half five he was in the room wasn’t he
11. when he had a quite prof:ound: (.)
12. **SENIOR NURSE 2:** [des:aturation]
13. **NURSE CONSULTANT:** okay
14. **SENIOR NURSE 1:** he’s he’s the one to (.)
15. **NURSE CONSULTANT:** he’s our watcher
16. **SENIOR NURSE 1:** he’s our watcher (.) w:- with bells on

This extract gives an example of the type 6 process of identifying risks to patients. After Senior Nurse 1 describes a serious incident, the nurse consultant
renames the patient “our watcher” (line 15). The addition of “our” by the most senior person in the room displays his understanding that the situation is serious and emphasises the shared nature of the responsibility to the patient. The senior nurse repeats this, adding emphasis to the importance of it by adding the upgrade “with bells on” (line 16). This produces another category of patient in addition to the watchers - the extreme watchers. Note also that the nurse consultant here facilitates this information exchange through the use of the continuers, “okay” at lines 9 and 13.

To summarise, huddlers usually do not talk about patients as ‘really ill/poorly/sick’, and this is because very ill patients are not concerning to them if they are stable, and if their needs are within the bounds of the current institutional processes. Instead, huddlers needed, and are developing, other terms that can capture not simple static states but changes, and potential changes – labels that index the past, present, and future. The other thing to note is that concerns and risks that are raised by someone in a huddle need to go through a process in order to become established by the huddle as a shared problem, and that this process may be more, or less collaborative in how it is achieved. The next section looks at the next stage of this process.

How does a ‘concern’ become a plan?

According to theories of situation awareness, an important principle is not only the identification of risks, but also the making of plans to mitigate these risks (Brady et al., 2013; Provost et al., 2015). However, as we have seen, a concern does not automatically become a plan of action, there is a process through which the concern raised by one person becomes a shared concern, and this happens before a plan is warranted. This, in itself, is not always simple, as we shall see.

In terms of where planning happened in huddle meetings, there were three broad ways in which huddlers in our sample made plans for action:

1. Making a plan of action after the huddle has ended – typical of Ward 2
2. Making a plan at the time that each concern is raised – typical of Ward 1
3. Not making plans but describing what is currently being done, or going to be done in the near future, to treat a patient – typical of Wards 3 and 4.

This had conversational similarity to the handovers described by Eggins and Slade (2012), in that they were ‘reports’ rather than live decision making.

The following are exemplars of type 1 planning. These were made after the initial part of the huddle meeting was over, in what appeared to be a follow-on mini-huddle.

Extract 7, Ward 2, day 2, morning

192. **Consultant:** Okay, good. Er::m:: good emm (.) that`s=it thanks.
193. **Staff nurse:** Lovely.
Consultant: thank you
Staff nurse: no, thank you.
((most of huddle disperses except the doctors))
Consultant: Good so let’s split now right so (. ) I think we need to split
Registrar: yeh
Consultant: so I’ll be seeing, so D__ (patient’s name) you can see,
we’ll just like start from the top so D__
((consultant decides with registrar which of the patients they will see and what needs doing))

Extract 8, Ward 2, day 1, morning

Nurse: Okay
Consultant: Okay?
Nurse: yeah.
Consultant: Good.
Doctor: Thank you.
Nurse: Thanks
Doctor: Bye

((Nurse leaves))
Consultant: Good so, I need to see the new ones of course=er::m:
((paper rustling))
but let’s start er::m with the sickest one, yes
((phone stops ringing)), so we can go together to see
D____ (patient’s name), then I will see new ones and you will
see some you know ( ) So let’s see
D____ (patient’s name) first, (. ) together. Take my stethoscope,
start writing observation.
(20.0)
So I think the two huddles are done now.
***end of recording***

In both examples here, the consultant initiates a closing of the meeting (extract 7, line 192 and extract 8, line 56), which most of the others take as their cue to confirm the close of the meeting and take their leave. The other doctor knows to stay, indicating that this splitting-off has become routine. The consultant then
plans with the doctor what they will do about the ‘watchers’ that had been identified earlier. In extract 8, line 73, the consultant displays his understanding that this conversation with the doctor is a separate huddle when he says to the researcher observing “the two huddles are done now”. The researcher takes this as a cue to switch off the audio recorder. Three out of the four huddles that were recorded at Ward 2 showed such planning in a follow-on mini huddle. The implications are that it is only the consultant and doctor that can be involved in taking further action.

At Ward 1, a very different level of involvement from the rest of the team in the planning was visible. Here, plans were initiated at the time that a concern was raised.

**Extract 9, Ward 1, day 1, morning**

27. **BANK NURSE:** And twenty-one ↑hmm:: had a complaint of serious back pain
28. 
29. **DOCTOR:** °Ohkay°
30. **BANK NURSE:** And requested for painkiller which I have given him
31. **DOCTOR:** °Ohkay°
32. **BANK NURSE:** Yes
33. **DOCTOR:** Erm and PEWS scoring? ze[ro?]  
34. **BANK NURSE:** [One] I would say one
35. **DOCTOR:** One?
36. **BANK NURSE:** Yeah.
37. **WARD MAN:** ↑Is it back pain or (new) pain?<  
38. **BANK NURSE:** No, No, he came in because of the back pain
39. **WARD MAN:** Yeah
40. **BANK NURSE:** But he’s not taken any painkiller but today it’s more (0.5)
worse than before
41. 
42. **DOCTOR:** ↑Ok (.)↑Alright
43. **WARD MAN:** °we need to [review the cha-°]
44. **DOCTOR:** [↑Ok, so ] we’ll review on the ward round

The bank nurse’s turn at line 27 represents a break from the format of the previous few turns (not shown here, but taking the sequential structure of extract 1, lines 15-20). The information that she gives about bed 21 is taken up by the others in the following way. The doctor uses continuers (cf. Fitzgerald and Leudar) at lines 29 and 31 to encourage the speaker to keep the floor and to say more. Where the bank nurse shows that she has finished speaking, at line 33, the doctor asks this nurse to make an assessment of the PEWS score – the timing of this question is interesting, suggesting either that the score is an
institutionally-required entity that has so far been absent, or that the doctor is not noting information down, incrementally (or possibly both). The doctor also offers a candidate answer at the end of his question - the lowest score (line 33). Offering the lowest score at this point elicits two possible interpretations; that the doctor implicitly refers to the absence of the PEWS scores up until now as meaning that the situation is not serious, or that the doctor’s assessment of the information that the nurse has provided is that the situation is not sufficiently concerning. It is not possible to say which is the more plausible interpretation, but in any case, the bank nurse rejects this candidate with the “one, I would say one” (line 34) and sticks to this after the doctor’s further question, with the confirmation, “yeah” (line 35). The ward manager, (who is a senior nurse), asks a further question about the patient, specifically about the type of pain. In response, the bank nurse provides further information giving more rationale for her score; it is not the type of pain that she highlights here, but the change in pain over time that she has observed – “today it’s more worse than before” (lines 40-41). It is at this point that the nurse’s concern starts to become a shared concern and plan. This begins with the doctor’s acceptance of the bank nurse’s formulation at line 42, continues when the ward manager initiates a plan, and is confirmed when the doctor states a plan at line 44 – a review by the doctors on the ward round. This decision then is distributed across several conversational turns – the ward manager, who first speaks about the need for a review, says this extremely quietly. The doctor’s overlapping speech repeats her phrase but instead “we need” (line 43) becomes “we will” (line 44) review. As highlighted earlier, at Ward 1 it is only the nurse responsible for a bed that can make the categorisation as concerning/not concerning – and it seems that another implicit rule is that it is only the doctor who can confirm a plan as necessary. This example was in fact typical of how plans were made on this ward – the nurses raised the concerns and provided information, and the doctors, and occasionally the ward manager (who is a senior nurse), made the plans.

A general feature of the huddles then is that it is the most senior members of the team that make the decisions about a course of action once a concern has been identified. However, the establishing of a concern as shared may also be distributed, and facilitated, by several huddlers.

Under what conditions does a ‘concern’ not become a plan?

In most huddles, a concern raised/or watcher identified by an individual led to some kind of plan of action to mitigate the perceived problem, even if this plan was simply to continue to watch a patient. However, there were a few instances where a concern did not translate into a plan. This was for two reasons. Firstly, some wards (Wards 3 and 4) did not make new plans in their huddles but reported the current status of their patients and what treatment they had received and were due, in ‘handover style’ (like those examined by Eggins and Slade, 2012). However in Ward 1, where plans were usually made at the time a
concern was established, there were other instances where a problem was raised and it did not become a plan. The following examples come from Ward 1:

**Extract 10, Ward 1, day 2, morning**

87. **STAFF NURSE:** Thirty?
88. **BANK NURSE:** Bed thirty:: err (.) reviewed by the plastics he might go home to their beds. I will have a little bit problem because Mum (.)
90. live in ___ (name of town) and say (.) Mum say that right
91. now will come around five she come and pick up.
92. **STAFF NURSE:** °Okay°
93. (4.0)
94. **DOCTOR:** Staffing?

**Extract 11, Ward 1, day 1, morning**

88. **WARD MANAGER:** Mum, yeah, erm parents are not happy because of the shower (.) so if you just you=know be er <careful and just communicate really< good with them so we don’t aggravate it. I’m going to speak to them >I went to speak to them earlier but they were aslee::p<, so (.) ( )
92. **DOCTOR:** I’m keen to get them home today anyway
94. **WARD MANAGER:** Yeah, be good
95. **DOCTOR:** so (0.4) shower problem will be fixed.

In the first example, the nurse raises "a little bit problem” (extract 10, line 89) and this is different from the usual form of categorisation used on this ward (concerns/no concerns). She does not say explicitly what the problem is, but the town that she names is a long way from the hospital and the suggestion is that the patient will be ready to go home before they can be taken home. This poses the problem of where to put the patient. Interestingly, Nurse 3 frames it as her own problem with the pronoun "I” at line 89 and this is exactly how the huddle treats it, there is an acknowledgment token from another huddler at line 92 and after a long pause, the doctor changes the topic.

In extract 11, the problem is that "parents are not happy” (line 88) and this has something to do with the shower. This extract in fact follows on directly from extract 3 where the doctor and the bank nurse discuss whether her concerns are ‘acute’. The ward manager adds this extra information about the parent’s
concern with the shower and embeds the instruction "be er careful and just communicate really good with them" (lines 89-90). The doctor offers a solution – that he intends to discharge the patient. This solution is treated as a humorous one as the problem with the shower presumably remains.

These two instances shared the following features:

- The problem involved parents;
- The problem was not a concern about a patient’s health, and;
- The problem would be ‘resolved’ by the end of the day through a change in the situation and without the direct intervention of the huddlers.

However, we saw an instance earlier (extract 1) where a concern over a patient was not taken up by the rest of the huddle. This was the nurse who handed over a request from a parent for a review of a patient and who hinted at a concern herself before downgrading it when prompted to categorise the patient. This demonstrates a general feature of the huddles in our sample – on the few occasions that nurses raised the concerns of others not present at the huddle, these did not become established as shared concerns.

The analysis of concerns/watchers and how these were negotiated may thus be summarised in the following process map:
Figure 3. Establishing shared concerns: There are various stages where a potential concern raised may not become a plan to mitigate risk.

We have seen so far that this process, whereby huddlers negotiate which matters are deserving of their attention, may be distributed across several turns, and several huddlers. In other wards, it may be dependent on just one or two people.

What are parents’ and patients’ views on and experiences of huddles?

When asked by the interviewer, eight parents and two patients stated that they were aware that the huddle had been taking place on the ward. Three of the parents were able to provide relatively detailed and accurate descriptions of the huddle, when prompted by the interviewer, along with an explanation of its purpose. Yet, one parent described knowing that the huddle took place on the ward, however they could not provide any more detail when asked. Four parents and one patient were not aware of the huddle at all.

Overall, the parents and patients had positive views about the huddle, both when they were aware that it had been happening on their ward and if they had been given a brief explanation of its purpose by the interviewer. One parent
referred to it as "refreshing one’s mind”, that is, an opportunity for families and staff members to remind other staff members about any daily safety or organisational issues (e.g., cleanliness on the ward). When asked about their perceptions of the purpose of the huddle, parents also viewed the huddle as an opportunity for them, as families on the ward, to share their opinions on safety matters with members of staff, a way of improving communication among the staff group, and a way of improving communication between members of staff and patients/parents. One parent also felt that the idea of the huddle was useful in terms of making all staff members aware of any safety risks, but on the condition that the huddle was brief and embedded into routine as opposed to “a massive meeting” distracting staff from their main duties.

The main drawback of the huddle seen by the parents was that it tends to take place in a public area (e.g., reception), thus from the parents’ perspective, maintaining confidentiality regarding patients must be challenging. As one parent reported, hearing that the care of his/her child is being discussed may make this individual feel “paranoid”. Thus, although the huddle was unanimously perceived as a beneficial intervention by participants, in their opinion it needed to take place in a confidential setting.

Interviewees were also asked if they had participated in or if would like to participate in the huddle. None of the participants had taken part in the huddle, but three parents and one patient stated that they would be willing to do so if they were given the option. Although one parent stated that they would only like to be part of the huddle if the care of his/her child was being discussed. On the other hand, another parent expressed his/her desire to participate in the huddle simply because “the more involved [one is], the better”, as any information may turn out to be useful. This same parent did not see a problem with being present when other patients are discussed, however this parent still emphasised that the huddle should take place in a confidential environment. Finally, when asked by the interviewer, one of the patients expressed a desire to be included in conversations about his/her care in order to ensure their involvement in their own treatment.

Four of the parents and one patient did not express any interest in being involved in the huddle, one was not sure. One of these parents did not feel that this was necessary, as they viewed the huddle as a staff meeting where confidential information about patients was shared. One parent felt that he/she might find himself/herself lacking understanding of issues discussed in the huddle. In a similar vein, two other parents did not perceive any clear benefit that would result from their participation in the huddle, unless the huddle was directly related to the care received by their children. Finally, one of the parents stated that they would be willing to share their feedback regarding their general experience of care (e.g., difficulty in navigating the hospital building) with staff members; however they felt that the huddle was not necessarily the right forum for this.
for this, as in their perception more urgent daily safety issues were more relevant to the huddle.

### Key findings from this chapter:

- Huddles tended to be brief, on average lasting up to around 10 minutes, taking place around the patient board and having a clear leader (see [this section](#)).
- Professionals attending the huddle across wards varied greatly in terms of seniority and job roles; however, with a ward manager, consultant and senior nursing (ward manager/matron) being consistently present (see [this section](#)).
- Huddles at certain times of the day may be more irregular and infrequent than others, especially if taking place at the evening or night (see [this section](#)).
- Half of the interviewed parents and patients were aware of the huddle (none participated), among whom most understood its content and purpose and in general, they had positive views about the huddle (see [this section](#)).
- SAFE may serve to improve clarity and communication, encouraging proactive management of risks by using clear language around particularly risky patients who were ‘watchers’ or ‘the ones to watch’ as well as clear framing of acute concerns (see [this section](#)).
Chapter IV: Are huddles and other safety improvement initiatives associated with improvements in safety indicators and patient-reported experience of care?

This chapter first explores the potential impact of SAFE on a range of hypothesised safety indicators, which were identified in collaboration with participating sites and were developed based on the limited existing evidence. For example, one study indicated that use of huddles was associated with approximately 50% fewer unplanned transfers to higher levels of care (defined as ‘the transfer of patients from the acute care floor to the ICU where the patient received tracheal intubation, initiation of vasoactive medications for hemodynamic support, or ≥3 fluid boluses in the first 60 minutes of ICU care or before arrival in the ICU’ (Brady, et al., 2013).

As part of our evaluation, we also wanted to investigate the potential link between implementation of SAFE and parents’ and patients’ perceptions of care and safety on the ward; the findings of which are also described in this chapter. As argued by Cox and colleagues (2013), understanding patient, or parent, particularly in the case of young age of the patient, experiences of care is crucial, as patients are at the frontline of care. Monitoring perceptions of safety by those directly involved in care, either as a care provider or recipient, is critical, as these perceptions tend to be associated with safety indicators and readmissions (Hansen, Williams, & Singer, 2011; Singer, Lin, Fadwell, Gaba, & Baker, 2009). Moreover, flexibility is one of the key characteristics of an organisation with a strong safety culture and this flexibility includes “deferring to expertise over rank and parents are assuredly the leading experts on their children’s care” (Cox, et al., 2013, p. 5).

We have also included findings from the parent interviews, which aimed to gain parents’ views on their experiences of care, including their experiences of communication on the ward and their perceptions of safety. The purpose of the interviews was not specifically to evaluate the impact of the SAFE programme on the ward. This was because it was not possible to conduct pre-implementation and post-implementation interviews with the families, given their generally limited stay on the ward. Therefore, the quotes from the parent interviews in this chapter have been used for illustrative purposes only.

This chapter then presents our analysis of the impact over the course of the SAFE programme of huddles and other interventions implemented as part of SAFE on the ward safety climate and its subdomains (team climate and
perception of management), as assessed using a staff measure of safety climate. A positive safety climate is founded on mutual trust, shared perceptions of the importance of safety, and confidence in the efficacy of preventive measures (Nieva & Sorra, 2003). In organisations with a positive safety climate, mistakes are treated as lessons to learn from and opportunities for improvement. Thus, staff are encouraged to openly share information and failures are considered at a systemic level rather than blaming individuals (Nieva & Sorra, 2003).

Finally, we have also presented findings relating to the impact of the SAFE programme, primarily the huddle, on patients and parents, from the perspective of ward staff members whose views were obtained through interviews conducted on four paediatric wards at the three time points described in Chapter 2. Overall, this chapter is relevant to the ‘outcomes’ and ‘context’ components of the theory of change, i.e., as part of the SAFE evaluation we aimed to assess the impact of the SAFE programme on patient safety outcomes (e.g., incidents of harm), patient perceptions of ward safety and care, and staff perceptions of patient care.

Safety indicators

This section outlines the primary analysis of safety indicators, unplanned transfers to a higher level of care, unplanned transfers to ICU, cardiac arrests, and respiratory arrests. The plots presented in this section represent monthly average numbers of the aforementioned safety indicators standardised by ward size (number of beds). The data are presented separately for specialist children’s hospitals (SCH) and district general hospitals (DGH). Due to the presence of missing data, the monthly average numbers include data points from between 4 and 9 wards.

The data are reported from April 2014 to June 2016, with missing data being below 1% among SCH and around 10% among DGH. The data were retrieved historically from April 2014 to September 2014, with three wards failing to obtain these data. Notably, the SAFE programme began at most sites between September and October 2014. We have used the rules for interpreting run charts in quality improvement programmes (shift, trend, runs, and astronomical points) proposed by Perla and colleagues (2011) in our analyses.

SCH. As shown by Figure 4, with the exception of an upward shift detected in the average number of unplanned transfers to ICU between October 2014 and March 2015 (indicated by 6 data points above median), there was no discernible pattern in data points for average numbers of cardiac arrests, respiratory arrests, or transfers to higher levels of care (including transfers to ICU) for SCH.
Figure 4. Monthly average number of safety indicators by ward size for SCH.
DGH. As presented by Figure 5, a non-random pattern of distribution of data points corresponding to unplanned transfers to a higher level of care was supported by too few (N=3) crossings of the median line. If the data were randomly distributed, the number of runs would range between 10 and 19. There were also two shifts detected in the average number of unplanned transfers to a higher level of care, one between April 2014 and March 2015 (indicated by 10 data points below median), indicating a lower number of transfers than average across the data collection period, and between August 2015 and June 2016 (11 data points above median), indicating a higher number of transfers than the overall average. There was also a reduction of transfers, which started in November 2015 and lasted until the end of data collection (June 2016). There was no discernible pattern in the data in terms of the average number of unplanned transfers to ICU. There was, however, an astronomical data point (a number substantially lower than others) in February 2015 (0.74). Finally, there was no discernible pattern in the distribution of the data points corresponding to the average number of respiratory arrests, whereas an increase in the average number of respiratory arrests between October 2014 and February 2015 was observed.
Figure 5. Monthly average number of safety indicators by ward size for DGH.
Parent perceptions of safety

The results are presented as proportions of positive, neutral, and negative respondents on all items in the parent perceptions of safety questionnaire. In the case of positively phrased items, responses “strongly agree” and “agree” were considered positive, whereas “strongly disagree” and “disagree” were classified as negative. The opposite was true for reversed items (negative statements). “Neither agree nor disagree” responses were judged as neutral in both options. The proportions of positive/neutral/negative responses on the items were compared over three data collection points (early implementation of the huddle, mid-implementation, and late implementation). The data collection times were largely overlapping with the data collection periods of the staff safety climate survey for the purpose of consistency (early implementation: April 2015 – July 2015; mid-implementation: August 2015 – January 2016; late implementation February 2016 – May 2016).

As presented in Figure 6, overall 70.2% of parents strongly agreed or agreed that patient safety is never sacrificed to get more work done. A greater proportion of parents responded positively to this item at Time 3 compared to at Time 1 (Time 1: 66.6% vs Time 3: 80.0%), however the difference did not reach statistical significance ($z = 1.71, p=0.08$). Nearly three-quarters of the respondents (74.8%) also strongly agreed/agreed that procedures and systems on the ward were good at preventing errors from happening. Again, there was a non-significantly greater proportion of positive respondents at Time 3 than at Time 1 (Time 1: 70.7% vs Time 3: 80.0%; $z = 1.26, p=0.21$). Across the 15 wards, over three-quarters of the parents (78.4%) strongly disagreed or disagreed that there were patient safety problems on the ward. This number was again non-significantly higher at Time 3 compared to at Time 1 (Time 1: 75.9% vs Time 3: 82.5%; $z = 0.95, p=0.34$). Finally, 60.9% of the parents strongly disagreed or disagreed that it is by chance that more serious mistakes did not happen on the ward. The proportions of such respondents did not substantially vary across time.

We have also included some examples of quotes from the qualitative interviews with parents in Table 8 to show the types of issues that parents can experience relating to safety on the ward.
Figure 6. Proportions of respondents giving strongly agree/agree, neither agree nor disagree, or strongly disagree/disagree responses to each item on the parent perceptions of safety questionnaire across three time points.
Table 8. Parents’ perceptions of safety as mapped according to the parent perceptions of safety questionnaire and illustrated using quotes from the qualitative interviews conducted with parents.

<table>
<thead>
<tr>
<th>Questionnaire item</th>
<th>Illustrative quotes from interviews with parents</th>
</tr>
</thead>
<tbody>
<tr>
<td>“It is just by chance that more serious mistakes do not happen in this ward”</td>
<td>Positive  “But they’re brilliant, like, it’s good on here because it’s a lot of regulars that end up coming back on the ward. So, they know the kids and know if they can be pushed and what needs to be done. So, yes, the communication’s brilliant”</td>
</tr>
<tr>
<td></td>
<td>Negative “And he, the day when he needed the tracheostomy he had an airway obstruction. So that is telling me that he needs to go back on the ventilator. And when we’ve talked it through with everybody, he did need to go back on the ventilator, but there was like, a six to eight hour delay on him going back on the ventilator because everybody thought somebody else was sorting it out, and they weren’t”</td>
</tr>
<tr>
<td>“Patient safety is never sacrificed to get more work done”</td>
<td>Positive  “Since we’ve been here, a few times the emergency alarm’s gone off and, like, [the staff have] handled the situation with ease […] you know, once there’s been a red light, they know how to handle things and bring back calm to the ward”</td>
</tr>
<tr>
<td></td>
<td>Negative “Obviously the nurse on the Saturday, the bank nurse thought they were only short staffed and I don’t know, I just, she’s been ill, my daughter’s been ill for a long, long time and we’ve been fighting for, like, it’s been over four months we’ve been fighting to get anywhere and because I’ve been so patient, like, thinking oh, they’re short staffed, they’re busy, they don’t have time”</td>
</tr>
<tr>
<td>“The procedures and systems in place on this ward are good at preventing errors from happening”</td>
<td>Positive  “I mean, like, maybe on [ward name], some of the nurses, they had, like, a piece of paper, you know, with, like, like a notepad kind of thing for each patient that they saw and anything that we wanted, they just jotted it down so that they could go off and tick it off and then do things one by one. And they wouldn’t forget”</td>
</tr>
<tr>
<td></td>
<td>Negative “[…] he needed to go to theatre and they kept saying, he’s on the emergency list, and he was on the emergency list, and he’s going to go at 3:00pm. Well, the emergency list doesn’t work like that. They can’t give you a time, and he didn’t end up going to theatre until 6:00pm. And they just kept leaving him, and leaving him, and leaving him, and then it got that bad they had to take him to ICU because he couldn’t wait any longer”</td>
</tr>
<tr>
<td>“There are patient safety problems in this unit”</td>
<td>Positive  “I’ve not felt worried that she’s in danger or things haven’t been done but should have been, to do with her health”</td>
</tr>
</tbody>
</table>
Parent and patient experience of care questionnaires

The results were presented as proportions of respondents who chose “certainly true”, “partially true”, or “not true” on each item (see Figure 7). All items were positively phrased. The proportions of “certainly true”/“partially true”/“not true” responses to the items were compared over three data collection points (early implementation of the huddle, mid-implementation, and late implementation). The data collection times were largely overlapping with the collection periods of the staff survey for the purpose of consistency (early implementation: April 2015 – July 2016; mid-implementation: August 2015 – January 2016; late implementation: February 2016 – May 2016).

Parents and patients reported extremely high satisfaction with the care that they received. Overall, around 90% of the respondents felt listened to (90.2%), felt that their views and worries were taken seriously (89.2%), and thought that staff were working together (87.7%). The vast majority of the parents and patients were also satisfied with the explanation that they were given (82.6%), and felt that staff were working together (87.7%). The differences in the proportions of positive respondents across time points were minimal.

As previously, we have also included some examples of quotes from the qualitative interviews with parents and patients in Table 9 to show the types of issues that parents and parents can experience relating to their experience of care on the ward.
Figure 7. Proportions of respondents giving certainly true, partially true, or not true responses to each item on the parent and child experience of care questionnaires across three time points.
Figure 7. Continuation.
Table 9. Parents’/patients’ experiences of care as mapped according to the parent and patient experience of care questionnaires and illustrated using quotes from the qualitative interviews conducted with parents and patients.

<table>
<thead>
<tr>
<th>Questionnaire item</th>
<th>Illustrative quotes from interviews with parents and patients</th>
</tr>
</thead>
</table>
| “I feel that the staff who have seen my child listened to me” | Positive  
“Yes, because they as your opinion as well, you know, at the other two hospitals we were at, and then they always finished it and they said, ‘Have you got any questions? Do you want to add anything to that?’, you know, which was quite nice because you do feel involved” (Parent) |
| | Negative  
“Because he was diagnosed when he was two years old and we went through all sorts of hospital visits where we’re telling them things and they’re not listening” (Parent) |
| “My views and worries were taken seriously” | Positive  
“I think they do everything they can with [name of child] and they take it very seriously. And they take precautions which is great” (Parent) |
| | Negative  
“So obviously as a parent I’m very concerned that he’s going to have the same problem for the same period of time, which is a great concern, which unfortunately is being treated a bit as if it’s not a great concern” (Parent) |
| “I feel the staff here know how to help with the problem I came for” | Positive  
“His line snapped on Saturday night and within literally a couple of seconds of me telling them that it had three or four staff in here sorting it out. And it was sorted within minutes” (Parent) |
| | Negative  
“And you know, at the end, I did get used to them saying, ‘Well we just don’t know’. I think [what’s] frustrating is that you can’t always get an answer out which is right. Because people don’t know, you know, people aren’t crystal balls” (Parent) |
<table>
<thead>
<tr>
<th>Table 9. Continuation.</th>
<th>Positive</th>
<th>Negative</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;I have been given enough explanation about the help available&quot;</td>
<td>&quot;We knew nothing and you know, we had no knowledge at all about it so kind of once she was stable and we knew she was sort of okay, you know we had millions of questions and they were very patient and took the time to you know, explain it all, you know. We probably sat with the dietician for a couple of hours one day you know” (Parent)</td>
<td>“And did anyone come and tell you that it wasn’t going to happen at all? No. There was one when they said [they] were taking me for a CT scan and she came up and said there was more urgent cases, but I never heard anything else about that until last [week] when I did have the CT scan that I was meant to have [several] months ago” (Patient)</td>
</tr>
<tr>
<td>“I feel that staff who have seen my child are working together to help with the problem(s)”</td>
<td>“Well just lots of the time we saw them kind of en masse so the doctor was there, the nurses were there, you know even when you saw the ultrasound lady, she knew exactly why, you know, why she was doing what she was doing and she was very good” (Parent)</td>
<td>“[What] I’ve experienced here and what you experience regularly in the NHS especially is that everyone has an ego and people don’t like sharing between teams or working together. So the cystic fibrosis team won’t work with the ENT team to my experience only. Everyone sticks to their own little boxes” (Parent)</td>
</tr>
</tbody>
</table>
Staff safety climate survey

The results for the staff safety climate survey (SCS) are presented as average proportions of positive, neutral, and negative respondents on all items (for the overall scale), and on items corresponding to the subscales (safety climate, team climate, and perception of management). In the case of positively phrased items, responses “strongly agree” and “slightly agree” were considered positive, whereas “strongly disagree” and “slightly disagree” were classified as negative. The opposite was true for reversed items (negative statements). A “neutral” response was judged as neutral in both options. The proportions of average positive/neutral/negative responses on the scale and its subscales were compared over the three data collection points (early implementation: April 2015 – July 2016; mid-implementation: August 2015 – January 2016; late implementation: February 2016 – May 2016).

As presented in Figure 8, the overall perception of safety climate among staff members was highly positive across the participating wards, with an average of 76.3% positive respondents. The percentage of positive respondents was extremely consistent throughout the three data collection time points, ranging from 75.3% at Time 2 to 76.9% at Time 3. The proportions of neutral and negative respondents were also highly comparable. An even greater average percentage of positive respondents was recorded for the team climate subscale, accounting for 89.7%. As previously, the differences in the average of positive respondents across time points were minimal ranging from 87.8% at Time 2 to 91.0% at Time 3. Averages of neutral and negative respondents were also highly consistent. Finally, the perception of management subscale also produced a high overall average of positive respondents, equal to 77.9%, with similar proportions of positive respondents across time (ranging from 76.5% at Time 2 to 79.3% at Time 3).

At the item level, there were two statements that differed in terms of the average percentage of positive respondents across time. A significantly higher percentage of respondents at Time 3 compared to at Time 1 strongly agreed or slightly agreed that the culture where they work makes it easy to learn from the errors of others (Time 1: 76.7% vs Time 3: 82.5%; $z = 2.25, p<0.05$), and that medical errors are handled appropriately here (Time 1: 79.3% vs Time 3: 84.2%; $z = 1.99, p<0.05$).
Figure 8. Proportions of respondents giving positive, neutral, or negative responses on the staff SCS and its subscales.
Proportions of positive, neutral, and negative respondents on the SCS were also compared across various subgroups of wards, split according to the type of hospital, type of ward, average length of patient stay, and number of beds. The analysis was conducted in order to investigate if the huddle and other safety initiatives within the SAFE programme had a differential impact on wards with different contextual characteristics.

As shown in Table 10, there were minimal differences observed in the proportion of positive respondents across the time across various subgroups, which however did not reach statistical significance (z scores for comparisons between Time 1 and Time 3 ranged from 1.49 (p=0.14) to 0.30 (p=0.76)). Thus, one could conclude from this that contextual characteristics did not seem to have an effect on the extent to which certain wards benefitted from the huddle and other SAFE initiatives, in terms of staff perceptions of the ward safety climate. Nonetheless, certain differences in the overall proportion of positive respondents were noted. For instance, a neonatal ward had a significantly lower proportion of positive respondents than a medical general ward (79.3% vs 90.0%; z = 2.74, p<0.01), mixed medical/surgical (79.3% vs 91.7%; z = 3.54, p<0.001), and short stay paediatric assessment unit (79.3% vs 90.6%; 2.41, p<0.05). Moreover, smaller wards (with numbers of beds ranging from 10-20) had a significantly lower proportion of positive respondents than larger wards, namely ones with 21-30 beds (78.3% vs 89.9%; z = 5.00, p<0.001) and over 30 beds (78.3% vs 84.2%; z = 2.00, p=0.05).
Table 10. The proportion of positive, neutral, and negative respondents on the staff SCS across the different subgroups of wards across three time points.

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>Time 1 (n = 507)</th>
<th>Time 2 (n = 529)</th>
<th>Time 3 (n = 470)</th>
<th>Overall (N = 1513)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of hospital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District</td>
<td>77.2%</td>
<td>13.1%</td>
<td>9.7%</td>
<td>78.5% 12.7% 8.8%</td>
</tr>
<tr>
<td>Children’s</td>
<td>76.9%</td>
<td>13.3%</td>
<td>9.8%</td>
<td>78.3% 12.5% 8.2%</td>
</tr>
<tr>
<td><strong>Type of ward</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neonatal</td>
<td>73.5%</td>
<td>19.4%</td>
<td>7.1%</td>
<td>79.3% 13.3% 7.4%</td>
</tr>
<tr>
<td>Medical general</td>
<td>91.9%</td>
<td>5.4%</td>
<td>2.7%</td>
<td>90.0% 6.1% 3.9%</td>
</tr>
<tr>
<td>Mixed specialties</td>
<td>85.7%</td>
<td>10.7%</td>
<td>3.6%</td>
<td>85.6% 8.9% 5.5%</td>
</tr>
<tr>
<td>Mixed medical/ surgical</td>
<td>92.4%</td>
<td>4.0%</td>
<td>3.6%</td>
<td>91.7% 4.8% 3.5%</td>
</tr>
<tr>
<td>HDU</td>
<td>81.9%</td>
<td>9.6%</td>
<td>8.5%</td>
<td>85.0% 7.7% 7.3%</td>
</tr>
<tr>
<td>Short stay PAU/PASSU</td>
<td>96.2%</td>
<td>0.0%</td>
<td>3.8%</td>
<td>90.6% 3.5% 5.8%</td>
</tr>
<tr>
<td><strong>Average length of stay</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-2 days</td>
<td>81.8%</td>
<td>11.9%</td>
<td>6.3%</td>
<td>81.8% 11.7% 6.5%</td>
</tr>
<tr>
<td>3-6 days</td>
<td>84.8%</td>
<td>9.0%</td>
<td>6.2%</td>
<td>85.4% 8.1% 6.5%</td>
</tr>
<tr>
<td>1-2 weeks</td>
<td>86.3%</td>
<td>9.8%</td>
<td>3.9%</td>
<td>87.6% 8.9% 3.5%</td>
</tr>
<tr>
<td>2-4 weeks</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Number of beds</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10-20 beds</td>
<td>77.2%</td>
<td>14.4%</td>
<td>8.4%</td>
<td>78.3% 14.0% 7.7%</td>
</tr>
<tr>
<td>21-30 beds</td>
<td>91.5%</td>
<td>5.9%</td>
<td>2.6%</td>
<td>89.9% 7.5% 2.6%</td>
</tr>
<tr>
<td>31+ beds</td>
<td>84.0%</td>
<td>11.3%</td>
<td>4.7%</td>
<td>84.2% 9.4% 6.4%</td>
</tr>
</tbody>
</table>

*Note. PAU = paediatric assessment unit; PASSU = paediatric assessment and short stay unit.*
Staff members’ perceptions of the impact of the SAFE programme on patients and parents

This section aims to present the perceptions of staff members on the impact of the SAFE programme, principally the huddle, on patients and parents, drawing on the interviews with the staff members conducted on the four paediatric wards involved in the qualitative component of the SAFE evaluation at Times 1, 2, and 3. The following themes were derived from the dataset in relation to this.

Prevention of incidents or patient deterioration. Staff members spoke about how the huddle had given staff more opportunities to raise their concerns among the wider staff group about actual or potential patient deterioration. Interviewees described how this could help to prevent patients from needing to be transferred to intensive care, as patients with the potential to deteriorate would be brought to staff members’ attention earlier than they perhaps usually would be.

"Because we do [the huddle] twice a day as well, there’s more opportunity to flag up any possible deterioration and that hopefully prevents patients from having to be transferred out to a kind of more intensive ward” (Physician Assistant)

In addition, staff members commented on how the planning element of the huddle had also potentially contributed to the prevention of incidents or patient deterioration on the ward because it had given staff a clear pathway for each patient’s care, from both the nursing and medical staff team’s perspectives, detailing what staff needed to do or what needed to be in place to prevent or identify any potential deterioration. Discussing who were the most ill or high risk patients in the huddle had also helped the medical staff to know how to prioritise their ward round, meaning that importantly for preventive efforts, the most ill or high risk patients were often seen first.

"I think it does have a lot of benefits for patient safety particularly because it means that the patient you’re worried about most gets seen first . . . so you probably get the consultant to see the sickest patients so that they review them” (Ward Manager)

Increased awareness among staff about specific patient details. Staff members described instances where they had been able to inform their colleagues in the huddle about particular situations occurring with patients, which they might otherwise have not had the opportunity to do, or instances where they had been able to hear information about patients that they might not otherwise have realised.

"And the first one I went on actually told me something I needed to know, I wouldn’t have known otherwise . . . we got to a baby with a chest problem. And I’d heard in the [medical] handover about the chest
problems, so my safety concern was how much oxygen is the baby, you know, is he breathing okay? And the nurse pointed out [in the huddle] that there were safeguarding issues . . . and I had no previous knowledge about that” (Consultant)

**Improved patient flow and timelier patient care.** Staff members commented on how discussions about patients between the multidisciplinary team in the huddle had led to patients being reviewed, discharged, or transferred to other wards in a timelier manner, compared to before the implementation of the SAFE programme began on the ward. This was because, from the nursing staff members’ perspectives, being able to discuss patients in the huddle meant that they no longer had to spend a long time trying to contact doctors over the telephone to ask them to come and review patients who may need to be discharged or who may need a higher level of care, as they could simply discuss these patients with the doctors at a prearranged time in the huddle.

“Instead of us spending hours on the phone trying to get through to people that actually these patients are ready to be discharged, there’s doctors there, they’re aware of who needs to go” (Sister)

**Continuity of patient care.** Staff members indicated that continuity of patient care had increased since the implementation of the SAFE programme began as the huddle had enabled staff members to share information about patients with the wider staff group. This had meant that more staff members knew what was going on with all of the patients on the ward, even if they were not directly under their care. For the nursing staff, this had helped them to care for patients when their colleagues were absent or off the ward.

“So I think in terms of working together and communicating about the patients, [the huddle] actually aids in better care because if someone goes on their break we know from the huddle that this child in bed 9 will need your attention more” (Nurse)

For the medical staff, this had helped them to know about each patient’s situation before they would go and see patients, such as during their ward rounds.

“When they’re doing the huddles, all the, as much information as you can in five minutes is given to the consultants before they go on ward round. So you haven’t got that situation, or as much where they’ll go on ward round and they’ll ask the patients all the questions that we could of answered at that point and they’re aware that they’re on treatments or they’re aware that they are scoring high” (Nurse)

As interviewees pointed out, this meant that parents and patients had to repeat themselves less when speaking to different members of staff about their
situation. Staff members also described how the huddle could serve as a reminder for staff members to discuss or raise particular concerns, which helped to prevent issues related to patient care or condition from being forgotten about.

**Reassurance for parents.** Staff members commented on how they felt that being able to inform parents that they could take their concerns to the huddle had helped parents to feel reassured that their concerns were being raised. Interviewees also described how the planning element of the huddle had meant that staff could then update parents about the plan for their child so that parents could understand what was happening in relation to their child’s condition and care, and feel reassured in knowing what the most up to date plan is for their child’s care.

“You can update them on what’s going on and what the doctors have said, what tests need to be done, and so they understand as well and are at ease more” (Healthcare Assistant)

**Involvement of parents and patients in their care.** By Times 2 and 3, interviewees on two of the wards spoke about how their sites had introduced new initiatives, stemming from the implementation of the SAFE programme, to involve parents and patients more in their care, for example, using whiteboards at the end of each patient’s bed to record the daily plan for each patient’s care.

“The parents found that useful as well because they know the plan because it’s difficult when you go, when you speak to a parent in the morning after the ward round for them to remember the plans that you [are] going to do so it’s quite handy to look on the board and say, ‘Oh at 12 o’clock my child is having antibiotics’” (Matron)
Key findings from this chapter:

- There was an increase during the winter months in the average monthly number of unplanned transfers to ICU at the specialist children’s hospitals and the average monthly number of respiratory arrests at district general hospitals, but this did not appear to be related to the SAFE programme (see this section).

- There was an increase in the average monthly number of unplanned transfers to a higher level of care within district general hospitals at mid- to late implementation, which however was gradually decreasing at late implementation (see this section).

- The staff and parents/patients measures showed highly positive perceptions of safety and, in particular, satisfaction with care throughout all three time points; however, significant differences over the time were not found (see sections for findings corresponding to parents/patients, parents, and staff).

- The benefits of the huddle reported in the staff interviews were: (1) an earlier anticipation of deterioration leading to prevention of more serious incidents; (2) improved patient flow and quicker patient discharge; (3) improved continuity of patient care; (4) reassurance for parents and patients; (5) other initiatives improving participation of parents and patients in their care (see this section).
Chapter V: What mechanisms explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes?

This chapter aims to address the following research question: What mechanisms explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes? The study described below addresses this through qualitatively examining the benefits (and drawbacks) of the implementation of the SAFE programme, including huddles and other safety improvement techniques, from the perspectives of staff members on four paediatric wards in England at three time points (early implementation/Time 1; mid-implementation/Time 2; late implementation/Time 3) over a 2-year period. This chapter is relevant to the ‘mechanisms’ and ‘context’ components of the theory of change.

In line with Goldenhar and colleagues (2013), identifying the benefits of implementing huddles and other safety improvement techniques could help to identify the mechanisms behind how such initiatives work to improve patient safety and the ward environment. Thus far, although there is evidence from paediatric hospital settings in the USA for the potential efficacy of huddles as a way of improving staff members’ situation awareness, staff members’ working environments, and patient safety (Brady, et al., 2013; Goldenhar, et al., 2013; Provost, Lanham, Leykum, McDaniel, & Pugh, 2015), we do not yet know whether, how, or when these benefits would translate over to paediatric hospitals in England.

Data analysis

All of the interview transcripts from all three time points were uploaded into NVivo Version 10, a computer-assisted qualitative data management software package (Bazeley & Jackson, 2013). The transcripts were then thematically analysed to answer the following research questions:

1. What are the positive effects or benefits of implementing the SAFE programme on the wards?
2. What are the negative effects or drawbacks of implementing the SAFE programme on the wards?

In the initial stages of the data analysis process, the content of 75% of the Time 1 interview transcripts was coded or sorted into two predefined, ‘top-down’
categories in NVivo, based on these research questions: ‘positive effects or benefits’; ‘negative effects or drawbacks’. A thematic analysis, drawing on the methodology outlined by Braun and Clarke (2006), was then conducted to identify and analyse ‘bottom-up’ themes in the content coded to each of these predefined categories. Themes represent "some level of patterned response or meaning" among participants (Braun & Clarke, 2006, p. 82). Following this initial analysis of 75% of the Time 1 interview transcripts, the thematic frameworks derived from the content coded to each predefined category were then further tested against the remaining 25% of the Time 1 interview transcripts. Minimal additional refinements were made to the thematic frameworks for each category as a result of this, which enhanced our confidence in the robustness of the frameworks. The content of the Time 2 interview transcripts was then coded using the thematic frameworks developed from coding the Time 1 interview transcripts. Where new themes emerged from the Time 2 interviews, these were added to the frameworks. The same procedure was then followed for the Time 3 interview transcripts.

**Findings**

**Time 1**

The main themes derived from the interviews with the staff members at Time 1, relating to the benefits and drawbacks of the implementation of the SAFE programme on the wards from the staff members’ perspectives, are summarised in Table 1 and described in this section.

Table 1. The main themes derived from the interviews with the staff members at Time 1 relating to the benefits and drawbacks of the implementation of the SAFE programme on the wards.

<table>
<thead>
<tr>
<th>Positive effects or benefits</th>
<th>Negative effects or drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A place to raise awareness</td>
<td>Pressure on time and workload</td>
</tr>
<tr>
<td>Prevention of loss of information or miscommunication</td>
<td>Possible feelings of exclusion</td>
</tr>
<tr>
<td>A sense of the bigger picture</td>
<td>Variable added value</td>
</tr>
<tr>
<td>Increased teamwork</td>
<td></td>
</tr>
<tr>
<td>Anticipation and planning</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
</tr>
</tbody>
</table>

**Positive effects or benefits**

*Table 12* contains key quotes from the staff members’ interviews at Time 1 relating to each theme described in this section.
A place to raise awareness. Staff members across the wards described how the huddle had provided them with a valuable opportunity to formally share information and raise particular issues or concerns, such as highlighting the most ill or at-risk patients, with a range of colleagues on the ward at set times throughout the day or shift. According to the interviewees, such discussions would otherwise have taken place in a more haphazard or ‘hit and miss’ manner prior to the implementation of the huddle. Staff members also described how the huddle had provided a new opportunity for staff to bring patient safeguarding concerns and issues raised by parents to the attention of the wider staff group, as well as staffing and patient flow issues to inform planning for the day or shift.

Prevention of loss of information or miscommunication. Interviewees across the wards mentioned that having lots of staff members from a range of different occupations and levels of seniority at the huddle was particularly helpful in terms of preventing staff members from misinterpreting, miscommunicating, or missing out on hearing important information. This was because it ensured that a range of views and perspectives could be shared and clarified within the wider staff group at one point in time. Different staff members may bring different pieces of the puzzle for each patient. One staff member also commented on how encouraging staff to raise any safety concerns that they had in the huddle, even if they are simply gut feelings, had helped to perpetuate a culture of openness on the ward, and minimise the danger of concerns about patients not being voiced early enough. In addition, interviewees described how the regularity and formality of the huddle had helped to ensure that staff members did not miss out on being updated about incidents and situations. Use of a structured way of communicating within the huddle and handover, such as the Situation Background Assessment Recommendation communication tool (SBAR; NHS Institute for Innovation and Improvement, 2013), had also helped to ensure that staff members did not miss out any important information when handing over to colleagues.

A sense of the bigger picture. Staff members across the wards indicated that they had a greater awareness of the ‘bigger picture’ surrounding individual patients, as well as of the ward, the unit, and the hospital, as a result of the huddle. This was because the huddle had brought a range of staff members together who had different types of knowledge about each patient and so had provided a new opportunity for a wide range of issues that could be affecting patients to be discussed, regardless of their medical condition or which speciality team they were under. The nursing staff members, in particular, also noted that the huddle had increased their awareness of all patients on the ward who may be in danger of deteriorating and, consequently, who need to be ‘watched’, even if they are not directly under their care.
Increased teamwork. Staff members across the wards mentioned that taking part in the huddle had made them feel more like one team working together on the ward, rather than several separate teams. Interviewees described how they had come to know their colleagues on the ward more and what their roles entailed through attending the huddle, and commented that they now felt more confident in communicating with colleagues with whom they might not have so readily communicated or approached before. Staff members also alluded to feeling more supported, particularly by senior staff members, as a result of attending the huddle or due to an increased consultant presence on the ward since the SAFE programme began. From the nursing staff members’ perspectives, ‘feeling more supported’ primarily seemed to mean having quicker reviews for their patients from doctors and knowing that doctors shared their awareness of any problems with or needs for their patients.

Anticipation and planning. Staff members across the wards described how huddling specifically each morning or at the start of the shift had meant that any issues or concerns could be highlighted by the medical and nursing staff teams to each other early on in the day or shift. This had then helped the staff group as a whole to make sure that they were prepared to deal with any eventualities, and had given them the opportunity to jointly formulate a plan or structure for the day or shift on the ward, such as in terms of which patients and tasks needed to be prioritised, and any staffing issues that needed to be accounted for or addressed. Staff members also commented on how paediatric early warning system scores (PEWS; Lambert et al., 2014) could help with ‘catching’ patients who may deteriorate and then initiating early action or planning in relation to these patients. Two staff members described how the huddle and PEWS scores had married together to streamline the communication of concerns between staff, as PEWS scores are a way of documenting concerns and the huddle is an opportunity to explicitly highlight these concerns to colleagues.

Efficiency. Staff members across the wards described how the structure and systematic nature of the huddle had meant that important information relating to patient safety could be effectively communicated to the nursing and medical staff teams in a short space of time. Furthermore, the nursing staff members, in particular, mentioned that having a regular medical staff presence on the ward as a result of the instigation of the SAFE programme and the huddle had meant that communication between nurses and doctors was now much more efficient, as the nurses did not have to spend so much time now trying to contact doctors to ask them to come to the ward. In turn, from the medical staff team’s perspective, taking part in the huddle at the start of the shift had ensured that they would know from the nursing staff prior to their ward round which patients they needed to see quickly and urgently, which could then help them to effectively and efficiently organise their ward round according to patient need.
Table 12. Quotes relating to the ‘positive effects or benefits’ themes at Time 1.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A place to raise awareness</td>
<td>“It just raises everybody’s awareness as to any potential incidents that could happen” (Sister)</td>
</tr>
<tr>
<td></td>
<td>“[The consultants are] aware of our staffing as well because we bring that up as part of one of the bullet points within the huddle and previous to that the medics never really used to ask about our staffing and how many patients we could staff” (Sister)</td>
</tr>
<tr>
<td>Prevention of loss of information or</td>
<td>“I guess it’s like ‘Chinese Whispers’. The more you hand over, the more it’s going to get lost. So if you can hand over less, then you’re going to lose less information” (Junior Doctor)</td>
</tr>
<tr>
<td>miscommunication</td>
<td>“I think now on the ward everyone’s so much more open and everyone just says what they think because that’s the ethos that it’s given is that everyone can go, ‘Hang on I’m not happy about that’” (Registrar)</td>
</tr>
<tr>
<td>A sense of the bigger picture</td>
<td>“I think we get a more rounded and holistic picture before we go to see a patient. Because from the handover we would know about the medical condition and then we go out and go through the board huddle [and] if there are any issues or complaints that the nurses have picked up they will feed that back to us” (Consultant)</td>
</tr>
<tr>
<td></td>
<td>“So I could be looking after patients 1 to 4 but I know the patient in bed 5 is deteriorating, so the huddle highlights to us that we need to keep an eye out for bed 5 . . . it’s [the] whole ward that we get to see through the huddle” (Nurse)</td>
</tr>
<tr>
<td>Increased teamwork</td>
<td>“I think it helps that boundary between medical staff and nursing staff, it sort of links them a little bit more . . . having that time to discuss patients it’s usually something that the medical team would do together and the nursing team would do together in different ways” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>“And the huddle’s improved communication among the doctors and the nurses, because I’ve had feedback from the doctors saying to me that, you know, she feels she can talk to the nurses about the patient more and then she feels like the nurses come to her about patient care more” (Matron)</td>
</tr>
<tr>
<td></td>
<td>“We’re better looked after, we’ve got people that are actually advocating for us” (Sister)</td>
</tr>
<tr>
<td>Anticipation and planning</td>
<td>“Before, no one was actually saying, ‘And if this kid’s dropping off the edge of the earth, this is the person you’re going to ring, this is the next plan’. None of that went on. And one of the things we’re trying to do in the huddle is to say, ‘Well the plan is...’” (Consultant)</td>
</tr>
<tr>
<td>Efficiency</td>
<td>“It just kind of feels like somebody somewhere realised that all of this information is being passed on but there’s a quicker way of doing it” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>“The huddle provides an opportunity whereby any care that my patients need that I need the doctors to be aware of I can do so in a very quick manner that’s effective, rather than me chasing them around” (Nurse)</td>
</tr>
</tbody>
</table>
**Negative effects or drawbacks**

Table 13 contains key quotes from the staff members’ interviews at Time 1 relating to each theme described in this section.

**Pressure on time and workload.** Staff members across the wards described perceiving an increase in workload or alluded to experiencing increased pressure at work, as a result of having to attend the huddle, which could be time-consuming, on top of their usual meetings and responsibilities, or as a result of having to cover other staff members’ duties while they have been attending the huddle. This was the most common drawback directly expressed by the staff members. These feelings were most pronounced when there were not enough staff in general working on the ward. Yet, at the same time, staff members also seemed to feel that with practice and when conducted at a regular agreed time and with an agreed script, such as SBAR, the huddle in fact tends to take a relatively short amount of time.

**Possible feelings of exclusion.** Interviewees on some of the wards mentioned in the early stages of the implementation of the programme how junior nursing staff members had not always been invited to attend the huddle, or they had not yet been able to attend the huddle due to their busy work schedules or obligation to stay at the patient’s bedside. Interviewees felt that there could be a sense among some junior nursing staff members of feeling ‘too junior’ or ‘not important enough’ to attend the huddle. One staff nurse referred to instances when the huddle had taken place on the ward solely with the medical staff team as the nurses had been too busy to join at that time, which had then meant that the nursing staff were unaware of any decisions made or plans formulated in the huddle that might affect them and the ward. However, other interviewees mentioned that if any staff members had not attended the huddle, it was then ensured that they were updated with the outcome of the huddle. Nonetheless, even when present in the huddle, another staff nurse alluded to not really feeling included in the planning process in the huddle.

**Variable added value.** Some of the staff members across the wards indicated that they had not yet seen much obvious impact of the implementation of the SAFE programme and huddles on the ward environment or on their clinical practice so far. For instance, for one of these staff members, this was because they had been unable to attend the huddle so far, as they had usually been too busy at the times when it had taken place, and so the huddle had not yet had the chance to have any impact on their clinical practice. Yet, another of the interviewees felt that the minimal impact so far of the programme on the ward could be due to the nature of the ward on which they worked, as because it was relatively small, in their opinion this potentially made the huddle less necessary than perhaps it would be on a larger ward, with more staff from different teams to update and more patients to keep track of.
Table 13. Quotes relating to the ‘negative effects or drawbacks’ themes at Time 1.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure on time and workload</td>
<td>&quot;Sometimes you might be so busy and they stop you from doing what you’re doing [to] come and listen to the huddle or maybe you know because one of us needs to go to the huddle and then the others might be sitting needing help and so that might just cause pressure for them to have to work a little bit harder on their own for [a] certain time” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>&quot;It is a little bit time-consuming, maybe that’s the negative” (Administrator)</td>
</tr>
<tr>
<td></td>
<td>&quot;[An effective huddle is] quick and to the point. That’s what I like about SBAR. So if you do use it properly, then it should be quick. You know, obviously complicated patients take longer, but yes, you can rattle off your patients quickly and get the key points across” (Junior Doctor)</td>
</tr>
<tr>
<td>Possible feelings of exclusion</td>
<td>“It tends to be the team leader and the consultant and although it says the nurses can be involved as well, we’re never invited to be involved, plus we’re never really free to be involved” (Nurse)</td>
</tr>
<tr>
<td>Variable added value</td>
<td>“The benefits for me I think are more limited because it’s quite unusual for something to come up in the huddle that we didn’t already know about” (Consultant)</td>
</tr>
</tbody>
</table>
Time 2

The main themes derived from the interviews with the staff members at Time 2, relating to the benefits and drawbacks of the implementation of the SAFE programme on the wards from the staff members’ perspectives, are summarised in Table 14 and described in this section.

Table 14. The main themes derived from the interviews with the staff members at Time 2 relating to the benefits and drawbacks of the implementation of the SAFE programme on the wards. New themes arising at Time 2 have been highlighted in bold.

<table>
<thead>
<tr>
<th>Positive effects or benefits</th>
<th>Negative effects or drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A place to raise awareness</td>
<td>Pressure on time and workload</td>
</tr>
<tr>
<td>Prevention of loss of information or miscommunication</td>
<td>Variable added value</td>
</tr>
<tr>
<td>A sense of the bigger picture</td>
<td>Possible negative connotations of terminology</td>
</tr>
<tr>
<td>Increased teamwork</td>
<td></td>
</tr>
<tr>
<td>Anticipation and planning</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
</tr>
<tr>
<td><strong>Improved stress levels</strong></td>
<td></td>
</tr>
</tbody>
</table>

Positive effects or benefits

Table 15 contains key quotes from the staff members’ interviews at Time 2 relating to each theme described in this section. As at Time 1, interviewees across the wards at Time 2 similarly spoke about how the huddle had provided a crucial opportunity for staff members to raise awareness among their colleagues about key issues, including the most high risk or ill patients (often defined as ‘watchers’), safeguarding issues, staffing issues, and parental concerns. There also seemed to be an increased emphasis among the interviewees at Time 2, compared to at Time 1, on how the huddle was a forum to raise gut feelings about patients. Again as at Time 1, staff members across the wards at Time 2 similarly spoke about how the huddle and use of structured communication tools, such as SBAR, had helped to minimise instances of miscommunication on the ward and prevent information from being forgotten about or not being passed on to colleagues. Moreover, interviewees’ sense of the ‘bigger picture’, in terms of their increased awareness of all of the patients on the ward, rather than just the individual patients under their care, increased awareness of a range of issues that could be affecting patients, and increased awareness of issues that
could affect the ward as a whole, was also apparent in staff members’ Time 2 interviews across the sites.

As at Time 1, staff members across the wards at Time 2 similarly described how the huddle and PEWS scores had led to increased anticipation among staff members of risks and incidents, and had facilitated planning in relation to patients’ care and management of staffing issues on the ward. Furthermore, interviewees across the wards at Time 2 again spoke about how communication between doctors and nurses was now more efficient on the ward and how tasks tended to be completed in a more timely fashion because, as a result of the instigation of the SAFE programme, there had been an increased consultant presence on the ward and clear plans for the shift were formulated during the huddle. Finally, interviewees across the wards similarly spoke at Time 2 about how the huddle, in particular, had facilitated teamwork among staff members, helped staff to feel more supported in their roles, and increased communication between staff members on the ward. In relation to this, an interviewee at a DGH at Time 2 described how they felt that the huddle had helped to foster a sense of equality among staff members on the ward, as all staff were able to attend the huddle, regardless of their occupation and level of seniority. However, paradoxically, an interviewee at a SCH described how, while the huddle had facilitated teamwork between staff members on the ward, it had also in fact been an effective vehicle for enabling the medical staff team to “exercise clinical leadership” on the ward.

The following new theme relating to the positive effects or benefits of the implementation of the SAFE programme was derived from the staff members’ interviews at Time 2:

**Improved stress levels.** Two of the interviewees at two of the sites (one SCH and one DGH) commented on how staff members’ stress levels at work had improved as a result of the implementation of the SAFE programme on the wards. One of these interviewees explained that this was primarily due to the huddle helping staff members to plan and pre-empt events, which had meant that staff members were then able to prepare for such events rather than react when such events occurred, which would usually be much more stressful.
Table 15. Quotes relating to the ‘positive effects or benefits’ themes at Time 2.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
</table>
| A place to raise awareness                       | "Especially when we do the watchers, it highlights that we need to be more aware of those patients and I think people are more aware of those patients when they come in on shift" (Sister)  
"So by coming back and then doing the huddle it gives us an opportunity to say, ‘Well I know this patient has not been flagged up to you but I am quite worried about this patient’, so you know you can actually come back and you can talk about it as a team" (Ward Manager) |
| Prevention of loss of information or miscommunication | "Before the huddle it was a lot harder to kind of chase [things] up [with the medical staff] so things would get forgotten . . . so knowing that the consultant is in [the huddle] and the SHO it’s just quite an easy way to just remind them that you know someone needs some bloods or something, so that’s very useful" (Sister)  
"[The huddle ensures that] everyone’s told at one time rather than hearsay" (Play Therapist)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| A sense of the bigger picture                    | "I think what the huddle does is . . . you could see the forest and not the trees, you get the big picture rather than dealing with a minutiae of lots of individual patients . . . it’s the stand out stuff" (Consultant)  
"[The huddle] gives a focus where people all stop and think about what’s happening on the whole ward rather than just individual patients which is a very positive way forward I think" (Consultant)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Increased teamwork                               | "It just helps to get to know people, I think because I’m in a different team I would like to think it’s helped both of us, like those in each team become a bit more aware of what we might need help with and what we actually do, and I think it’s become a bit easier to ask each other for help” (Sister)  
"I think meeting together as a team is really important so you get all the disciplines. So you get the pharmacists in [the huddle] as well, you get the physiotherapists, if they’re on wards at the time they’re in there as well. So it’s a good cross-discipline meeting. It’s useful. I think that’s really good for equality” (School Staff)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
<p>| Anticipation and planning                        | &quot;And it’s good because the watched patients that we identify in the 5 o’clock huddle we try and get a plan through - if they did deteriorate what would be the next plan of action and the next step . . . and then that is fed back and handed over to the medical, on-call teams [so] that they’re aware” (Consultant)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |</p>
<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>&quot;And if you’re raising anything then that can be dealt with straight away so you know there’s no point in bleeping [the medical team], you know we’re huddling in 10 minutes . . . patients can be reviewed and decisions can be made faster to do with discharges or admissions” (Sister)</td>
</tr>
<tr>
<td></td>
<td>&quot;If there’s any plan, or anything new, or anything that needs to be done, you will be told as soon as the huddle’s over, which I think is you know a better way rather than you chasing the doctors down sort of saying, ‘So what’s the plan for this patient? What’s the plan for that patient?’” (Nurse)</td>
</tr>
<tr>
<td>Improved stress levels</td>
<td>&quot;If you’re prepared for things that might be coming in [then] like I said it’s not that sudden you’ve got five minutes to set up your bed space and discharge [the patient] . . . [it] just makes for a stressful shift doesn’t it, so that’s probably one of the biggest benefits” (Nurse)</td>
</tr>
</tbody>
</table>
Negative effects or drawbacks

Table 16 contains key quotes from the staff members’ interviews at Time 2 relating to each theme described in this section. Similarly to at Time 1, the most common drawback expressed by the interviewees across the sites at Time 2 was the increased pressure on their time and workload, which staff members had experienced as a result of the implementation of the huddle in addition to their usual tasks. However, a new finding relating to this theme at Time 2 was how the huddle could result in an increased workload specifically for doctors. In particular, one interviewee at a SCH described how consultants and their teams could feel under pressure to review patients quicker as a result of these patients being highlighted in the huddle, which although positive for the patients, could then put extra burden on these staff members’ workloads. Moreover, another interviewee at a DGH explained how if a doctor attends the huddle and is told about a problem with a patient who is not under their speciality, they are then duty-bound to attend to this patient even if this patient would not usually be in their caseload, which would thus increase their workload. Nonetheless, there was also a greater emphasis in general among the interviewees across the sites at Time 2, as compared to Time 1, on how the benefits and the short duration of the huddle worked to mitigate this drawback of the implementation of the SAFE programme.

Some of the interviewees at Time 2 felt that, similarly to at Time 1, impact of the implementation of the SAFE programme on daily practice or on the ward environment so far had been relatively minimal or variable. For instance, in line with the interviewee at Time 1, another interviewee at Time 2 felt that as no issues had been raised in the huddle so far that they did not already know about, the benefits of the huddle at this point for them had been relatively limited. Moreover, another interviewee indicated that they felt that the huddle perhaps had more direct benefits for senior staff members than junior staff members, as the planning element of it was particularly important for those leading a shift or managing a team.

The following new theme relating to the negative effects or drawbacks of the implementation of the SAFE programme was also derived from the staff members’ interviews at Time 2:

Possible negative connotations of terminology. One interviewee commented on how the term ‘watcher’, which staff now gave to particularly ill or high risk patients as a result of the instigation of the SAFE programme, had sometimes caused issues with parents who felt that if their child was not a watcher then they would not be receiving as high a level of care as the patients who were watchers. Moreover, this interviewee described how some parents felt that actually their child should be a watcher, even when their child had not been given that label by ward staff, which had also been problematic.
Table 16. Quotes relating to the ‘negative effects or drawbacks’ themes at Time 2.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
</table>
| Pressure on time and workload | "But potentially if the huddle comes out and says, ‘There are these four patients who are ready for discharge, why haven’t their team sorted them out?’, you might actually be driving those teams to work harder to be able to do that. That’s not necessarily a bad thing but it does have a resource implication” (Consultant)  
"I think once they’ve been [to the huddle] they then feel better because they’ve got a plan for the day and they know what’s happening so . . . [although] it may seem like it’s a bit of an inconvenience to them, actually they do get something out of it” (Nurse) |
| Variable added value          | “As nurses come through the ranks or become more experienced then I think it would be an added benefit to them as well, especially when they start taking [charge of the ward]” (Ward Manager)  
“The huddle hasn’t directly influenced my practice in terms of we’ve not had a situation where it’s raised any issues that I wasn’t already aware of” (Registrar) |
| Possible negative connotations of terminology | “I think sometimes when you’ve given a title to another child of being critically ill, sometimes it’s being offensive to other parents because they think actually no mine’s the sickest” (Nurse) |
Time 3

The main themes derived from the interviews with the staff members at Time 3, relating to the benefits and drawbacks of the implementation of the SAFE programme on the wards from the staff members’ perspectives, are summarised in Table 17 and described in this section.

Table 17. The main themes derived from the interviews with the staff members at Time 3 relating to the benefits and drawbacks of the implementation of the SAFE programme on the wards. New themes arising at Time 3 have been highlighted in bold.

<table>
<thead>
<tr>
<th>Positive effects or benefits</th>
<th>Negative effects or drawbacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>A place to raise awareness</td>
<td>Pressure on time and workload</td>
</tr>
<tr>
<td>Prevention of loss of information or miscommunication</td>
<td>Variable added value</td>
</tr>
<tr>
<td>A sense of the bigger picture</td>
<td>Possible feelings of exclusion</td>
</tr>
<tr>
<td>Increased teamwork</td>
<td></td>
</tr>
<tr>
<td>Anticipation and planning</td>
<td></td>
</tr>
<tr>
<td>Efficiency</td>
<td></td>
</tr>
<tr>
<td>Improved stress levels</td>
<td></td>
</tr>
</tbody>
</table>

Positive effects or benefits

Table 18 contains key quotes from the staff members’ interviews at Time 3 relating to each theme described in this section. At Time 3, interviewees across the sites again spoke about how the huddle was a valuable opportunity to raise awareness among the wider staff group about specific information and issues that had arisen on the ward. Most commonly, interviewees noted how the huddle had given them the opportunity to raise concerns with or issues about high risk and very ill patients. Specifically, interviewees noted that the huddle was a place for them to highlight issues with complex patients and concerns about any patient on the ward, even if that patient’s care was not directly assigned to the staff member raising the issue. Moreover, as at Times 1 and 2, interviewees across the sites at Time 3 mentioned how their use of communication tools alongside the huddle, such as regularly updated PEWS scores, had also helped to ensure that important information about patients’ conditions was always passed on to their colleagues. Similarly, interviewees across the sites at Time 3 described how the huddle had helped to prevent loss of information or miscommunication among staff members by providing an ‘extra safety net’ to ensure that issues or concerns, no matter how small, could be passed on by staff members to the wider staff group. This was particularly important given that the
medical and nursing staff teams at the sites generally had separate handovers, which meant that the huddle provided the opportunity for concerns raised in these separate handovers to be shared between the medical and nursing staff teams at one point in time.

Again, as at Times 1 and 2, getting a sense of the ‘bigger picture’ was a prominent theme present in staff members’ Time 3 interviews across the sites. This was described by interviewees in terms of staff members getting a better overview of all of the patients on the ward as a result of the huddle. In particular, staff members emphasised that having the nursing viewpoint in the huddle had facilitated the staff group as a whole in gaining more in-depth or holistic knowledge of patients, as nurses spent the most time with the patients daily. Interviewees at one DGH also mentioned that the huddle had enabled staff members to gain a sense of the bigger picture of the ward in terms of increased knowledge about what colleagues’ roles involved, as well as an opportunity to be introduced to new members of staff. In relation to this, the theme of increased teamwork was particularly prominent at this DGH at Time 3. Interviewees at this DGH mentioned that having the whole multi-disciplinary team involved in the huddle, such as play specialists, school staff, physiotherapists, and pharmacists, as well as the medical and nursing staff teams, had allowed for a more holistic and ‘joined-up’ approach to patient care. Moreover, the idea that ‘everyone has a voice’ within the huddle, which also facilitates more holistic patient care and an increased knowledge of the ward, was also mentioned as a benefit by interviewees across the sites. Alongside this, as at previous time points, the huddle was described by staff members across the sites as contributing to improved communication between staff members, in particular between the nursing and medical staff teams.

The most prominent theme evident in the staff members’ interviews across the sites at Time 3, in relation to the benefits of the implementation of the SAFE programme on the wards, was the increased anticipation of risks and issues, as well as increased planning, that the huddle had facilitated. Specifically, interviewees noted that the huddle had allowed for earlier and better planning of patient care, such as prioritising patients during ward rounds, highlighting patients who need immediate attention, helping with bed management, and allocating tasks to staff throughout the day. Furthermore, interviewees mentioned that as a result of the huddle, if there was a patient emergency, staff members were more likely to be aware of which patient this is and of any recent issues that could have contributed to this emergency, which could then be addressed. As demonstrated at Times 1 and 2, this seemed to have led to a sense of increased efficiency in staff practices and patient care on the ward, particularly as interviewees emphasised that the huddle allows for all important information about patients to be shared in one place at one time. Finally, the theme of improved stress levels among staff was also present among some of the interviewees at Time 3, as the fact that the staff members know that they
have up to date, accurate information about patients and clear plans for patient care as a result of the huddle, and feel empowered to voice their gut feelings about patients to their colleagues, can help to alleviate staff anxiety.
Table 18. Quotes relating to the ‘positive effects or benefits’ themes at Time 3.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>A place to raise awareness</td>
<td>“So when they come to the ward for the huddle it is about the ward itself. Like, which is the sickest patient you need to see, if there is any concern regarding a particular patient, who is ready to go home, and are there any particular issues about any patient that we need to address on the ward round” (Consultant)</td>
</tr>
</tbody>
</table>
| Prevention of loss of information or miscommunication | “So every patient’s PEW score will be updated at regular intervals. So that is also happening. So that gives a better [level of] situational awareness for the staff on the ward” (Consultant)  
“So there was one example where a safeguarding concern was brought up in a huddle, which wasn’t made aware of to us at the handover, and that consultant went and had their consultation with the parents and then she actually wrote to me in an email saying this was really positive and you know, a really good way huddles have worked” (Consultant) |
| A sense of the bigger picture  | “I think it’s actually quite an important opportunity for [the nurses] to voice not only their concerns, but also just generally how they think the patient is doing. You know, a lot of the time we only get to see snapshots of patients on ward rounds because it’s so busy and there’s lots of other things going on. But if they’re with them for a much longer period of time they get to sort of assess them and see how they’re progressing, if they think they’re deteriorating or if they think they’re improving. I think it’s important for them to have that input as well” (Junior Doctor) |
| Increased teamwork             | “It’s an opportunity to feedback from everybody because you don’t always get that opportunity, you’ve got people from all different jobs in the huddle, not just the nursing staff, [so] it kind of makes it a little bit more grounded, a little bit more holistic so to speak” (Other)  
“When you start having opportunities for disciplines, different people from different disciplines to meet it increases unity. It sort of flattens hierarchies and people are more open” (School Staff)  
“It’s just offering another opinion, which is useful when it comes to assessing a patient more holistically” (Junior Doctor) |
| Anticipation and planning      | “Going through the patients and looking at the plan for the patient, of any patient which needs immediate attention, you know just to prioritise and so that the whole team knows what we’re doing and how we’re doing it” (Consultant) |
| Efficiency                     | “So it means that it’s all in one place, you haven’t got to go and try and find information, you can go to the huddle and you’ve got as much information as you possibly can without having to try and find everything” (Nurse) |
| Improved stress levels         | “I think it empowers people to actually say, ‘I know you’re saying that you’re happy with that patient but I’m telling you there’s something not quite right’” (Ward Manager) |
**Negative effects or drawbacks**

Table 19 contains key quotes from the staff members’ interviews at Time 3 relating to each theme described in this section. Similarly to earlier time points, both the increased pressure on staff time and workload as a result of the implementation of the SAFE programme, and the minimal and variable impact of the programme and associated safety improvement initiatives so far on the ward were themes that arose in the staff members’ Time 3 interviews across the sites. For example, in relation to the latter theme, one interviewee explained how PEWS scores were not particularly useful for the patients on their ward, as their patients were all high dependency and so their patients were often constantly triggering high PEWS scores, with little change. Moreover, another interviewee at described how they had not noticed that anything major had changed on the ward as a result of the instigation of the huddle.

The theme of possible feelings of exclusion amongst staff arose again at Time 3 but only in one SCH where those staff members who regularly attended the huddle reflected that there was still not enough effort being made on the ward by senior staff members to include junior nursing staff members in the huddle, in terms of their attendance at the huddle or in terms of other huddle attendees feeding back information discussed in the huddle to these staff members.

Table 19. Quotes relating to the ‘negative effects or drawbacks’ themes at Time 3.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure on time and workload</td>
<td>&quot;You are taking staff off the ward and I think until, it can be quite difficult until we’ve got better staffing numbers, even if it’s just one person you do sometimes feel that one person is gone&quot; (Nurse)</td>
</tr>
<tr>
<td>Variable added value</td>
<td>&quot;To be quite honest the PEW doesn’t really work on HDU because as soon as you score a 3 then you trigger the PEW but obviously they’re here in high dependency for a reason and . . . that would be normal for them&quot; (Sister)</td>
</tr>
<tr>
<td></td>
<td>&quot;I mean I can’t really think of anything that’s changed dramatically on the ward, I mean it’s still exactly the same as it was&quot; (Nurse)</td>
</tr>
<tr>
<td>Possible feelings of exclusion</td>
<td>&quot;It’s like we’ve never taken [the huddle] out to individual nurses [on the ward] so I’m not quite sure how they feel, I think it might still be a mystery [to them] as to what happens here” (Nurse)</td>
</tr>
<tr>
<td>Key findings from this chapter:</td>
<td></td>
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<tr>
<td>--------------------------------</td>
<td></td>
</tr>
<tr>
<td>The mechanisms that could explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes include: (1) the provision of a place and an opportunity for staff members to raise awareness among the wider staff group of issues and concerns, (2) increased teamwork and communication between staff members (including nursing and medical staff), and (3) increased anticipation, planning, and efficiency among staff (for details see this section).</td>
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</table>
Chapter VI: What are the barriers and facilitators to the implementation of huddles and other safety improvement initiatives?

This chapter aims to address the following research question: What are the barriers and facilitators to the implementation of huddles and other safety improvement initiatives? Previous research has identified a range of barriers and facilitators to implementing quality improvement initiatives, such as PEWS scores, in paediatric hospital settings (e.g., Adshead & Thomson, 2009; Tucker et al., 2009). We do not yet know whether similar facilitating factors and barriers would be identified in relation to the implementation of huddles and other safety improvement initiatives on paediatric wards in England.

The aim of this study was to qualitatively explore the barriers and facilitators to implementing the SAFE programme, with a particular focus on huddles, from the perspectives of staff members on four paediatric wards in England at three time points (early implementation/Time 1; mid-implementation/Time 2; late implementation/Time 3) over a 2-year period. This chapter is relevant to the ‘input’ and ‘context’ components of the theory of change.

Data analysis

All of the interview transcripts from all three time points were uploaded into NVivo Version 10, a computer-assisted qualitative data management software package (Bazeley & Jackson, 2013). The transcripts were then thematically analysed to answer the following research question: what are the barriers and facilitators to the implementation of the SAFE programme on the wards? In the initial stages of the analysis process, the content of 75% of the Time 1 interview transcripts was coded or sorted into two predefined, ‘top-down’ categories in NVivo, based on this research question: ‘barriers’; ‘facilitators’. A thematic analysis, drawing on the methodology outlined by Braun and Clarke (2006), was then conducted to identify and analyse ‘bottom-up’ themes in the content coded to each of these predefined categories. Following this initial analysis of 75% of the Time 1 interview transcripts, the thematic frameworks derived from the content coded to each predefined category were then further tested against the remaining 25% of the Time 1 interview transcripts. Minimal additional refinements were made to the thematic frameworks for each category as a result of this, which enhanced our confidence in the robustness of their frameworks. The content of the Time 2 interview transcripts was then coded using the thematic frameworks developed from coding the Time 1 interview transcripts.
Where new themes emerged from the Time 2 interviews, these were added to the frameworks. The same procedure was then followed for the Time 3 interview transcripts.

**Findings**

**Time 1**

The main themes derived from the interviews with the staff members at Time 1, relating to the barriers and facilitators to the implementation of the SAFE programme on the wards from the staff members’ perspectives, are summarised in Table 2 and described in this section. Table 2 contains key quotes from the staff members’ interviews at Time 1 relating to each theme.

Table 20. The main themes derived from the interviews with the staff members at Time 1 relating to the barriers and facilitators to the implementation of the SAFE programme on the wards.

<table>
<thead>
<tr>
<th>Themes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior nursing and medical leadership</td>
</tr>
<tr>
<td>Degree of fit between the programme and the ward</td>
</tr>
<tr>
<td>Time and capacity</td>
</tr>
<tr>
<td>Building into daily routine</td>
</tr>
<tr>
<td>Staff enthusiasm and awareness</td>
</tr>
</tbody>
</table>

**Senior nursing and medical leadership.** Staff members across the wards described how the huddle generally required consultant or senior nursing staff member leadership and instigation to take place. Particular senior nursing or medical staff members were often described by interviewees as being programme ‘champions’, who owned and promoted the programme on the ward to drive programme implementation. However, as interviewees acknowledged, this could be an uphill battle. Staff members on some of the wards suggested that there was a need for senior management to enforce the implementation of the programme more on the ward. Furthermore, interviewees on some of the wards implied that particularly among junior nursing staff members, there had been a feeling of needing an invite from a senior nursing or medical staff member to the huddle to know that they were allowed to or should attend. Interviewees across the wards also commented on how most staff members needed regular reminders from senior nursing and medical colleagues about the huddle to ensure that they attended. Having readily available information about how procedures work, such as the huddle and SBAR, and what they involve could additionally help with this.
Degree of fit between the programme and the ward. Staff members across the wards indicated that in order for the programme to be successfully implemented, the programme needed to ‘blend in’ or fit with, and enhance rather than alienate, their existing ward practices. In particular, staff members described how establishing an appropriate time for the huddle on the ward was especially important so that it fit with the daily routine of the ward, and staff members’ regular duties and responsibilities. Essentially, interviewees described how the huddle needed to take place at a time that was most useful and suitable to allow a range of staff members to be able to attend, which could take some practice and ‘trial and error’ to get right. Staff members on some of the wards who did not tend to attend the huddle appeared to have a lack of awareness or understanding of how the huddle could fit with or be part of their job role. These feelings were particularly prevalent among the more junior nursing staff members on these wards. Reasons for this voiced by these interviewees included having patients to look after and so not actually ever being free to attend the huddle, not knowing that it was possible to attend the huddle as a junior member of staff, and feeling that as they were not a senior member of staff they did not need to be involved in the huddle.

Time and capacity. Staff members across the wards indicated that time and capacity had been a key factor influencing whether or not staff were able to attend the huddle at all or on a regular basis. Interviewees described the competing responsibilities that they had, which made it difficult to engage with such new initiatives as the huddle on top of their other existing duties. As the staff members mentioned, the time efficiency of new initiatives like the huddle was paramount in relation to tackling this barrier to implementation. According to the staff members, organisation and standardisation of the huddle, such as through use of a script to structure the information discussed in the huddle, had been key to making the huddle as time efficient as possible. However, interviewees also described how waiting for staff members to arrive at the huddle, or senior nursing or medical staff members finding it difficult to ‘round up’ staff to attend the huddle, had worked against the time efficiency and organisation of the huddle.

Interviewees mentioned that teamwork, in terms of staff members working together to cover each other’s duties to facilitate their attendance at the huddle, or updating each other on concerns to bring to the huddle or on outcomes from the huddle, could also help to address the lack of time and capacity barrier to huddle implementation. In addition, interviewees described how staff members’ concerns about time and capacity could potentially be alleviated by staff members seeing the value of the huddle. For instance, staff members seeing the huddle ‘working’ to improve patient safety would potentially make it easier to implement in future, even in busier times, as staff members would feel more positively towards being involved. Although, as one interviewee had found, staff
members will particularly struggle to see the benefits of an initiative if it is first introduced at a time when staff members’ time and capacity is especially overstretched.

**Building into daily routine.** Staff members across the wards described how, ultimately, the huddle needed to become embedded or ‘integrated’ into everyday, routine practice on the ward for it to be most effective, consistently implemented, and useful. Staff members referred to the fact that in order for this to happen, the huddle first needed to be in staff members’ daily calendars or ‘timetables’. Interviewees on some of the wards mentioned that the huddle was now an official part of training for new members of staff on the ward, which had helped to formalise and embed its implementation on the ward. Staff members also spoke about the importance of practicing the huddle methodology during the initial stages of the programme and adapting it as necessary to fit with the daily routine of the ward, such as through deciding on suitable timing and script content for the huddle.

**Staff attitudes and awareness.** Staff members across the wards alluded to the importance of staff enthusiasm for and awareness or knowledge of the SAFE programme as being key factors necessary for implementing and embedding the programme on the ward. Interviewees on some of the wards described how lack of awareness of the huddle and what it involved had meant that the huddle did not always happen during night shifts or over weekends, and had meant that not all staff, particularly junior nursing staff members, attended the huddle when it did happen. Interviewees felt that staff enthusiasm for and awareness of the SAFE programme essentially came as a result of senior nursing and medical staff members inspiring, educating, and encouraging others to be involved, as well as from staff members understanding the benefits, relevance, and importance of the programme and seeing this in action. In relation to this, interviewees alluded to the importance of staff members getting used to and embracing change as being another facilitating factor behind the implementation of the programme, and staff resistance to and dislike of change as being a barrier, particularly at the start of implementation. Staff members also felt that it ultimately takes time for all staff members on the ward to become aware of a new initiative, how it works, and its benefits, and that persistence over time by senior nursing and medical staff members in implementing the programme on the ward and encouraging other members of staff to be involved had helped with this.
Table 2. Quotes relating to the ‘barriers and facilitators’ themes.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
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<tbody>
<tr>
<td>Senior nursing and medical leadership</td>
<td>“And it seems to be that it’s like if the consultant isn’t on to lead it, it’s not going to happen” (Consultant)</td>
</tr>
<tr>
<td></td>
<td>“I think [to get the doctors on board] that needs to come from the consultants really, same as for the nurses. I think some nurses are really good at it and other nurses think, ‘Ah I don’t need to do that, what’s the point’, so I think it kind of needs to come from management almost, ‘This is what we are doing and we need to do it’” (Nurse)</td>
</tr>
<tr>
<td>Degree of fit between the programme and the ward</td>
<td>“I think probably we were doing this before but not in such a scheduled way you know whereas maybe, yeah a bit more formal now” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>“And [the timing’s] already been changed to putting the huddle before the ward round where it’s a lot more beneficial to have the information that helps us with the ward round” (Physician Assistant)</td>
</tr>
<tr>
<td>Time and capacity</td>
<td>“It’s just when the ward’s so busy it’s getting people there to, and although you know it’s only a two minute job, it’s when you’ve got five other things that need to happen at the same time” (Nurse)</td>
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<tr>
<td></td>
<td>“So for me, the actual huddle should only take five minutes to whip through, or even less sometimes it takes one or two. The problem for us is that it takes 15 minutes to get everybody in the room at the same time and actually start” (Consultant)</td>
</tr>
<tr>
<td>Building into daily routine</td>
<td>“We’re getting used to it, so. It’s taken a while but I think we all know now, you know. As soon as the doctors come out of handover, we know that, oh yes, it’s huddle before everything starts. So we’re getting into it” (Administrator)</td>
</tr>
<tr>
<td></td>
<td>“I think there’s been a lot of things that we’ve introduced and then we’ve had to change and change and change [until] eventually we get to that point where it works” (Nurse)</td>
</tr>
<tr>
<td>Staff attitudes and awareness</td>
<td>“It was hard to get it going at first. The staff didn’t understand it, they had had very little input to it. The staff that had been on the training days hadn’t really fed back the information so I’ve made a concerted effort really to bring it to staff attention through ward meetings” (Ward Manager)</td>
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<td></td>
<td>“I think we just need to chat more to some of the junior staff because I’m more aware that some of them are not as aware as we probably thought they were because we concentrated very much on the kind of senior staff to start with” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>“It’s like pushing a boulder up the hill. If you take your foot off the pedal, it’s going to hit you back in the face, so you’ve got to keep pushing to try and change it” (Consultant)</td>
</tr>
</tbody>
</table>
The main themes derived from the interviews with the staff members at Time 2, relating to the barriers and facilitators to the implementation of the SAFE programme on the wards from the staff members’ perspectives, are summarised in Table 2 and described in this section. Table 2 contains key quotes from the staff members’ interviews at Time 2 relating to each theme.

Table 2. The main themes derived from the interviews with the staff members at Time 2 relating to the barriers and facilitators to the implementation of the SAFE programme on the wards. New themes arising at Time 2 have been highlighted in bold.

<table>
<thead>
<tr>
<th>Themes</th>
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<tbody>
<tr>
<td>Senior nursing and medical leadership</td>
<td></td>
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<tr>
<td>Degree of fit between the programme and the ward</td>
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<tr>
<td>Time and capacity</td>
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<tr>
<td>Building into daily routine</td>
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</tr>
<tr>
<td>Staff enthusiasm and awareness</td>
<td></td>
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<tr>
<td><strong>Support from the SAFE implementation team</strong></td>
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</table>

As at Time 1, staff members across the wards at Time 2 noted that having senior nursing and medical staff leadership and enthusiasm for the programme was a key facilitator to the implementation of the programme on the ward. Moreover, interviewees on some of the wards again suggested that the programme could be enforced more on the ward by senior staff members. A staff member at one of the SCH indicated that a record of huddle attendance could help with this, especially in the early stages of the programme. Staff members on some of the wards felt that the huddle was very much part of the daily routine on the ward by Time 2, which had helped with more consistent implementation of the programme. Equally, within the theme of staff attitudes and awareness, interviewees across the wards at Time 2 felt that staff members had had greater experience of the benefits of the huddle by now, which had helped to encourage implementation. Yet, interviewees on some of the wards also acknowledged that there were still staff members at their site who had more negative attitudes towards or who were less willing to get involved with implementing the programme, such as those who had not yet been involved so who had not had the chance to see the benefits, or those staff members who had worked on the ward for a long time and so who were harder to convince about the value of change.
Not having enough time and capacity to attend the huddle was the main barrier highlighted by interviewees across the wards again at Time 2, in relation to staff member involvement in the huddle and to the huddle taking place at particular times. For instance, one interviewee at a SCH described how it was difficult for them to attend the morning huddle because the timing clashed with particular jobs that they had to complete every morning for their patients. Indeed, interviewees on some of the wards described how they had had to move the time of the huddle to ensure that more members of staff were able to attend.

The following new theme relating to the barriers and facilitators to the implementation of the SAFE programme was derived from the staff members’ interviews at Time 2:

**Support from the SAFE implementation team.** Two of the interviewees at two of the sites (one DGH and one SCH) at Time 2 indicated that the support provided from the SAFE implementation team, such as through their organisation of periodical study days for hospital staff to attend and collaboration-wide learning events, had been a source of motivation for them in implementing the programme and in getting ideas for how to successfully implement the huddle on their ward.
Table 23. Quotes relating to the ‘barriers and facilitators’ themes.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior nursing and medical leadership</td>
<td>“... our advanced nurse practitioner [has] been pushing it loads... so they [have] been giving a lot of information out about it, starting a huddle diary or to make sure that it’s actually on certain days, and so you can keep a record of when it is happening, is it happening, who’s coming to it, who isn’t coming to it” (Sister)</td>
</tr>
</tbody>
</table>
| Degree of fit between the programme and the ward | “It’s best to have it initially because then if they’re having problems with the patients, any problems overnight, they’re addressed early in the morning” (Sister)  
“Doing it first thing in the morning after the doctors have had a handover, the nurses have had a handover, the play specialists have had their team [meeting], the school teachers have had their team briefing in the morning, it’s a good time to have it in the morning because if you delay it longer than that you’re not going to get everybody because everybody will be going around doing their things so it is important to do it first thing after you’ve all had your different team briefings to bring any concerns to the huddle” (Matron) |
| Time and capacity                         | “Nurses looking after individual patients, trying to get them to participate in the huddle has been a problem because... they for various good reasons have been reluctant to actually join the huddle because it means leaving their patients and there’s [been] a big emphasis on trying to keep the patients under supervision” (Nurse)  
“I don’t think it’s feasible to get all the staff [to the huddle] because obviously there’s what, four or five band 5’s on a shift, [so] to try and get us all free at the same time is not going to happen” (Nurse) |
| Building into daily routine               | “Obviously the morning [huddle] and the evening one that’s a part of the routine everyone knows now as a daily thing that happens” (Nurse)                                                                 |
| Staff attitudes and awareness             | “[The huddle is] just 10 minutes out of your evening that actually are really beneficial” (Nurse, SCH)  
“They want you to prove to them why they should do it and how it works and that’s difficult if you haven’t done it yet to prove that it works” (Nurse) |
| Support from the SAFE implementation team | “But I think the main, the biggest challenge is people doing something new, it takes time to get people to do it and it takes time for that to become second nature. And for me it is second nature but that’s because I’ve been to all the study sessions and in London and I’ve heard all the good things about it” (Nurse) |
The main themes derived from the interviews with the staff members at Time 3, relating to the barriers and facilitators to the implementation of the SAFE programme on the wards from the staff members’ perspectives, are summarised in Table 24 and described in this section. Table 25 contains key quotes from the staff members’ interviews at Time 3 relating to each theme.

### Table 24. The main themes derived from the interviews with the staff members at Time 3 relating to the barriers and facilitators to the implementation of the SAFE programme on the wards. New themes arising at Time 3 have been highlighted in bold.

<table>
<thead>
<tr>
<th>Themes</th>
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<tbody>
<tr>
<td>Senior nursing and medical leadership</td>
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<tr>
<td><strong>Persistence of the hierarchy</strong></td>
</tr>
<tr>
<td>Degree of fit between the programme and the ward</td>
</tr>
<tr>
<td>Time and capacity</td>
</tr>
<tr>
<td><strong>Teamwork</strong></td>
</tr>
<tr>
<td>Staff enthusiasm and awareness</td>
</tr>
<tr>
<td>Part of daily routine</td>
</tr>
<tr>
<td>Support from the SAFE implementation team</td>
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**Senior nursing and medical leadership.** As at Times 1 and 2, interviewees across the wards at Time 3 indicated that support and leadership from both the senior medical and nursing staff teams on the wards had been particularly important at the start and throughout ongoing implementation of the programme to ensure the sustainability of the programme on the ward, as ward practices ‘filter down’ from the senior staff members to the junior staff members. Indeed, one interviewee at a DGH acknowledged that, on reflection, it would have been more effective at the start of the programme to more closely involve the ward matron or ward manager in the implementation of the programme at this point. On some of the wards, as at Times 1 and 2, staff members at Time 3 still felt that the huddle would not necessarily take place if senior medical or nursing staff members were not there to lead the huddle. One interviewee at a DGH at Time 3 also felt that having different ‘huddle champions’ in different teams on the ward, such as the play specialist team, as well as senior nursing and medical staff involvement, had been crucial in sustaining the implementation of the programme on the ward over time.

**Persistence of the hierarchy.** A new theme evident in some of the staff members’ interviews at Time 3 related to the persistence of the hierarchy within
the staffing structure on some of the wards, as an ongoing barrier to huddle implementation. This was apparent on one of the wards in terms of the huddle consistently only taking place with senior medical and nursing staff members, as junior nursing staff members were never free to attend the huddle because they always had patients to look after. A solution to this proposed by staff members at this hospital was to bring the huddle to the junior nurses, i.e. to the patients’ bedsides, rather than asking the junior nurses to come to the huddle, which took place in a room off the ward. However, this had not yet been implemented. Furthermore, according to one interviewee on another ward, the timing of the huddle was organised around the consultants’ timetables, which meant that the huddle took place when the consultants arrived on the ward, even if this was not convenient for other staff members.

**Degree of fit between the programme and the ward.** As at Times 1 and 2, a facilitator to programme implementation across the wards, as identified by the interviewees at Time 3, was the perceived relevance of the huddle to staff members’ job roles or interests, and ward practices or needs. In turn, a barrier to programme implementation, as identified by the staff members, arose when the huddle was not seen by staff members as being relevant for, necessary, or a good fit with staff members’ job roles or the type of ward. Indeed, three interviewees from different wards commented on how the type of ward, specifically a large or a particularly busy ward, or a ward with multiple speciality consultants who all came to the ward at different, unpredictable times each day to see their patients, had made implementation of the huddle with a large representation of the staffing group attending more difficult. Interviewees across the sites also spoke about how the timing of the huddle, while appropriate for some staff members, was still not appropriate to allow particular staff teams to attend, such as physiotherapists or the surgical team, as it did not fit with their working patterns, which these teams were unable to change.

**Time and capacity.** As at Times 1 and 2, staff members across the wards at Time 3 again commented on how the huddle occurrence and staff attendance at the huddle ultimately still depended on whether staff had time to attend the huddle, which lack of staff in general working on the ward could affect, and on whether the huddle conflicted with other duties and responsibilities that they had. However, if staff members could not attend the huddle, interviewees at Time 3, similarly to at Time 1, described how their way of mitigating this was to ensure that staff members passed their concerns to individuals who would be attending the huddle, or that huddle attendees relayed information discussed in the huddle to other staff members either in person or through keeping a written record of the huddle content. Another way of mitigating this, as similarly described by interviewees at Times 1 and 2, was to ensure the time efficiency of the huddle, which seemed in general to have improved over the course of the programme, with practice and honing of the methodology.
**Teamwork.** A theme that was of particular prominence in the staff members’ interviews on some of the wards at Time 3, as compared to at Times 1 and 2, was staff members’ reflections on the importance of teamwork to facilitate programme implementation on the ward. This was in terms of shared ownership of the programme, working together to refine and adapt the methodology where necessary, ensuring that staff members who did not attend the huddle were updated about the huddle content, ensuring that all staff were able to bring their concerns to the huddle even if they could not physically attend, and shared responsibility among staff members for ensuring that the huddle took place.

**Staff enthusiasm and awareness.** Interviewees across the wards at Time 3 felt that by this time many staff members had actually been able to see the benefits of the huddle in action, which had encouraged them to attend the huddle, and had thus facilitated the implementation of the programme on the wards.

**Part of daily routine.** Interviewees across the wards at Time 3 felt that the huddle was now very much part of the daily routine on the ward, which had facilitated the implementation of the programme on the ward. This had come as a result of staff members’ persistence over time in implementing the programme and as a result of the staff team on each ward adapting the huddle methodology where necessary, particularly in terms of the huddle timing and content, to fit with staff members’ schedules and interests. Moreover, three staff members at Time 3, on reflection, felt that receiving training in implementing the huddle at the start of the programme by an individual experienced in implementing the methodology would have been particularly valuable, in terms of helping the huddle to become part of the daily routine on the ward. In addition, one interviewee at a DGH described how they had now stopped asking huddle attendees to record that the huddle had taken place, so as to make its occurrence seem more like a natural process than an addition to daily practice on the ward.

**Support from the SAFE implementation team.** As at Time 2, two interviewees at Time 3 (both at separate DGH) described how the SAFE learning events organised by the SAFE implementation team had been a source of encouragement, motivation, and inspiration for them in terms of implementing the programme, as they had learned from and gathered ideas from the national programme team and from other sites at these events. One of these interviewees felt that staff members who had not attended these events at the start of the programme were not as immediately ‘sold’ on the programme as they were.
Table 25. Quotes relating to the ‘barriers and facilitators’ themes.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior nursing and medical leadership</td>
<td>&quot;And I think having our clinical lead on the team of people who were implementing things, that has made a massive, massive difference. Because I think had it been maybe a new consultant, it might not have taken off. We needed backing from the top really, to be able to make it work&quot; (Sister)</td>
</tr>
<tr>
<td></td>
<td>&quot;If we stop leading it, would it happen? Interesting question, not quite sure if someone didn’t push for it I think sometimes it wouldn’t happen&quot; (Consultant)</td>
</tr>
<tr>
<td>Persistence of the hierarchy</td>
<td>&quot;There’s been times when we’ve been waiting for half an hour and all of a sudden the consultant comes up and it’s sort of, ‘Oh but we need you to start rounds’, ‘Well we’ve been waiting for half an hour’. So I do find that just a little bit annoying, so that we have to sort of work on their time, but they are the big boss&quot; (Nurse)</td>
</tr>
<tr>
<td></td>
<td>&quot;It often is that it’s only senior members of staff so the coordinators and team leaders who don’t have patients allocated to them, they’re free to attend and I think at the moment we’ve not been very good at actually filtering the news from the huddle to the [junior nurses at the bedsides] and I think there’s a lot of improvement we can make there” (Nurse)</td>
</tr>
<tr>
<td>Degree of fit between the programme and the ward</td>
<td>&quot;Ward rounds don’t start at the same time, the wards are big . . . you will have perhaps about eight specialities on there so within those specialties there are different consultant teams . . . [and] medical staff can’t say well they’ll always come to you at half past eight because there might be a clinical need to be elsewhere” (Matron)</td>
</tr>
<tr>
<td></td>
<td>&quot;I mean, that’s a whole question about building a culture for improvement and safety in a department and you know, I think we were relatively lucky that there was that kind of culture to some extent. So getting other people on board was maybe easier” (Consultant)</td>
</tr>
<tr>
<td>Time and capacity</td>
<td>&quot;Certainly the evening one doesn’t happen as regularly over the weekends as it does during the week and that’s just about attendance and I guess that just reflects the minimum staff, the skeleton staff that are around at weekends really” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>&quot;I think it can be tricky if it’s particularly busy or if you’ve got a lot of IVs that are due in the morning. Then I think that can be hard because it’s like you get called off to go and do that. So then you miss the huddle and the doctors have to sort of just carry on, which is a bit of a shame really” (Nurse)</td>
</tr>
</tbody>
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Table 2. Continuation.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teamwork</td>
<td>&quot;And it is from the both sides, medical as well as the nursing side, and it is not one person’s responsibility to make it happen . . . the nurses often remind, so if we haven’t had the huddle, ‘Can we quickly do a huddle?’, so I think it is becoming more and more part of the team culture” (Consultant)</td>
</tr>
</tbody>
</table>
| Staff enthusiasm and awareness | “But the morning ones are happening regularly. Regarding the huddle, it happens most of the time before the ward round because everyone wants to know how to prioritise and how to plan ward round, and the nurses are also quite keen to know which way the ward round is going to go” (Consultant)  
"And, I think, because it has proven effective so it’s working, so, of course, that’s enough to make you keep doing it” (Nurse) |
| Part of daily routine          | “It’s pretty automatic I’d say now like after [the doctors’ handover] we’ll know exactly where to go, we know there’s a huddle going on” (Junior Doctor)  
“We’re all kind of used to, you know, when you get into that routine, that pattern you know once the doctors have finished their handover it’s time for huddle” (Play Specialist) |
| Support from the SAFE           | "And then each time we went to a learning session we’d come back and maybe tweak things, adjust things, give a bit more encouragement, get it really embedded” (Sister)  
"The learning sets as a time away to be a bit creative and innovative and have that kind of headspace away from work to think about what we could do” (Consultant) |
A case study

Qualitative data collection was also carried out at one additional site at Time 3 (late implementation) to explore staff perceptions of aspects of the project that had been helpful or useful, aspects that had been less helpful, and barriers and facilitating factors to implementing the project at this hospital. This site had had difficulties engaging with the programme since implementation began. To protect the anonymity of this site, the following findings from the interviews conducted at this site have been included among those from a small number of other sites.

Barriers

**Difficulties with clinician engagement.** The interviewees spoke about the difficulties that they had experienced over the course of the programme in terms of ensuring that clinicians were engaged with the programme. Reasons behind this outlined by the interviewees included:

- Logistically, it can be difficult for clinicians to attend the huddle
  
  "They are committed mentally and you know it’s just the actual implementation and it’s not anybody’s fault, it’s the way the service is running and that’s tricky really and if you can’t get the clinicians on board to do it, actually implement it, it’s hard”

- Disillusionment among clinicians about the types of data being collected for the programme
  
  "[The data to be collected] all seemed like such [infrequent] events . . . and I suppose that made it difficult to get anyone else excited because they felt, you know some of the other paediatricians in fact were less than keen and we did have to persuade them”

- Clinicians’ time constraints
  
  "I went to [some] SAFE meetings at the College on my own . . . and so it was very difficult to take any energy that you get from a gathering and take it home again when it’s just you . . . sometimes I had, you know, a possible crowd and then it all fell apart. So yeah it was difficult to get people to commit to giving their time [to attend SAFE meetings]”

**Difficulties fitting programme-related duties into existing job roles.** The interviewees commented on how they and/or their colleagues had had difficulties finding the time and capacity to carry out programme-related duties, such as supporting members of staff in implementing the huddle or attending the huddle themselves.
"I won’t say you need a full timer in each organisation because that, you wouldn’t, but you certainly need some dedicated time to do it properly and to get people doing it on top of their normal job is difficult"

Degree of fit between the programme and the way that the hospital works. The interviewees mentioned that it had been difficult to fit the programme into their established way of working at the hospital and that the logistics of doing this had been complicated, for example, it was hard finding a time for the huddle that would ensure that all staff could attend.

"Ward rounds don’t start at the same time, the wards are big [with lots of specialities] . . . so within those specialties there are different consultant teams, there may be children with same specialities on wards elsewhere, so medical staff can’t say well they’ll always come to you at [that time] because there might be a clinical need to be elsewhere . . . this is not because they’re being obstructive, this is just the way our services work"

The interviewees also spoke about how they had already had safety or quality improvement initiatives in place prior to the start of the programme, which had made it difficult to engage staff in implementing the programme and to see where the programme fit at the hospital.

"We found it kind of difficult to apply because we’d already been doing twice daily sit down rounds with nurses and doctors to review all the children . . . it didn’t seem like there was [an] obvious gap for, like there’s a hole, size hole that we weren’t utilising"

Staffing changes and staff sickness. The interviewees described how staff long-term sickness, senior staffing changes, or ‘huddle champions’ being rotated to a different department had been problematic in relation to implementing and sustaining the programme.

"Quite early on in the study . . . it was apparent that there was going to be a change in ward manager then for various other reasons, sickness and whatever, there was another change and another change and that is not conducive to supporting a ward to implement a new quality initiative"

"The huddles worked well [at first] and it was a lot to do with the enthusiasm of a [junior doctor] . . . a very talented person who was in the paediatric team, [but who] then rotated to [another team]"

Facilitators

Easier nursing team engagement. One of the interviewees felt that it was easier to engage nurses in the programme than clinicians, as the programme aligned more with the nursing team’s daily schedules and potentially nurses may be more comfortable with ‘action learning’ programmes than clinicians, who may be more used to, for example, randomised controlled trials (RCT).
"Nurses all start the shift, they start, they all go to the same place . . . so [the huddle] was very easy to bring in [for the nursing team], whereas medical staff rounds will start at slightly different times”

**Particular ward types may be more conducive to programme implementation success.** The interviewees spoke about how implementing the programme on wards with specific patient populations, such as orthopaedic patients only, or on relatively small wards with small consultant teams, could be helpful in terms of increasing the chances of the success of the programme’s implementation.

"Where I think it’s worked in, places where it will work really well are critical care, you’ve got a stable nursing and consultant workforce because the intensities just work in intensive care [or] a smaller hospital that perhaps would have one ward or two wards with maybe a limited consultant team, so paediatrics or surgery”

**Flexibility of the method.** The interviewees described how having some flexibility around how and when the programme was implemented had been helpful.

"It’s about that two-way process really, tweaking it, because when we did the huddle it went out for circulation to everyone so everyone commented on it before it was agreed and started to be used and then you just tweak it as you go along and it shouldn’t be set in stone”

**Importance of the SAFE learning events.** The interviewees spoke about how the SAFE learning events led by the SAFE implementation team had been useful and inspirational for those staff members who had attended them, as they were able to learn from other sites and hear from those championing the programme.

"In terms of me and SAFE, I think I didn’t get it completely in terms of living and breathing it until the webinar with the man from Cincinnati . . . [he] just talked to us and it was, I mean he’s obviously enthusiastic about it, he’s obviously got a long way with it, but it was a very powerful bit of interaction even though it was across the Atlantic through the webinar”

**Importance of junior and senior staff member programme ownership.** One of the interviewees spoke about how it was important to have both senior staff member ownership of the programme, as well as more ‘grass roots’ junior staff member buy-in.

"It needs to be top down and grass roots up. It’s got to be a two-way street for it to really work. I think top down on its own won’t work and grass roots upwards without any senior help will be also challenging”
Key findings from this chapter:

- Facilitators to the implementation of huddles and other safety improvement initiatives included (1) senior medical and nursing leadership; (2) the need for the initiative to blend in with and enhance existing ward practices; (3) having the time and capacity to implement the initiative; (4) staff perceiving the benefits of the initiative; (5) staff members having enthusiasm towards and awareness of the initiative, how it works, and its rationale; (6) practice and adaption of the methodology to suit the needs and interests of staff and the ward; (7) support from the SAFE implementation team; (see more details for Time 1, Time 2, Time 3).

- Barriers included (1) lack of perceived relevance or ‘good fit’ of the initiative with staff members’ job roles and priorities, and with ward practices; (2) resistance to change; (3) lack of staff; (4) lack of time; (5) other competing duties or responsibilities; (see more details for Time 1, Time 2, Time 3).
Chapter VII: What are the barriers and facilitators to the positive impact of the huddle?

Key findings from the current chapter can be seen here.

As identified by staff members at the four qualitative sites in their interviews at Times 1, 2, and 3, there are several key factors that appear to be important for the huddle to be as effective as possible. This chapter is relevant to the ‘mechanisms’ and ‘context’ components of the theory of change. Quotes relating to each theme are shown in Table 26. The themes derived from the dataset are as follows:

Adaptable. Staff members at all sites and across all time points indicated that for it to be most effective, the huddle methodology needed to be adapted to fit with the particular needs, interests, and schedules of the ward.

The right location. Interviewees suggested that the huddle can be less effective when it is conducted in a busy environment, such as in the middle of the ward or next to the nurses’ station, where it can be easily disrupted or staff attending the huddle can be easily distracted. Such a location can also mean that the huddle is potentially in earshot of patients and parents, thus presenting issues for patient confidentiality, and in the way of other staff members on the ward trying to conduct their daily duties. Three of the sites were holding the huddle at such a location at Times 1 and 2. However, at Time 3, staff members at one of these sites commented that their huddle had now moved to a private room just off the ward with the patient board in it, which had lessened the issues of disruptions and patient confidentiality. Yet, according to these staff members, this also meant that junior nursing staff members would then be taken off the ward and away from their patients if they were to attend the huddle, which was not feasible. Interviewees at this site (a SCH High Dependancy Unit; HDU) suggested that potentially an alternative location for the huddle that could enable junior nursing staff members to attend and not leave their patients would be to have the huddle at the patients’ bedsides, although this could also mean that patient confidentiality issues may again be problematic. On the other hand, the fourth site had held their huddle in a private room just off the ward with the patient board in it at all time points. Staff members at this site were consistently a lot more positive about this location. Potentially the issue of junior nursing staff members being away from their patients was not as pertinent at this site given that this site was a general paediatric ward, rather than a HDU.

Particular type of leadership. Interviewees across the wards and at all time points suggested that the huddle needed to be led by a consultant and/or a senior nurse, such as the nurse in charge, as these were the individuals with the
most comprehensive view of the entire ward and were those who could make important decisions about patients and put plans in place. According to interviewees, having a clear leader of the huddle also ensured that a structured information exchange took place in the huddle.

**Specific staff presence.** The minimum staff presence for the effective impact of the huddle, as identified by staff members at all sites and at all time points, was one senior nurse and one doctor (preferably a consultant). However, for the huddle to have maximal impact, it was identified by interviewees across the wards that wider staff involvement was needed, such as junior nursing staff members and medical representatives from the multidisciplinary team, although this was primarily only happening at the two DGH, where administrative, housekeeping, play therapy, and/or school staff were also involved in the huddle. By contrast, at one of the SCH, staff members described how it was too difficult for medical representatives from the multidisciplinary team to regularly attend the huddle because there were too many of them and their schedules were too unpredictable. Moreover, as described above, at the other SCH, junior staff members were unable to get involved in the huddle because they could not leave their patients, who were all high dependency, to attend. Interviewees across the sites suggested that if staff members could not attend the huddle, then they needed to ensure that they passed on any concerns to other staff members who could then take their concerns to the huddle. In turn, interviewees emphasised that huddle attendees needed to ensure that they passed information and decisions made in the huddle on to staff members who had been unable to attend.

**Appropriate timing.** Interviewees across the wards and at all time points described how the huddle was most effective when it happened enough to ensure that staff members had a regular forum throughout the day for communication among the multidisciplinary team, but that it did not interfere with their daily tasks. This was typically a minimum of twice a day – once at the start of the day shift and once at the start of the night shift. In addition, staff members indicated that to be effective the huddle should take place directly after the nurses’ and doctors’ handovers to ensure that both teams have been updated with the relevant information to share with each other at the huddle, as well as directly before the ward round to facilitate planning and so that the doctors know which patients to prioritise. Yet, interviewees also indicated that setting the time of the huddle was easier on some wards than others. For instance, at one of the SCH, a large ward with multiple speciality consultants all visiting the ward at different times throughout the day, there appeared to be no natural set time for the huddle as it just had to happen as and when the consultants were on the ward. Whereas, on another ward at one of the DGH, a smaller ward with a relatively small number of consultants working on the ward, it was easier to set the time of the huddle to ensure maximal staff attendance.
Use of a script or a standardised approach. To ensure that the information relayed in the huddle was always concise, consistent, relevant, and appropriate for the purpose of the huddle, staff members across the wards suggested that the use of a script (e.g., ‘discuss patients’ PEW scores first, discuss any safeguarding issues second, discuss any concerns raised by parents third’, etc.), or a standardised approach to relaying information in the huddle, such as presenting each patient one at a time using the patient board (e.g., ‘Patient 1 – “No concerns”, Patient 2 – “Concerns about high PEW score”’, etc.), was helpful. Interviewees also noted that a standardised format of the huddle had helped staff to know when they should give their views in the huddle and what information should be raised, and had facilitated their teaching of the huddle methodology to new members of staff. However, at Time 2, it was mentioned by staff members at one SCH that a formal script was no longer needed as the huddle was now so embedded in the ward’s daily routine that all staff knew the information that they needed to raise in the huddle. Moreover, interviewees at Time 3 at one of the DGH commented that while they had begun implementing the huddle using a script, they now simply used the patient board to structure their conversations about patients in the huddle, as the script had been too difficult for staff members to remember. However, one interviewee at Time 2 expressed a potential barrier to effective communication in the huddle that a script presented, in that it potentially made it more difficult for staff members to raise important information outside the script that attendees perhaps could have benefitted from hearing.

Specific subject matter. Interviewees across the wards and at all time points mentioned that the huddle was most useful when it was used to raise staff awareness about patient risks or incidents, and for the management of those risks or incidents. Other subject areas mentioned by interviewees across the sites as being important to cover in the huddle included: issues or concerns raised by parents, bed management, patient discharges and transfers, staffing levels, safeguarding issues, and status updates for all patients. One interviewee summed up the subject areas discussed in the huddle as being “less about clinical care and more about organisational aspects of care delivery”. This seemed to capture how staff members across the sites viewed the huddle and reflects the particular gap in information sharing at the sites that the huddle filled.

Concise. Another suggestion made about the format of the huddle as a facilitator to effective impact, as voiced by staff members across the sites at all time points, was that the huddle should only take a short amount of time to minimise pressure on staff members’ workloads and to prevent staff from being taken away from their daily duties and patient care. Interviewees mentioned that this could be achieved through use of a script or a standardised approach to information sharing, as described above, and by rapid and concise exchanges of information between staff members in the huddle, with a focus on giving an overview of the main patient issues or concerns, without going into too much
clinical detail about each patient (which was more appropriate for the handover) or off on a tangent.

**Collection of data.** A suggested addition to the huddle by staff members at the two DGH to maximise impact was the collection of data on issues raised in the huddle, in order to track where additional resources may be needed or to assess improvements to ward safety over time, as well as a record of huddle attendance and huddle occurrence to encourage staff engagement and assess the consistency of the huddle on the ward. However, at Time 3, one interviewee at one of these DGH described how their ward no longer kept a record of huddle attendance and occurrence to try and encourage ward staff to see the huddle as part of their daily routine, rather than as an additional task that needed to be monitored.

**Connection to ward practice.** Interviewees across the wards and at all time points indicated that the huddle was most effective when staff members ensured that what was discussed in the huddle was put into practice when staff were back on the ward, such as medical staff being willing to prioritise patients in their ward rounds based on information raised in the huddle, decisions made in the huddle being documented for patient records, and information shared or plans made being fed back by huddle attendees to relevant staff members who were unable to attend the huddle.

**Polite and respectful interaction.** Staff members across the wards and at all time points felt that the huddle was most effective when they and their colleagues felt that their opinions were listened to and considered valuable, and that there was mutual respect between all staff in all job roles and of differing levels of seniority.

**Parent and patient involvement.** Parents and patients have not been directly involved in the huddle on any of the wards, due to the issues that this could present in terms of patient confidentiality. However, staff members across the wards felt that it was important for parents and patients to know that the huddle was taking place and why, which could be achieved, for instance, through giving parents and patients a leaflet about the huddle or having a poster with details of the huddle on a noticeboard on the ward. Moreover, parental concerns were mentioned by interviewees across the sites as being a definite point of discussion in the huddle as and when they were raised. Some ways to improve parent and patient involvement with the huddle were also suggested by staff members at some of the sites, such as formalising the questions asked to parents prior to and after the huddle to ensure that information is fed into the huddle and back to parents, and documenting plans made in the huddle on a whiteboard at the patient’s bedside.
Table 26. Quotes relating to the ‘barriers and facilitators to impact’ themes.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adaptable</td>
<td>“And over a period of time we had to make some modifications and things like that. And it seemed to be working reasonably okay. It is not perfect yet but it is working reasonably and we may have to sustain it for some time and we may have to make some modifications in future” (Consultant, Time 1)</td>
</tr>
<tr>
<td>The right location</td>
<td>“I think one thing that I have noticed is that sometimes the locality of it, so a lot of the time it is around the nurses’ station and you’ve got potentially sensitive information being discussed in a fairly public place, and a lot of the time you are having to kind of push past them because they’re all there and they’re all in your way” (Nurse, Time 1)</td>
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<td></td>
<td>“I think it’s just because that’s where our patient whiteboard is with all the patient names and details, and it’s a convenient spot because it is right in the middle of the ward. So you know, if they need to grab any of us in an emergency we’re there, but it does have a closed door so we felt it was sort of confidential as well. And I don’t suppose that’s absolutely essential but it does help us talk quite openly about patients and the concerns, having that door closed” (Consultant, Time 3)</td>
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<tr>
<td>Particular type of leadership</td>
<td>“Yeah definitely by the nurse in charge as she knows the whole ward, she’s aware of every patient so it’s quite, it’s very effective yeah when they’re there and then they can speak with the doctor and it’s very good communication then” (Healthcare Assistant, Time 1)</td>
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<td>Specific staff presence</td>
<td>“Because some of the healthcare assistants who’ve been here years probably have just as much if not more knowledge than somebody more senior, so I think it’s good to make sure that they all feel included as well” (Nurse, Time 1)</td>
</tr>
<tr>
<td></td>
<td>“As a band 5 I don’t tend to have much involvement in them really, well I suppose other than handing over to the team leader so they know about your patients so if there’s anything to still talk about in the huddle then they do it . . . I think they are trying to involve more band 5’s but as I say it’s quite difficult to leave patients and stuff to actually be involved in them” (Sister, Time 2)</td>
</tr>
<tr>
<td>Appropriate timing</td>
<td>“It’s really important that it’s done at the time that is feasible and convenient for the staff. It’s important to get the timing right. So immediately after the handover in the morning and just before the handover in the afternoon and then the night shift. So it shouldn’t, it’s important that it doesn’t interfere with the natural flow of the ward work. So timing’s important” (Consultant, Time 1)</td>
</tr>
<tr>
<td></td>
<td>“It’s a good time for them because it means all the doctors are around generally [so] the whole team can attend, so I think the timing’s really important so it’s not just some people attending” (Sister, Time 3)</td>
</tr>
<tr>
<td>Themes</td>
<td>Quotes</td>
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<td>---------------------------------------------</td>
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| Use of a script or standardised approach    | “But just standardising the way that we’re actually talking about the patient would be good and again might provide structure that stops us forgetting stuff” (Consultant, Time 1)  
“We used to have it . . . as a script, whereas now I think I’m so used to doing it it’s sort of embedded in me” (Nurse, Time 2)  
“We initially started by introducing a script. That was scrapped. People prefer just to work through the board, each name, and discuss them. And I think that actually works better because then none of the patients are missed, it gives them order” (Sister, Time 3) |
| Specific subject matter                     | “It’s sort of outlining any potential problems that may occur within the wards. So anything from patients with the same names, to patients with very similar names. Looking at problems with children that may be at risk of falls or risk of infections. Looking at those patients that we think are sort of, are unwell or particular concern for the day, so they’re highlighted early in the morning so that people can address that and see them” (Consultant, Time 1) |
| Concise                                     | “It’s just important just to talk about the key things very quickly because everybody has to get on with their job” (Nurse, Time 1)  
“And I suppose the way we sold it was that it was short. We made sure it was only 5 or 10 minutes” (Consultant, Time 3)                                                                                                                                                                                                 |
| Collection of data                          | “I suppose a handheld iPad or a smartphone whereby the data is sort of stored and captured might be useful for analysing the results of it and looking back and auditing as well” (Consultant, Time 1)                                                                                                                                                                   |
| Connection to ward practice                 | “It did help with ward rounds, it did help with, for example if a child needs to be discharged as well to free the bed and to have more, to be more proactive on admissions and discharges, [as] if we have a patient to go home then we can highlight that in the huddle” (Sister, Time 1)  
“So normally if there is anything that comes out of the huddle, any decisions that are made then that will be cascaded down from the team leader or the coordinator accordingly” (Nurse, Time 3) |
Table 2. Continuation.

<table>
<thead>
<tr>
<th>Themes</th>
<th>Quotes</th>
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</thead>
</table>
| Polite and respectful interaction | “I mean that actually there isn’t a hierarchy of the consultant or the medics being more or less important than the nursing staff, this is about a team acting together as a team to listen to one another so that everybody is aware of what the issues may be” (Consultant, Time 1)  
“And you have to value if someone feels they can say something, wants to say something, they should be at least listened to and discussed, not discounted. And that’s good listening skills really, isn’t it? But that’s what it is, respect. Because it could be, I mean it could be anything from the cleaner having noticed something underneath the bed. Or some inappropriate action to, you know, something the doctor’s concerned about and the whole range in between” (School Staff, Time 1) |
| Parent and patient involvement | “We can also raise concerns about any, if we’re concerned about parents as well, so if we’re worried about parents, [and] like if a parent raises concerns with us as well, so we can put that forward to the doctors, because sometimes parents are a little bit more afraid of addressing concerns with the doctors, so they would, they might talk to us and then that way we can kind of go to the doctors . . . How did that work before the huddle? I think we always used to do it anyway. But I think by having the huddle now it’s made sure that actually we can raise these concerns as well” (Nurse, Time 1)  
“And truly engaging parents in the whole programme, to be honest, because you know, it’s that challenge of the huddle discusses confidential data and patients and we couldn’t, we weren’t able to bring parents in the huddle environment. So it was hard for us to engage them in the, you know, say that we’ve engaged them in the design of the huddle because we can’t. It’s just not been possible like that” (Consultant, Time 3) |
**Key findings from this chapter:**
The factors moderating the positive impact of the huddle included (1) identifying a clear huddle leader; (2) use of a script or a standardised approach to ensure a structured and concise exchange of information; (3) ensuring that the information raised and discussed in the huddle was then translated or had continuation into ward practice; (4) the huddle being flexible and adaptable to each ward’s needs and schedule; (5) the level of dependency of patient care; (6) the degree to which the huddle was implemented effectively; (see this section for more details).
Chapter VIII: To what degree has the huddle been embedded on each ward and spread to other wards at each site? What are the barriers and facilitators to the sustainability of the intervention?

Key findings from the current chapter can be seen here.

There has been a lack of conceptual consensus and understanding in the literature about how safety improvement initiatives implemented in healthcare can be sustained, particularly after the formal programme comes to an end (Scheirer & Dearing, 2011; Stirman et al., 2012).

It has been argued that sustainability is achieved "when new ways of working and improved outcomes become the norm" (Maher, Gustafson, & Evans, 2010, p. 23). One aspect of sustainability is routinisation/institutionalisation, which involves the "embedding of structures and processes of an innovation into the habitual practices of individuals, organisations and systems" (Fleiszer, Semenic, Ritchie, Richer, & Denis, 2015, p. 3). This occurs through a process of "'mutual adjustment' between an innovation and its context, so that the innovation eventually 'loses its separate identity'" (Shediac-Rizkallah & Bone, 1998, p. 94) and becomes ‘business as usual’ (Greenhalgh, Voisey, & Robb, 2007).

Routinisation refers to "cycles of repeated action in a social structure (e.g., practice or organizational routines)" (Fleiszer, et al., 2015, p. 7), whereas institutionalisation can be defined as "the concretisation of organisational infrastructure (e.g., established committees, dedicated budgets, embedded data management technologies" (Fleiszer, et al., 2015, p. 7). In the current chapter, both of these terms have been captured through use of the term ‘embedding’.

The second aspect of sustainability, which is also the focus of this chapter, is spread. Conceptualisations of spread have centred on the geographical diffusion or transfer of an innovation to a new setting (i.e. from one hospital unit to another; Scheirer & Dearing, 2011). Spread occurs "when best practice is disseminated consistently and reliably across a whole system and involves the implementation of proven interventions in each applicable care setting" (Quality Improvement Hub, 2014, p. 2).

From a review of the literature, Fleiszer and colleagues (2015) grouped the factors influencing innovation sustainability into four broad categories (i.e., innovation, context, leadership, and processes; see Table 27). The most commonly listed innovation related factors were: Effectiveness; fit with missions, strategies, procedures; relevance in addressing a need or problem;
type/nature/form of the innovation. Top cited contextual factors were: Programme management structures and systems; organisational culture; policies and procedures. The importance of leadership, as well as the impact of programme ‘champions’, were factors that were consistently emphasised across the studies. The most frequently cited processes involved: Planning and implementation, and performance monitoring.

Table 27. The categories of factors affecting embedding and the spread of the huddle, with definitions and examples.

<table>
<thead>
<tr>
<th>Category of factors</th>
<th>Definition of the categories</th>
<th>Examples of factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>Product, practice, policy, or programme that is new to the organisation or a group of individuals at the time of adoption</td>
<td>Relevance of innovation in addressing a need or problem</td>
</tr>
<tr>
<td>Context</td>
<td>Environment, setting, situation, or conditions in which the innovation is implemented</td>
<td>Predominant organisational culture (shared beliefs, values, norms)</td>
</tr>
<tr>
<td>Leadership</td>
<td>Formal or informal manager(s) or organiser(s) of a group, with certain authorities, attributes, and actions that influence others</td>
<td>Involvement/actions of leadership and management</td>
</tr>
<tr>
<td>Process</td>
<td>Series of events, strategies, or actions that lead to a particular result</td>
<td>Communication about the innovation</td>
</tr>
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</table>

In this chapter, drawing on the Time 3 (late implementation) interviews conducted with staff members on the four wards involved in the qualitative component of the SAFE evaluation, we aim to describe the degree to which the huddle has been embedded and spread on these four wards. We also explore the barriers and facilitators to this, as reported by the staff members in their Time 3 interviews. These are secondary research questions, which arose as questions of interest over the course of the evaluation. Thus, part of the focus of the Time 3 interviews with staff members was on the embedding and spreading (sustainability) of the methodology, given that this was our last opportunity at the end of the programme to be able to speak with the staff members.

Data analysis

The Time 3 staff interview transcripts were qualitatively analysed to answer the following research questions:
1. To what degree has the huddle methodology been embedded on each ward?
2. What does embedding of the methodology mean to staff members?
3. To what degree has the huddle methodology spread to other wards at each site?
4. What are the barriers and facilitators to the embedding and spreading of the huddle methodology?

The content of the Time 3 staff interview transcripts was coded or sorted independently by the two researchers into two predefined, ‘top-down’ categories in an Excel spreadsheet, based on research questions 3 and 5: ‘barriers’; ‘facilitators’ (referring to both embedding and spread). The first researcher coded all of the transcripts, whereas the second researcher coded 20% (N=5) of the transcripts for the comparison of emerging codes, in order to ensure a robust validity of the analysis. A framework analysis, drawing on the methodology outlined by Ritchie and Spencer (1994), was then conducted to organise the codes into further predefined categories based on the theoretical framework outlined by Fleiszer and colleagues (2015).

Based on the discussion with the wider SAFE programme research group, we identified three key determinants of the extent to which the huddle methodology had been embedded. These were (1) consistency of the huddle, (2) if the huddle happens when the members of staff (e.g., nurse in charge, consultant, programme leads) are absent, and (3) if it is going to continue being implemented after the formal programme ends. Interestingly, participants at the same sites did not always agree about the extent to which the huddle methodology had been embedded at their sites.

Findings

To what degree has the huddle methodology been embedded on each ward?

In general, staff interviewees across all four sites described how by Time 3 the huddle methodology was now much more embedded on their wards, compared to earlier in implementation. The majority of the participants indicated that the huddle still took place when key members of staff, such as the nurse in charge, were absent. All interviewees were also confident that the huddle would continue after the end of the formal SAFE programme. Nonetheless, interviewees from all four sites also emphasised that they felt that some of their huddle meetings were now more embedded than others. In particular, as some of the interviewees at two of the participating wards indicated, weekend huddles tended to be less consistent than weekday huddles. This may potentially be due to differences in staffing at weekends as compared to weekdays (e.g., less of a regular consultant presence at weekends). In addition, according to participants across three of the wards, morning huddles were more successfully embedded
than evening or night time huddles. A possible reason for this may be that the morning huddle fits better with staff working practices and daily routines, for instance it tends to take place directly after the handover. It was also observed by staff members at the fourth ward, that their huddles that involved mainly nurses had been better embedded than the huddles where members of the multidisciplinary team were involved. These staff members explained that members of certain specialty medical teams could not often attend the huddle due to their competing responsibilities and different schedules.

What does embedding of the methodology mean to staff members?

Through our interviews we also tried to gain a better understanding of what embedding of the methodology means to staff members. Most commonly, participants described the huddle as being part of their routine, as opposed to it being "something extra" (Consultant DGH). In a similar vein, the huddle was also described as being part of the team culture and being the norm now. Notably, the huddle may become ‘normalised’ with its shortcomings. For instance, as pointed out by one of the interviewees, it has been the norm on their ward that junior members of staff do not attend the huddle even though their presence would be desirable. Other participants focused on the automatism of the huddle when discussing their perceptions of the embedding of the methodology on the ward, in the sense that everyone “knows the drill” (Student Nurse DGH). According to some of the staff members, the huddle has now become a "second nature“ for staff, hence the intervention is more succinct and it runs very smoothly.

To what degree has the huddle methodology spread to other wards at each site?

According to the staff members at three of the sites, spreading of the huddle to other units and wards had already been achieved, and at the fourth site such spreading was in process from the staff members’ perspectives. Participants spoke about the types of ward that the SAFE programme had spread to at their sites, including intensive care, neonatal wards, and surgical units. However, the staff members also acknowledged that huddles spread to other units did not always have the same format as the huddle implemented on the initial implementation ward, thus highlighting the adaptability of the methodology to particular settings.

What are the barriers and facilitators to the embedding and spreading of the huddle methodology?

As described above, the factors facilitating and hindering the embedding and spreading of the huddle have been categorised into innovation-, context-, leadership- and process-related factors.

Innovation factors. Perceiving benefits of the huddle was the most commonly reported facilitator to the embedding of the intervention. As demonstrated
through the quotes in Table 28, seeing the relevance of the huddle to one’s role and perceiving benefits of the intervention, such as improvements in patient safety, was a significant factor in making the huddle more embedded into practice. Similarly, participants talked about the relevance of the huddle in addressing a need or a problem, for instance poor communication on the ward or a disjointed flow of information due to the layout of the building.

This factor was also highly important in facilitating the spread of the huddle (see Table 29). Interviewees were in agreement that getting the team on board is the first indispensable step. In order to achieve that, the huddle needs to be “sold” (Consultant DGH) to other members of staff by demonstrating very specific benefits of it, for instance related to communication or patient safety. As pointed out by one participant, this could be done through use of real life examples (i.e., case studies) rather than academic publications. However, in order to be able to show the potential benefits, first one needs to understand how the huddle fits into current processes and procedures on the ward and what problems or needs it may address. Thus, the huddle needs to be easy to implement, needs to be concise, and needs to complement (and partially replace) already existing practices rather than adding another disjointed meeting.

Another facilitator to embedding the huddle methodology on the ward, as indicated by interviewees, referred to the adaptability of the huddle meeting in order to ensure that it fits into ward practices. For instance, finding the right time and the right location for the huddle may facilitate the extent to which the huddle is embedded. Thus, a certain dose of flexibility is needed in adapting the intervention as time goes by. Also, it is crucial that the huddle does not overlap with other procedures, for instance “it does not become the same as handover” (Staff Nurse SCH), as this may diminish its utility. Other characteristics of the intervention may also have facilitating effects, for instance being consistent in terms of time and format and keeping the meeting brief.

Finally, from interviewees’ perspectives, commitment of the team comprising of both nurses and doctors is essential to ensure that the huddle becomes embedded. The huddle stakeholders need to make a “conscious effort” (Consultant SCH) to make sure that the huddle is happening before it becomes fully-embedded into practice. However, as pointed out by some of the interviewees, there may be certain individuals on the team who have not “bought into” (Staff Nurse SCH) the intervention, thus who are not committed to its embedding. In cases when these individuals are consultants, this may also constitute a barrier for embedding the intervention among other members of staff, such as trainees under supervision of a given consultant.

Leadership factors. Leadership was reported by interviewees as being a vital facilitator of embedding of the huddle. The participants cited factors such as
having stable and encouraging leadership, possibly focusing on staff who are employed long-term, as facilitating factors. Also, having input specifically from the medical leadership was seen as of key importance.

In terms of spreading, it was pointed out that executive leadership and senior staff understand the benefits and importance of the huddle before it is implemented. Also, having support from both nursing and medical leadership was considered to be crucial.

Another strong facilitator within the leadership category, drawing on the staff members’ interviews, is having a "champion", or ideally champions from different specialities, who would be "a driving force" (Staff Nurse SCH) for the huddle encouraging others to commit their efforts in the embedding of the intervention. When spreading of the huddle is concerned, they would be responsible for disseminating the information about the huddle to other members of staff.

**Process factors.** The main process-related facilitator to embedding reported by staff was sharing information about the intervention. The information should be shared in various formats to ensure that it reaches a wide audience, particularly new and junior staff. For example, the huddle could be discussed in various forums or learning events or, specifically in the context of new staff, in induction sessions. More formal training for new staff could also be provided. As one participant pointed out, when new staff join the ward “things kind of got a little bit lost along the way” (Staff Nurse SCH) and they may not be aware of the huddle, thus potentially preventing the ward from continuing the embedding of the intervention.

Providing training and education about the huddle would also facilitate its spread. As one participant suggested, senior staff who would need to lead on the huddle could be given more formal training, whereas other members of staff could be exposed to brief informational sessions. Participants consistently emphasised that understanding the content and purpose of the huddle is also essential when spreading the innovation. Novel implementers should also be aware of the benefits of the huddle. Importantly, the huddle ought to be implemented in a collaborative manner where its implementation is advised, rather than imposed on staff.

**Contextual factors.** The contextual factors were much less prevalent when staff members were discussing facilitators to the embedding of the huddle. Only one participant indicated that settling in after a move to new facilities had simultaneously improved the degree to which the huddle had been embedded into practice, potentially due to the layout of the new hospital being more conducive to the huddle taking place.
On other hand, contextual influences that were considered as barriers were reported more commonly by interviewees. The interviews indicate that high staff turnover, large medical staff teams, frequent changes of ward manager, and lack of a consultant during the weekend may hinder embedding of the huddle.

The contextual factors were more commonly spoken about in the context of facilitating the spread the huddle. Having an appropriate programme team structure was seen as a key factor, according to the staff members. An overall consensus across the interviews was that having both management staff (e.g., consultants, ward managers) involved in the programme helps to implement the intervention ‘top-down’ . Namely, management use their authority to initiate the innovation, whereas frontline staff (e.g., nurses) are those who make sure that the huddle actually happens and others are buying in (‘bottom up’). Thus, an effective programme team needs to comprise members of staff representing both groups. Interviewees commented that having a culture open to innovation facilitates getting such a team together. On the contrary, dislike of change may prevent the huddle from being spread.

In addition, the right level of expertise in the team is needed. Ideally, having someone with previous experience of the huddle would be a strong facilitator of spreading the intervention. Alternatively, an external person with experience of the huddle could facilitate its spreading. Nonetheless, as highlighted by one of the interviewees, this person should have knowledge of the hospital or Trust. In terms of other contextual factors affecting the spread of the quality improvement innovation, interviewees mentioned moving to new facilities, as it can take time to for staff members to settle in before an intervention can be spread.
<table>
<thead>
<tr>
<th>Type of factor</th>
<th>Factor</th>
<th>Facilitator/Barrier</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>Relevance of the huddle in addressing a need or problem</td>
<td>Facilitator</td>
<td>“I think a lot of it, a lot of it has been through frustration with poor communication, and I say frustration because sometimes it can be you’re trying to get hold of people or you think someone knows something and they don’t know it so I think it’s definitely improved communication” (Staff Nurse)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Barrier</td>
<td>“We have plans for everyone and if there are no major issues they may not do a huddle post [ward] round” (Consultant)</td>
</tr>
<tr>
<td>Commitment of</td>
<td></td>
<td>Facilitator</td>
<td>“I think the main thing is, is that both doctors and nurses are all on board with it” (Ward Matron)</td>
</tr>
<tr>
<td>stakeholders</td>
<td>Fit with the existing procedures</td>
<td>Facilitator</td>
<td>“In my mind what we want to do is to have awareness about the overall big picture [of] how the HDU’s going to work, where the risks lie, and then you can plan to go out and do something about mitigating those individual risks but it’s not just a different way of giving people work” (Nurse)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Barrier</td>
<td>“Just because often our assessment unit’s really busy, so the consultant gets tied up helping in the assessment unit. […] it also coincides with medicine round for the nurses and it just didn’t really work or take off” (Nurse)</td>
</tr>
<tr>
<td>Adaptability</td>
<td></td>
<td>Facilitator</td>
<td>“Then obviously adapt it as time goes on like if you think some questions are irrelevant to your ward, change it and add something [that] you think is more relevant” (Consultant)</td>
</tr>
<tr>
<td>of the huddle</td>
<td>Characteristic of the huddle (consistency, brief)</td>
<td>Facilitator</td>
<td>“It’s just a quick, a brief, like any updates of what’s going on because obviously some days are more fast moving than others” (Healthcare Assistant)</td>
</tr>
<tr>
<td>Type of factor</td>
<td>Factor</td>
<td>Facilitator/Barrier</td>
<td>Quote</td>
</tr>
<tr>
<td>---------------</td>
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</tr>
<tr>
<td>Leadership</td>
<td>Presence and influence of programme champion(s)</td>
<td>Facilitator</td>
<td>&quot;The key people that set it up and I think it was them championing the 'Come on let's get together let's start this', and just yeah persisting with it really until it became becomes a habit&quot; (Staff Nurse)</td>
</tr>
<tr>
<td></td>
<td>Involvement/actions of leadership and management</td>
<td>Facilitator</td>
<td>&quot;We needed backing from the top really, to be able to make it work&quot; (Nurse)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Barrier</td>
<td>&quot;There was another change and another change and that is not conducive to supporting a ward to implement a new quality initiative&quot; (Matron)</td>
</tr>
<tr>
<td>Process</td>
<td>Communication about the innovation</td>
<td>Facilitator</td>
<td>&quot;I think it is again making [staff] aware, discussing in various forums that, why it is important&quot; (Consultant)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Barrier</td>
<td>&quot;Making everybody more aware of what SAFE is and what’s it doing. [I] think we definitely need some of that&quot; (Nurse)</td>
</tr>
<tr>
<td>Context</td>
<td>Settling in new facilities</td>
<td>Facilitator</td>
<td>&quot;I think everybody’s thinking about ways around that and ways to make it better particularly now with we’re moved and settled&quot; (Nurse)</td>
</tr>
<tr>
<td></td>
<td>Staffing structure</td>
<td>Barrier</td>
<td>&quot;I think it’s still hit and miss it’s like because we haven’t extended the HDU consultant cover to cover weekends&quot; (Nurse)</td>
</tr>
</tbody>
</table>
Table 29. Facilitators and barriers to spreading with illustrating quotes.

<table>
<thead>
<tr>
<th>Type of factor</th>
<th>Factor</th>
<th>Facilitator/Barrier</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation</td>
<td>Fit with the organizational procedures</td>
<td>Facilitator</td>
<td>“I think we need to think carefully about where the need is and [ensure] that it replaced something rather than became in addition to something else” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>Demonstrating benefits of the Huddle (“selling” it)</td>
<td>Facilitator</td>
<td>“I think possibly you know the way it’s sold, it sometimes makes you take it up doesn’t it? If it’s sold in the right manner then you think oh actually yeah I think we should do that. that would be really good” (Nurse)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Barrier</td>
<td>“Maybe calling it SAFE just misconstrues too much that it’s about safety whereas that’s the secondary [outcome], being aware is the first outcome and from being aware you’d expect there to be a change in safety” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>Commitment of stakeholders to the huddle</td>
<td>Facilitator</td>
<td>“And would you have any advice or recommendations for another ward who was thinking of implementing the SAFE programme? Just to get everybody on board” (Matron)</td>
</tr>
<tr>
<td>Context</td>
<td>Programme management structure</td>
<td>Facilitator</td>
<td>“I think perhaps next time, like if we were ever to do something like this again we would definitely want to involve matron, or one of the ward managers who would drive it” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>Organisational culture (shared beliefs, values, norms)</td>
<td>Facilitator</td>
<td>“I think we were relatively lucky that there was that kind of culture to some extent. So getting other people on board was maybe easier” (Consultant)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Barrier</td>
<td>“People are reluctant to change” (Consultant)</td>
</tr>
</tbody>
</table>
|                | Availability of expertise related to the innovation                  | Facilitator         | “I think having been in a hospital where this has worked it will be easier to bring in [elsewhere] as well, rather
than it being [just] something that I read somewhere”
(Consultant)

Table 29. Continuation.

<table>
<thead>
<tr>
<th>Type of factor</th>
<th>Factor</th>
<th>Facilitator/Barrier</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership</td>
<td>Presence and influence of programme champion(s)</td>
<td>Facilitator</td>
<td>“A couple of people could probably [lead on] it and push it, like communicate it and disseminate it through staff” (Sister)</td>
</tr>
<tr>
<td></td>
<td>Involvement/actions of leadership and management</td>
<td>Facilitator</td>
<td>“The executive board actually believing... leadership that’s what made it change” (Nurse)</td>
</tr>
<tr>
<td>Process</td>
<td>Planning and implementation of the innovation</td>
<td>Facilitator</td>
<td>“Start small and be prepared for a long run” (Consultant)</td>
</tr>
<tr>
<td></td>
<td>Use of performance monitoring systems</td>
<td>Facilitator</td>
<td>“I would say if you wanted to improve your quality look at your data . . . [then] say to the team, ‘These are our issues what should we work on?’; because . . . [for] some things you just need to do like a proper PDSA cycle” (Matron)</td>
</tr>
<tr>
<td></td>
<td>Training and education about the innovation</td>
<td>Facilitator</td>
<td>“So training in how to do a huddle. Yes, that would be useful” (Nurse)</td>
</tr>
<tr>
<td></td>
<td>Communication about the innovation</td>
<td>Facilitator</td>
<td>“The nurse in charge [should] try and get everyone together to explain what’s going to happen” (Student Nurse)</td>
</tr>
<tr>
<td></td>
<td>Collaboration</td>
<td>Facilitator</td>
<td>“So maybe it’s the way you put it to nurses, rather than</td>
</tr>
</tbody>
</table>
sort of just imposing it on them . . . people, nurses, as myself, I respond better to sort of, ‘This is helping a patient’ . . . rather than people saying you have to do this” (Nurse)
**Key findings from this chapter:**

- The huddle has been well-embedded on the majority of the wards, and most wards have spread these practices, or are in the process of spreading them, to other wards (see this section for more details).
- The factors affecting embedding and the spread of the huddle were (1) the need to ensure that the huddle fits into existing practices and it is relevant in addressing needs and problems on the ward; (2) ensuring that everyone is aware of the benefits of the huddle (as a “selling” point); (3) commitment from everyone at the outset and, in particular, getting both nursing staff and doctors on board; (4) having support from executive leadership and senior staff, as well as nominating a “champion” responsible for disseminating the innovation; (see this section for more details).
- Whereas contextual and process factors appeared to be of greater importance for the spread of the huddle than for its embedding, innovation and leadership were reported to be equally important for both types of process; (see this section for more details).
Chapter IX: What were the approaches to implementation and evaluation at the Wave 2/3 sites? How do they compare with Wave 1?

The initial aim for SAFE was for the implementation team to work with 12 hospital sites across two years to embed huddles and allied practices. However, due to increasing awareness and popularity of the programme following presentations at the Royal College of Paediatrics and Child Health (RCPCH) Annual Academic Meeting in 2015, implementation of SAFE was extended to a further 16 hospitals (Wave 2: 7, Wave 3: 9). The Wave 2 and 3 sites applied by completing a form where they explained their reasons for wanting to participate in the programme, their prior experiences of using the huddle or similar interventions, and how they were going to ensure that there would a patient/parent representative engaged with the programme. The Wave 2 sites began participating in September 2015, closely followed by the Wave 3 sites in November 2015. These new waves of the programme led to our investigation of the following secondary research questions as part of our evaluation of SAFE: What were the approaches to implementation and evaluation at the Wave 2/3 sites? How do they compare with Wave 1?

There were some notable advantages for the Wave 2/3 sites compared to the sites in the first wave of the programme. First, from the outset the Wave 2/3 sites were able to make use of tools developed as part of the programme, such as those included in the SAFE toolkit (available here). They were also able to learn from the challenges and successes reported by the Wave 1 sites, and adopt a number of their already tried and tested implementation models. Finally, the Wave 2/3 sites also benefitted from having a more clearly articulated model for SAFE, which had emerged during initial implementation. This meant that the approach for the Wave 2 and 3 sites, while still flexible to local context, was less exploratory in nature than it was at Wave 1.

The implementation team noted a number of differences in the nature and course of implementation at these new sites, which also implied that there may be some benefits of being second or third wave programme implementers. First, the implementation team reported that early engagement was more rapid with this group, with sites appearing to achieve greater buy-in on wards early on in implementation and quicker adoption of the core features of the SAFE model. Specifically, the implementation team described noticing that huddle meetings were implemented sooner at the Wave 2/3 sites, as compared to the Wave 1 sites, and embedded with a greater degree of consistency at an earlier time point.

Key findings from the current chapter can be seen here.
It was not within the scope of the SAFE evaluation to evaluate spread to other wards; however, given interest in observed differences between earlier and later waves, a pragmatic information gathering exercise was completed by the evaluation team with these later joining sites to ascertain what implementation looked like at these sites, what the anticipated outcomes were from the perspective of these sites, and whether any changes in culture or safety outcomes had been observed to date at these sites. This information gathering drew on information collected through discussion with the Wave 2/3 sites at workshops organised by the implementation or evaluation teams, completion of logic diagrams (available here) and intervention description templates (Template for Intervention Description and Replication; TIDieR; Hoffmann et al., 2014), and posters and other dissemination materials created by sites.

Using the aforementioned tools, information was collated for 12 out of the 16 Wave 2/3 sites. For presentation purposes in this chapter, this information has been divided into two sections (implementation and evaluation), and summarised in corresponding tables.

This chapter is also supported by a qualitative interview with the implementation lead who has worked with Wave 1 and Wave 2/3 sites since the conception of the programme. This interview was used to explore potential differences between the Wave 1 and Wave 2/3 sites. In addition, we, as an evaluation team, share our reflections on the work of the sites participating in the different programme waves. Our views are based on two years of close collaboration with the Wave 1 sites and several learning events with the Wave 2/3 sites.

### Implementation at the Wave 2 and 3 sites

The majority of the Wave 2/3 sites implemented huddle meetings or safety briefings, often supported with checklists or scripts, including items to discuss in the huddle. In this respect implementation was consistent with Wave 1. Notably, the Wave 2 teams were also able to make use of a number of additional tools, developed during Wave 1, to support their implementation and process monitoring from the outset. For instance, a few of the Wave 2/3 teams used huddle reviewing tools (e.g., the Huddle Observation Tool developed by the evaluation team), in order to gain an insight into attendance and other processes taking place in huddles. Other Wave 2/3 sites used the ‘druggle’, a type of huddle developed specifically by a Wave 1 site to discuss medication-related issues, or ‘tops-and-pants’, which was a feedback system designed for parents and patients used by some of the Wave 1 sites.

The most common challenges to implementation reported by the Wave 2/3 sites were similar to those identified by the Wave 1 sites, namely staffing and heavy workload, getting buy-in from staff, overcoming scepticism, and choosing appropriate measures to show change. Moreover, similarly to at the Wave 1 sites, representatives from the Wave 2/3 sites acknowledged that these
challenges could be mitigated by using a collaborative approach to implementation, where nurses and doctors worked together to implement the programme and were supported by strong clinical leadership, as well as by being open to feedback, resulting in sites networking with implementers at other sites and learning from each other.

Table 30 details how 12 of the 16 Wave 2/3 sites (for whom information was available) implemented the SAFE programme.
Table 30. Implementation approach across the Wave 2/3 sites.

<table>
<thead>
<tr>
<th>Site</th>
<th>Source of information</th>
<th>Intervention</th>
<th>Characteristics</th>
<th>Factors affecting implementation</th>
<th>Mechanisms leading to change</th>
<th>Desired outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGH 1 Wave 2/3</td>
<td>Poster</td>
<td>Safety/operational briefing</td>
<td>Involves operational issues such as staffing, workload, and reviewing concerns from the previous 24 hours</td>
<td>Implementing feedback from staff and Plan, Do, Study, Act (PDSA) cycles</td>
<td>Empowering staff</td>
<td>Improved communication (sick patients) and situational awareness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safety huddle</td>
<td>Involves multidisciplinary team to identifying sick patients or those at risk of deteriorating</td>
<td></td>
<td>Improving communication and situation awareness</td>
<td>Earlier identification of sick or deteriorating children</td>
</tr>
<tr>
<td>DGH 2 Wave 2/3</td>
<td>Poster</td>
<td>Patient safety and quality improvement measures</td>
<td>Questionnaires identifying areas for improvement</td>
<td>CQC visit interrupted SAFE continuity on ward</td>
<td>Highlighting parental concerns</td>
<td>Engaging parents and young children into their management</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Patient satisfaction survey</td>
<td>Questionnaires identifying areas for improvement</td>
<td>Nursing recruitment</td>
<td>MDT discussions about patient care incorporated into huddles</td>
<td>Improve communication and team working</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safety briefing/huddles</td>
<td>Led by nurse in charge - identifies HDU patients, safeguarding concerns, bed status, and staffing</td>
<td>Culture change - not everyone was easily adaptable to huddle</td>
<td>Enhancing situational awareness/identifying unwell/unstable children (PEWS) including ‘watchers’</td>
<td>Improving patient safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘Theme of the week’</td>
<td>Devised as safety tools to ensure we were succinct with admission paperwork including fluid charts, care plans and wrist bands</td>
<td>Motivation and encouragement required for all staff in attending huddle</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEWS traffic light for whiteboard</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site</td>
<td>Source of information</td>
<td>Intervention</td>
<td>Characteristics</td>
<td>Factors affecting implementation</td>
<td>Mechanisms leading to change</td>
<td>Desired outcome</td>
</tr>
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<td>---------------------------------------------------</td>
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<td>------------------------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------</td>
<td>------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>DGH 3 Wave 2/3</td>
<td>Poster</td>
<td>Training &amp; measurement of nurses in accuracy and action-ing of PEWS scoring</td>
<td></td>
<td>Challenges: choosing measurements of success, consistent and appropriate data collection, engaging stakeholders</td>
<td>Patient assessment/situational awareness (identify high risk patients and mitigate, escalate, and predict deterioration)</td>
<td>Increase in days between unsafe transfers to PICU by 50% by September 2017</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Huddle</td>
<td>Twice daily ‘huddles’ discussing all ward patients, identifying those at risk of deterioration and confirming a plan to mitigate &amp; escalate treatment</td>
<td></td>
<td>Situational awareness/safety culture (communication/learning from unsafe events)</td>
<td>Developing a culture of high quality patient care and safety</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safety briefings, integrating consultants into weekly ward meetings, aid prediction and learning from cases of deteriorating patients</td>
<td></td>
<td></td>
<td>Patient assessment, availability of the PAU, physical space for assessment and management, patient involvement, discharge process</td>
<td>Demonstrating qualitative improvement in patient satisfaction and patient flow on the Paediatric Assessment Unit by September 2017</td>
</tr>
<tr>
<td>SCH 1 Wave 2/3</td>
<td>Logic diagram</td>
<td>Virtual huddle</td>
<td></td>
<td>Senior leadership buy-in, nursing buy-in, promoting multidisciplinary working, SHO presence</td>
<td>Understanding patients and having a plan in place</td>
<td>Reducing escalation and unnecessary crash calls, earlier recognition of the deterioration</td>
</tr>
</tbody>
</table>

Table 30. Continuation.
### Table 30. Continuation.

<table>
<thead>
<tr>
<th>Site</th>
<th>Source of information</th>
<th>Intervention</th>
<th>Characteristics</th>
<th>Factors affecting implementation</th>
<th>Mechanisms leading to change</th>
<th>Desired outcome</th>
</tr>
</thead>
</table>
| DGH 4 Wave 2/3 | Logic diagram          | Multidisciplinary teams safety huddle | Training, staff numbers, environment, new whiteboard not fit for purpose | Improved situational awareness and safety culture through:                                        | • Lead of nurse or doctor  
• Improved team work  
• Lack of hierarchy  
• Better communication between Paediatric Admissions Unit and emergency department | Overall better morale among staff, staff satisfaction/perception of safety culture, parents satisfaction/perception of safety culture, increase in low level harm with simultaneous decrease in high level harm, increase in days between transfers to PICU/calls to transfer team |
Table 3. Continuation.

<table>
<thead>
<tr>
<th>Site</th>
<th>Source of information</th>
<th>Intervention</th>
<th>Characteristics</th>
<th>Factors affecting implementation</th>
<th>Mechanisms leading to change</th>
<th>Desired outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGH 5 Wave 2/3</td>
<td>TIDieR checklist</td>
<td>Paediatric early warning scores</td>
<td>Use the NHS I + I PEWS system, the criteria are embedded in VitalPac electronic notes and charting system, the escalation plan decided locally</td>
<td></td>
<td>Proactively seeking information about known risks to patient safety and team/system capacity then collating and discussing that information within the multi-disciplinary team</td>
<td>Enhancing team performance, improve resilience and safety and patient satisfaction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parental concern (we have displayed posters encouraging parents to raise concerns)</td>
<td>“It’s OK to ask” – posters encouraging/supporting parents to raise concerns</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Main huddle</td>
<td>Happening consistently 3 times daily. Includes:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Paediatric early warning scores</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td>- Parental concern (we have displayed posters encouraging parents to raise concerns)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>- Nursing/Doctor Concern – Watchers</td>
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<td></td>
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<td></td>
<td>- High dependency</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>- Safeguarding issues</td>
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<td></td>
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<td></td>
<td>- Mental Health/Self Harm</td>
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<td></td>
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<td></td>
<td>- Transfers in/out</td>
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<td></td>
<td>- Expected patients</td>
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<tr>
<td></td>
<td></td>
<td>Interim huddles</td>
<td>Happening 3 times daily, occasionally missed</td>
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</tbody>
</table>
Table 30. Continuation.

<table>
<thead>
<tr>
<th>Site</th>
<th>Source of information</th>
<th>Intervention</th>
<th>Characteristics</th>
<th>Factors affecting implementation</th>
<th>Mechanisms leading to change</th>
<th>Desired outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCH 2 Wave 2/3</td>
<td>Poster; TIDieR checklist</td>
<td>Safety briefing/huddle</td>
<td>Key members of the theatre team and wider team meet for 3-5 minutes to discuss safety concerns and identify potential issues</td>
<td>The key challenges centered on engagement and perceived barriers to the concept of “huddles” and the language of quality improvement</td>
<td>Embedding the concept of situational awareness</td>
<td>Standardising processes, reducing variability in performance and optimising safety</td>
</tr>
<tr>
<td>DGH 6 Wave 2/3</td>
<td>Learning event presentation; poster</td>
<td>Huddle (including MDT Safety Huddle Checklist)</td>
<td>Checklist items are: Patients, parents, PSIs, PAU, previous 24h, potential problems, acuity, accident and emergency, staffing, safeguarding, investigations, IT issues, infection, technology trouble</td>
<td>Trust geography Implementing: Convincing colleagues, embedding practice Data collection/analysis: Seasonal variance and unpredictable acuity; small dataset and/or infrequent events; measuring perception of safety</td>
<td>Embedding huddles, staff education, reinforcing SBAR handover, maintaining EWS, encouraging parent engagement</td>
<td>Improving safety climate</td>
</tr>
<tr>
<td>Site</td>
<td>Source of information</td>
<td>Intervention</td>
<td>Characteristics</td>
<td>Factors affecting implementation</td>
<td>Mechanisms leading to change</td>
<td>Desired outcome</td>
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</tr>
<tr>
<td>SCH 3 Wave 2/3</td>
<td>Poster; logic diagram</td>
<td>The Leeds neonatal unit huddle script</td>
<td>The script included: Risks for the unit (e.g., staffing, beds, infection concerns), risks for individual babies (e.g., deteriorating conditions, nursing concerns, parental concerns)</td>
<td>Workload, finding a location to do the huddle, buy-in from staff, ward differences</td>
<td>Evaluating the huddle that was already in place, identifying areas for improvement in the huddle</td>
<td>Standardise the information given at the huddle</td>
</tr>
<tr>
<td>Druggle</td>
<td>Huddle meeting during medication-related issues are discussed</td>
<td>Safety climate survey</td>
<td>A standardised questionnaire measuring perception of safety climate and helping to identify key areas for improvement</td>
<td></td>
<td>Improvement in communication, increase in situational awareness, flattening hierarchy Increase in safety culture</td>
<td>Improvement in prescribing standards, increase in safety culture, improvement in patient flow Increase in efficiency Reduction in clinical incidents</td>
</tr>
<tr>
<td>DGH 7 Wave 2/3</td>
<td>Poster; logic diagram</td>
<td>Safety Huddle</td>
<td>Multidisciplinary meetings led by the nurse in charge Staff changes/shortage, timing, engagement from staff</td>
<td>Consistency in student occurrence, bell to call staff to huddle, strong commitment from nurses and doctors</td>
<td></td>
<td>Better communication, stronger awareness across all staff, better planning/less surprises, potential risks (watchers), empowering staff, earlier escalation</td>
</tr>
<tr>
<td>Site</td>
<td>Source of information</td>
<td>Intervention</td>
<td>Characteristics</td>
<td>Factors affecting implementation</td>
<td>Mechanisms leading to change</td>
<td>Desired outcome</td>
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<tr>
<td>SCH 4 Wave 2/3</td>
<td>TIDieR checklist; posters</td>
<td>Huddle</td>
<td>Checklist included: Raised PEWS, watchers, parental concerns, safe guarding, infection control issues &amp; rapid review of adverse incidents, escalation of issues identified</td>
<td>A collaborative process with the ward lead was utilised, a huddle champion from the nursing team was identified. A huddle checklist was developed by the ward team and, utilising PDSA cycles,</td>
<td>Effective communication</td>
<td>Improved situational awareness, assurance that patients and families feel empowered to raise concerns, improved flow and reduction in length of stay, reduced unplanned PICU admissions, reduced adverse events, including extravasation injuries and medication errors</td>
</tr>
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<tr>
<td>DGH 8 Wave 2/3</td>
<td>Poster; TIDieR checklist</td>
<td>SAFE Huddle</td>
<td>Huddle objectives: 1) Identify sick patients 2) Bed state 3) Delays to discharge 4) Patients awaiting review 5) Medication issues 6) Safeguarding concerns</td>
<td>Having a small, enthusiastic, multidisciplinary SAFE team; attending planning days where were able to collaborate with similar sized teams facing similar difficulties</td>
<td>Greater interdisciplinary communication, awareness and interaction, creating a better team ethos, reducing errors, improving patient safety and care and better patient flow</td>
<td>Communication, reduced length of stay and unnecessary delays to discharge, reducing the number of medication errors and near misses with drug prescribing</td>
</tr>
</tbody>
</table>

*Note. CQC = Care Quality Commission; MDT = multi-disciplinary team; PEWS = paediatric early warning system; SHO = senior house officer; PICU = paediatric intensive care unit; PAU = paediatric assessment unit; TIDieR = template for intervention description and replication; PSI = Patient Safety Indicators; SBAR = Situation, Background, Assessment, Recommendation; EWS = early warning system.*
Evaluation at the Wave 2 and 3 sites

Although there was no formal independent evaluation commissioned of the Wave 2/3 sites, attempts were made by the sites to capture local evidence of changes associated with SAFE implementation.

The evaluation approaches undertaken by the sites could be divided according to three main aims: (1) assessing compliance with the intervention (e.g., assessing if the huddle/safety briefings happen consistently and follow the same format), which was mainly measured through auditing routinely completed documents, such as a staff huddle attendance register (2) staff and parent/patient perceptions of safety culture and experience of care, as assessed through questionnaires (3) safety indicators (e.g., UNSAFE PICU transfers). In general, improvements in all three outcomes over time were reported by the teams. Namely, sites reported improved huddle consistency (frequency, format, attendance), better communication among staff and prioritisation of ward jobs, improved interpretation and escalation in medically unstable children, reduced rates of unsafe transfers, and an improved awareness among staff of deterioration (see Table 31).
<table>
<thead>
<tr>
<th>Site</th>
<th>Source of information</th>
<th>Aim (to assess)</th>
<th>Methodology</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGH 1 Wave 2/3</td>
<td>Poster</td>
<td>Consistency (frequency) of the safety briefings</td>
<td>Audit</td>
<td>Consistency (frequency) improved from 57% to 89%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Running of the huddle</td>
<td>Observations (using huddle observation tool)</td>
<td>Attendance of the multidisciplinary team was inconsistent; safety huddles occasionally resembled handovers; huddles were inconsistent in terms of format depending on the senior nurse or consultant leading them</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evaluate changes in communication</td>
<td>Anecdotal evidence</td>
<td>Medical and nursing staff felt that communication improved following the introduction of the huddles</td>
</tr>
<tr>
<td>DGH 2 Wave 2/3</td>
<td>Poster</td>
<td>Communication</td>
<td></td>
<td>Better communication in the huddle as well as safety briefing which is set in our daily routine</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Multidisciplinary (MDT) involvement</td>
<td></td>
<td>More MDT involvement – nurses feel listened to and ‘have a voice’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Prioritisation of ward jobs</td>
<td>Not specified</td>
<td>Better prioritisation of ward jobs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEWS</td>
<td>Not specified</td>
<td>Improved interpretation and escalation in unstable children</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compliance with admission paperwork including fluid charts, care plans and wrist bands</td>
<td>Survey</td>
<td>Improved compliance</td>
</tr>
<tr>
<td>DGH 3 Wave 2/3</td>
<td>Poster</td>
<td>A patient satisfaction</td>
<td>Survey</td>
<td>Significant improvement in providing information, seeing patients in confidential space and in positive comments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Huddle consistency</td>
<td>Not specified</td>
<td>Occurrence of huddles was estimated to be between 60- 80%, representatives were present from all of medical, nursing and health care assistant groups at 92% of huddles (range 50-100%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Huddle compliance</td>
<td>Not specified</td>
<td>In 45% of huddles, every patient had each criteria to identify risk of deterioration discussed, the most frequently missing criteria from discussions were patients on high risk therapy (often there were none), or identifying those with family concerns raised about their child deteriorating</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Number of UNSAFE PICU transfers</td>
<td>Not specified</td>
<td>Number of UNSAFE PICU transfers reduced</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Safety culture and awareness of deterioration</td>
<td>Not specified</td>
<td>Safety culture and awareness of deterioration improved</td>
</tr>
<tr>
<td>Site</td>
<td>Source of information</td>
<td>Aim (to assess)</td>
<td>Methodology</td>
<td>Results</td>
</tr>
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<td>--------------</td>
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</tr>
<tr>
<td>DGH 6 Wave 2/3</td>
<td>Learning event presentation; poster</td>
<td>Patients'/parents' satisfaction with care and perception of safety culture</td>
<td>Patient/parent surveys/staff surveys</td>
<td>Patient and staff surveys revealed a consistently high score for safety both before and after the programme. No significant change was seen but it did highlight areas for improvement. Previous experience taught us that staff surveys had low response rates therefore we undertook small samples every 2-3 weeks. This will have limited the results but was most appropriate for our purpose. Many staff reported a subjective improvement of safety and situational awareness.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Staff perception of safety culture</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Patient safety incident reporting</td>
<td></td>
<td>Not specified</td>
<td>Patient Safety Incidents (PSIs) were analysed from September to March 2015-2016 and compared to the same period the previous year as a baseline. PSIs are reported in levels of actual impact. 1 = no injury, 2 = Low, 3 = moderate, 4 = severe, and 5 = near miss. There were no severe incidents in either period. During the programme period Level 1 reporting increased by 52% and Levels 2, 3, and 6 decreased by 24%, 69%, and 48% respectively. This represents improved reporting of low level incidents and a decrease in more significant events.</td>
</tr>
<tr>
<td></td>
<td>Transfers to PICU</td>
<td></td>
<td>Not specified</td>
<td>Transfers to PICU were evaluated from September to March 2015-2016 and compared to the previous 2 years to provide a historical baseline. The data was generated from our regional transport team – North West Transport Service (NWTS). As transfers were infrequent we used days between as a measure. Median days between transfers increased over the 3 years (11.5, 16, and 38.5). The ratio of referrals to the transport team for advice vs. transfer also increased (0.7, 1.71 to 2.25). This may indicate critically unwell patients are being recognised and escalated earlier</td>
</tr>
</tbody>
</table>
Table 3. Continuation.

| SCH 4 Wave 2/3 | TIDieR checklist; posters | Consistency (frequency) of the huddle | Huddle notes /observation | • Huddles occurring with increasing frequency  
• Good use of continuous improvement philosophy  
• Consistent use of checklist and development  
• Currently 2 methods of leading huddle, ward to decided consensus  
• Need to minimise interruptions  
• MDT involvement evolving |

| SCH 3 Wave 2/3 | Poster; logic diagram | Consistency of the huddle (any days on which the huddle did not happen) | Huddle review tool | Achievement of 100% consistency of the huddle in terms of frequency, use of script, having a coordinator in charge |

| DGH 8 Wave 2/3 | Poster; logic diagram | Perception of staff about the huddle | Questionnaire (self-designed) | Majority of staff reported that the huddle has improved staff communication, patient safety, and quality of care |

*Note. PICU = paediatric intensive care unit.*
Reflections on differences between the Wave 1 and Wave 2/3 sites

As outlined earlier in this chapter, the Wave 2 and 3 sites, in comparison with the Wave 1 sites, appeared to make more rapid progress in terms of implementation in the early stages of their involvement with SAFE. Reports from the sites themselves and from the implementation team indicated earlier establishment and embedding of huddles and allied practices. The Wave 2/3 sites also appeared to begin planning the spread of these practices earlier. Reflections by the Implementation and evaluation teams about the possible explanations behind the differences between these later waves and early implementers are identified below.

Motivations for joining the programme. Processes for joining the different waves of the programme differed quite substantially, which may have resulted in differential levels of motivation between the Wave 1 sites and the Wave 2/3 sites to participate in the programme and embed practices. Strategic leads for the Wave 1 sites were invited to join the programme prior to programme start up, whereas the Wave 2 and 3 sites were required to submit an application to join the programme, in which they had to demonstrate some existing knowledge/workings of quality improvement methodology and a clear plan in terms of how they would implement the programme at their local sites, in addition to the agreement that they would attend learning sessions every few months in London.

In addition, at the stage of these applications, there was a much clearer articulation of SAFE as an approach and a growing awareness of the potential benefits of huddles to improve situation awareness, as provided by dissemination of learning from the Wave 1 sites. This resulted in a more informed and self-selected group applying for participation in later waves. Relatedly, this meant that some of these later joining sites reported already using some huddle-like practices on their wards. Thus, for these sites, their motivation for joining the programme was to improve upon these existing practices by adding structure to them, rather than completely start from scratch.

Organisational differences. Members of the implementation team also reported that sites in later waves tended to have particularly strong clinical leaders, who took a very active role in the programme delivery and who were particularly committed to sustaining the programme. Moreover, the Wave 2/3 sites had to evidence the financial backing of their Trusts to implement SAFE, which was not a requirement for Wave 1.

The implementation team also perceived better buy-in from consultants and other staff at the Wave 2/3 sites, characterised by earlier reporting of recognition of the benefits of SAFE, better attendance at the SAFE learning events, and greater creativity in the process of implementing SAFE.
Momentum and learning from the Wave 1 programme. There appeared to be clear advantages stemming from the fact that the scale up of SAFE at the Wave 2/3 sites drew on the momentum from the first wave of the programme. As a result of their experience with Wave 1, the implementation team had established best practice in introducing and delivering the teaching on the programme by the start of Wave 2/3. In addition, the onus in Wave 1 was very much on building models of implementation ‘bottom-up’ and exploring what worked best in the local context. In comparison, as a result of their experience and learning from Wave 1, the implementation team gave the Wave 2/3 sites a more established, structured programme to roll out.

The Wave 2/3 sites also had immediate access to the extranet platform and a website hosted by RCPCH with a number of implementation (e.g., SBAR, PEWS) and evaluation (e.g., staff surveys, parents/patients surveys) tools, all of which had been developed over the course of Wave 1. Furthermore, the Wave 2/3 sites were also likely to be more aware of the limitations and challenges related to using a given evaluation outcome, either due to discussion with the implementation team or with the Wave 1 sites.

Overall, this reflects the idea of the wave-sequence approach, in which the spread of the innovation is built on the first wave of the implementers, which has been proven to be successful. For instance, as similarly found in previous research, participants of the second wave of a large scale quality improvement initiative benefitted from receiving more systematic training and supervision, more focused objectives of the innovation, and more knowledge about obtaining data from specific data systems (Newton, Lefebvre, Donahue, Bacon, & Dobson, 2010).
**Key findings from this chapter:**

- Wave 2 and 3 sites, in comparison with wave 1 sites, appeared to make more rapid progress in the early stages of their involvement with SAFE (see this section for more details).
- These differences may be due to (1) differential levels of motivation to participate and embed practices; (2) particularly strong clinical leaders among wave 2/3, who took a very active role in delivery and who were particularly committed to sustaining the programme; (3) advantages stemming from the fact that the roll-out of SAFE in the wave 2/3 sites drew on the momentum and learning from the first wave of the programme; (see this section for more details).
Chapter X: Overall Discussion

This report summarises learning from a two-year programme (the SAFE programme) aiming to improve patient safety in paediatric settings in 12 hospitals across England, through practices intending to increase situation awareness and improve the safety culture on wards. The programme had a positive reception from these early participating sites (Wave 1) and so the practice was then rolled out in a further 16 hospitals (Wave 2/3). This report draws on qualitative and quantitative data collected as part of the SAFE evaluation. It also draws on local learning from participating sites and reflections of the implementation team shared with the evaluation team. The evaluation sought to explore a number of key research questions. Discussion of the findings with respect to each of these research questions, in the context of the programme theory of change, is provided in the following sections. Below, we summarise our logic model and the key findings related to each section of the model.
We found that huddles:
- Tended to be brief, took place around the patient board, and had a clear leader
- Had a variety of professionals involved, in terms of their seniority and job roles
- May be more irregular and infrequent at certain times of the day.

We also found that:
- Half of the parent and patient interviewees were aware of the huddle (although none had actually participated in a huddle).

We found that other safety initiative sites implemented were:
- Initiatives to better involve parents, such as bedside whiteboards detailing each patient’s plan of care and PEWS scores
- Training and measurement of nurses in accuracy and actioning of PEWS scoring
- SBAR
- Safety briefing
- Schwartz Rounds
- ‘Theme of the week’
- PEWS traffic light for whiteboard
- Virtual huddle
- Druggle.

**Input**

Huddles and site-specific safety improvement initiatives

**Mechanisms**

Changes to safety culture

Changes to situation awareness

- The provision of a place and an opportunity for staff members to raise awareness among the wider staff group of issues and concerns
- Increased teamwork and communication between staff members (including the nursing and medical staff groups)
- Increased anticipation, planning, and efficiency among staff.
There was an increase during the winter months in the average monthly number of unplanned transfers to ICU at the specialist children’s hospitals (SCH) and the average monthly number of respiratory arrests at the district general hospitals (DGH).

There was an increase in the average monthly number of unplanned transfers to a higher level of care within the DGH at mid- to late- implementation. However, this gradually decreased again at late implementation. No significant differences over time were found.

The staff and parents/patients measures showed highly positive perceptions of safety and, in particular, satisfaction with care throughout all three time points. No significant differences over time were found.

The benefits of the huddle for patients and parents, as reported by the staff members in their interviews, were: (1) earlier anticipation of deterioration leading to the prevention of more serious incidents; (2) improved patient flow and quicker patient discharge; (3) improved continuity of patient care; (4) reassurance for parents and patients.
Different characteristics of each ward (including type of hospital, specialty of

- Identification of a clear huddle leader
- Use of a script or a standardised approach to ensure a structured and concise exchange of information
- Ensuring that the information raised and discussed in the huddle was then translated or had continuation into ward practice
- The huddle being flexible and adaptable to each ward’s needs and daily schedule
- The level of dependency of patient care
- The degree to which the huddle was implemented effectively
- Senior medical and nursing leadership
- The need for the initiative to blend in with and enhance existing ward practices
- Having the time and capacity to implement the initiative
- Staff perceiving the benefits of the initiative
- Staff members having enthusiasm towards and awareness of the initiative, how it works, and its rationale
- Practice and adaption of the methodology to suit the needs and interests of staff and the ward
- Support from the national implementation team
- Lack of perceived relevance or ‘good fit’ of the initiative with staff members’ job roles and priorities, and with ward practices
- Resistance to change
- Lack of staff
- Lack of time
- Other competing duties or responsibilities
Research questions 1 and 2

What does the implementation of huddles and other safety improvement initiatives look like in different contexts? What are parents’ and patients’ views on and experiences of huddles? (see Chapter III). These research questions are relevant to the ‘input’ and ‘context’ components of the theory of change (see Figure 2).

As indicated by the qualitative interviews with the staff members and the huddle observation tools completed by the evaluation team during their huddle observations at the sites involved in the qualitative arm of the evaluation across all three time points (early, mid-, and late implementation), huddles tended to take place at the reception area or in a private room off the ward, guided by a board including patient information. The timing of the huddle appeared to be well established across the sites, particularly the morning huddles, with the exception of one of the four qualitative sites. However, huddles at a certain time of the day were also noted to be more irregular and infrequent than others, especially if they were taking place in the evening or at night. Possible reasons for this included lack of overlap in staff schedules across different teams, and less presence of consultants on wards.

Professionals attending the huddle across the wards can vary greatly, although a consultant and senior nursing staff member (ward manager/matron) tended to be consistently present. In particular, at two of the wards in our qualitative sample, only a consultant and senior nursing staff member were primarily involved in the huddle, with the occasional presence of staff nurses and other doctors (e.g., registrars, junior doctors). A different approach was taken at the other two wards, where a greater variability of staff involved was observed, including more of the junior nursing staff members who were providing direct care to patients, or general support staff performing administrative or housekeeping duties. However, at all sites, the huddles were usually led by consultants or senior nursing staff.

The length of the huddle varied, being the shortest at the ward with the lower number of staff involved, and longest where more staff members were involved. Nonetheless, overall, huddles tended to be relatively brief, on average lasting up to around 10 minutes. The content of the huddle was relatively consistent across the sites and time points of the evaluation, which was supported by the use of checklists or scripts including discussion items.

A conversation analysis of the Time 1 (early implementation) audio recordings of huddles, at the qualitative sites, revealed that huddlers across the wards used their meetings to discuss many different topics, not constrained to the discussion of deteriorating or at-risk patients. However, it was clear that the huddlers’ understandings of risk were, in part, locally defined. For example, an ill patient with a certain condition on one ward may have been a concern, while on another
they may have been a typical patient. Moreover, risks to patients were time-bound; a high score on the PEWs was not seen as a concern if it was lower than at the previous huddle. Nonetheless, attention to the language that huddlers used with one another revealed that the wards all adopted particular terms to establish shared concerns under time pressure. Common ones were: the concern/no concern dichotomy; ‘watchers’; ‘the one/girl/boy to watch’ and ‘issues’. Huddlers also adapted these terms in situations where the patient resisted simple classification and also for interactional reasons.

There also appeared to be implicit rules in operation about the conversational rights of the different huddlers. For example, on one of the wards, only nurses raised concerns and they were ‘interviewed’ by the other members of the team. Similarly, only doctors made plans in early huddles at this site. Indeed, across the wards, the most senior staff members had the most active roles during the huddle meetings, possibly indicating that hierarchies within huddles remained, at least during the early stages of the programme. Flattening hierarchies was one of the proposed mechanisms to improving patient safety for SAFE. Patient safety literature has repeatedly emphasised the importance of assertiveness and frank and timely reporting of errors and has highlighted the hierarchical nature of healthcare settings as a barrier to this (Walton, 2006). Research evidence suggests that more hierarchical structure are less amenable to quality improvement projects in general but in terms of patient safety, more hierarchical hospitals also tend to have lower ratings of safety climate (Speroff et al., 2010). Research in Cincinnati had indicated this change post implementation of their huddles (Goldenhar, et al., 2013) but certainly at the early stages of the SAFE programme this did not appear to be fully replicated. This is possibly simply a feature of the early implementation as later reports, particularly in sites joining at later phases, did report observing less hierarchical exchanges. However, some challenges with attendance at huddles for more junior members of nursing staff were noted in some sites, even at the third time point.

As far as parents’ and patients’ views about and experiences of the huddle are concerned, half of the parents and patients were aware of the huddle, among whom most understood its content and purpose. In general, parents and patients had positive views about the huddle, both when they were initially aware of it and when provided with an explanation. The huddle was seen as a means to improve communication between staff and a platform to receive feedback on any raised concerns. The only drawback perceived concerned the confidentiality of the huddle, as parents felt anxious when details related to the care of their children were discussed in public (e.g., at the reception area). The parents and patients were divided in their desire to participate in the huddle. For some, it was seen as a needed opportunity to learn more about the care of their child or contribute any feedback, which is consistent with some existing evidence that one key area of concern for parents is that parents are not listened to enough (Abuqamar, Arabiat, & Holmes, 2016). However, for others the huddle
was perceived as a staff meeting where the presence of a parent is not necessary.

**Research question 3**

Are huddles and other safety improvement initiatives associated with improvements in safety indicators and patient-reported experience of care? (see Chapter IV). This research question is relevant to the 'outcomes' and 'context' components of the theory of change (see Figure 2).

The only safety indicator reported by the specialist children’s hospitals that showed a discernible pattern was the average monthly number of unplanned transfers to ICU, which increased between October 2014 and March 2015. A similar pattern was seen in the average monthly number of respiratory arrests, as reported by district general hospitals, which also increased between October 2014 and February 2015. This may be due to greater staff workload and prevalence of serious safety incidents in the winter months, as anecdotally reported by the participating sites and as previously noted in the literature (Callaly, Mikulich, & Silke, 2013). In addition, the average number of unplanned transfers to a higher level of care within district general hospitals appeared to be non-randomly distributed. The numbers were below the median at early to mid-implementation of the programme (April 2014 and March 2015), and they increased at mid- to late implementation (August 2015 and June 2016). There was, however, in general a downward trend that started in November 2015 and continued until the end of data collection; nonetheless, the data points for that period were still above the overall median.

However, it is important to note that these findings should be interpreted with caution. Although in the case of Brady and colleagues (2013), where there was an agreed very specific definition of UNSAFE transfers as the key outcomes for their implementation of huddles, it proved incredibly challenging for the disparate hospital wards involved in the SAFE programme to arrive at a single meaningful equivalent. Unplanned transfers to higher levels of care was an attempt to capture this but each site defined this locally and there was a great degree of variability in definitions. Furthermore, the range of methods used to collect the outcome at the sites was broad. The definition of the outcome was likely to change, particularly during an early implementation, and it may not always have fully overlapped with the definition used to retrieve the historic data (for the period between April 2014 and September 2014). In addition, cardiac and respiratory arrests were extremely rare events. For instance, there was no single cardiac arrest at six participating wards during the entire data collection period (over two years). Thus, we were perhaps extremely unlikely to see a change in this outcome over the course of the programme. It may therefore be that the huddle and other related interventions have a more longitudinal effect on the safety indicators, which was not picked up due to our relatively short period of data collection.
Overall, the subjective measures showed highly positive parent and staff perceptions of safety and, in particular, parent/patient satisfaction with care across all three time points. Nonetheless, the scales did not show any significant differences over the time. In addition, the results of the staff safety climate survey were compared over the three time points across subgroups of wards sharing certain characteristics, including the type of hospital, type of ward, average length of stay, and number of beds. Yet, there was no differential impact of the SAFE programme between the wards, depending on these characteristics. This lack of significant differences may have been due to a ceiling effect, meaning that there was very little space for further improvement on initially high scores on the measures (e.g., Rosenthal & Shannon, 1997). Also, parents/patients may not have been aware of the differences to ward practices, as the interventions may have acted on the processes within care provision that were not directly experienced or perceived by them.

The quantitative data did not appear to provide evidence for an association between the SAFE programme and improvements in safety indicators and patient-reported experience of care, for the reasons outlined above. Nonetheless, in their qualitative interviews, staff members at the four qualitative sites did report perceiving a positive impact of the programme on patient care. Staff saw the huddle as an opportunity to raise concerns with the wider staff group, which was likely to result in an earlier anticipation of deterioration leading to the prevention of more serious incidents. The huddle was also viewed as a useful platform to share information about patients that might not otherwise have been passed to other members of staff. This benefit of increased information transfer has been noted in previous studies aimed at improving handovers and other multidisciplinary meetings (Robertson, et al., 2014). Also consistent with previous findings, staff members described improved communication as having a positive effect on healthcare efficiencies (Sacks et al., 2015). Specifically, the discussion that took place during the huddle, particularly among the multidisciplinary teams, enabled improved patient flow and quicker patient discharge. In other cases, information shared in the huddle facilitated the continuity of patient care, as other members of staff who were to directly take care of a given patient already had the necessary details about that patient as a result of the huddle. The SAFE programme also resulted in the development of other initiatives, alongside the huddle, which aimed to increase the participation of parents and patients in their care.

**Research question 4**

What mechanisms explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes? (see Chapter V). This chapter is relevant to the ‘mechanisms’ and ‘context’ components of the theory of change (see Figure 2).
The staff interviewees at the four qualitative sites, across the three time points of the evaluation, mentioned that the huddle can provide a crucial opportunity for staff members to raise awareness of and share information with the wider staff group about specific issues or concerns, such as patients in danger of deteriorating, safeguarding issues, parental concerns, and staffing problems. There was also a sense among the staff members of having a greater awareness of the ‘bigger picture’ of the whole ward, unit, and hospital, as well as of the situation surrounding each individual patient, as a result of discussions in the huddle. This speaks to the theory of change for the programme; the idea that each staff member, patient and family member potentially holds a piece of the full picture. Improving communication between these individuals affords a more immediate complete picture. Using multidisciplinary huddles can also join these pieces together such that potential deterioration is detected sooner (Goldenhar et al., 2013; Robertson et al., 2014). In particular, the interviewees described how the huddle can help to prevent loss of information or miscommunication between staff members, by having a range of staff members from different occupations and levels of seniority present at the huddle, as well as through the use of standardised communication tools like SBAR. The interviewees also indicated that the huddle can lead to improved communication between staff members, as it facilitates teamwork on the ward and helps staff members to feel more supported in their roles. Finally, the staff members described how the huddle can contribute to a culture of increased efficiency, anticipation, and planning on the ward.

There was minimal variation between the sites in terms of the described benefits and drawbacks of implementing the SAFE programme identified by the staff members. One point at which some variation could be seen related to the lack of involvement of junior nursing staff members in the huddle at some of the sites, compared to others, which could have led to feelings of exclusion among these staff members. At another point some variation was observed in terms of the feeling of one staff member, on one of the smaller wards at Time 1, that the programme might have more impact on a larger ward. There was also relatively minimal variation between the different staff occupational groups in terms of the described benefits and drawbacks of implementing the SAFE programme identified by the staff members. However, different occupations provided different examples for the benefits and drawbacks that they spoke about. For instance, nursing staff members – in relation to the increased teamwork that the huddle had facilitated at the sites according to the interviewees – particularly tended to explain this by saying that they felt more supported by the doctors. This was in terms of having quicker reviews for their patients and finding it easier to contact the doctors when they needed to.

The positive effects of the implementation of the SAFE programme tended to be stable across the three time points of the study, with staff members highlighting the benefits of the huddle in relation to their levels of awareness,
communication, anticipation (as opposed to reactive care), and efficiency at Times 1, 2, and 3, and staff members’ improved stress levels emerging as a benefit according to interviewees at Time 2. Likewise, the drawbacks of the implementation of the SAFE programme tended to be stable across the three time points of the study. Staff members described their perceptions of the increased pressure on their time and workload that they had experienced as a result of the instigation of the programme, particularly in terms of time potentially taken away from patients. This challenge was also noted in the only other qualitative study of a similar approach (Goldenhar et al., 2013). In addition, a small number of staff members raised some scepticism about the added value of the programme in some instances. The latter seemed to be influenced by such factors as the size and type of ward, and whether or not the interviewee had been able to attend the huddle so far.

Overall, the findings in relation to this research question point towards the potential efficacy of the huddle, as introduced in England as part of the SAFE programme, as a way of improving staff members’ working environments and clinical practice on paediatric wards, which, in line with Goldenhar et al. (2013), could in turn positively impact on patient care and safety. The findings indicate that the mechanisms that could explain how the huddle and other safety improvement techniques might lead to improvements in safety outcomes include: the provision of a place and an opportunity for staff members to raise awareness among the wider staff group of issues and concerns; increased teamwork and communication between staff members (including nursing and medical staff); and increased anticipation, planning, and efficiency among staff.

**Research question 5**

What are the barriers and facilitators to the implementation of huddles and other safety improvement initiatives? (see Chapter VI). This chapter is relevant to the ‘input’ and ‘context’ components of the theory of change (see Figure 2).

Our findings suggest that successful implementation of SAFE requires: senior medical and nursing staff member leadership; to blend in with and enhance rather than alienate existing ward practices; staff members to have the time and capacity to implement the initiative – which staff members’ perceptions of the benefits of the initiative, the time efficiency of the initiative, and teamwork can help to mitigate against; staff members to have enthusiasm towards and awareness of the initiative – how it works, and its rationale; practice and adaption of the methodology to suit the needs and interests of staff and the ward; and support from the national programme team.

Our findings also suggest that barriers to the implementation of a new safety improvement initiative like the SAFE programme can include: a lack of perceived relevance or ‘good fit’ of the initiative with staff members’ job roles and
priorities, and with ward practices; resistance to change; a lack of staff; a lack of
time; and other competing duties or responsibilities.

Previous research exploring the implementation process of quality improvement
initiatives has similarly cited as facilitating factors the importance of senior staff
leadership and programme ‘champions’ in ensuring and driving the successful
implementation of such initiatives, staff enthusiasm, the positive influence of
collaborative learning days between sites, and the need to embed initiatives into
routine practice (e.g., Fernandez-Caballero, Becic, Bouras, Walker, & Sultan,
2013; Guinane & Davis, 2004; Leape et al., 2006).

One barrier to implementation identified by the staff members in our study was
not voiced by interviewees across all four of the paediatric wards. Specifically,
interviewees on some of the wards at Time 1 highlighted the lack of
understanding, particularly by junior nursing staff members, about how the
huddle could fit with their job roles. There also seemed to be a perception on
these wards of junior nursing staff members needing an invite from senior staff
members to attend the huddle, or a feeling that if one was not a senior member
of staff, one did not need to get involved in the huddle. This theme was not as
apparent at Times 2 and 3. Perhaps this was because, by these time points,

senior staff members who attended the huddle on these wards had been more
successful in feeding back the content of and decisions made in the huddle to
the more junior members of staff who did not attend. Or perhaps this was
because by Times 2 and 3, awareness of the SAFE programme and attendance
at the huddle had filtered down from the senior staff members to the more
junior staff members, who were then more likely to be involved in the huddle.
By contrast, on another ward, junior nursing staff members were consistently
involved in the huddle across all time points. Potentially this was because this
ward was a general paediatric ward where, unlike in a HDU for instance, junior
nursing staff members do not need to constantly remain at their patients’
bedsides.

It was clear by Time 3 that on some of the wards the barrier of lack of staff
enthusiasm had largely been overcome, as staff had seen the benefits of the
programme by that point. The programme had also become more embedded in
staff members’ daily routines, due to persistence by senior medical and nursing
staff members in encouraging and leading on the implementation of the
programme, and staff members having had time to practise and get used to the
methodology. Adaptation of the methodology to best fit with the schedules and
needs of the staff members and the wards seemed to have also facilitated its
implementation on the wards by Times 2 and 3. For example, by moving the
time of the huddle to enable more staff members to attend, or adjusting the
content of the huddle to best fit staff members’ interests. The importance of
support from the SAFE implementation team, particularly in terms of their
organisation of and presence at national learning events for all sites involved in
the collaboration, was a new facilitating factor apparent in the staff members’ interviews at Times 2 and 3, which is likely to have been because, by these time points, sites would have attended several collaboration-wide learning events.

While ‘persistence of the hierarchy’ was a theme that primarily emerged at Time 3 from the staff members’ interviews as a possible barrier to the implementation of the huddle, this could potentially be seen at Times 1 and 2 as well. This was in terms of the emphasis at some of the sites on involving senior staff members, rather than junior staff members, in the implementation of the programme, or in terms of junior staff members’ uncertainty about whether to attend the huddle, or their feelings about not being invited to attend. Yet, staff members often cited the importance of senior staff member leadership as being a key facilitating factor driving the implementation of the programme, which perhaps means that the ongoing presence of the hierarchy may be somewhat inevitable in the implementation of such a programme. Leadership has often been cited as a crucial ingredient to improving patient safety. In particular, transformational leadership, characterised by charisma and inspiration, has been associated with improved safety climate which, in turn, is associated with more successful implementation of quality improvement initiatives regarding patient safety (McFadden, Stock, & Gowen III, 2015). SAFE appears to be no exception to this. Challenges were particularly raised where there were changes in leadership roles or a lack of clear messaging or prioritisation of the programme.

Overall, the findings in relation to this research question have demonstrated the barriers and facilitators to implementing a specific quality improvement initiative, the SAFE programme, on paediatric wards in England. However, given the parallels between our findings and those of previous research in this area, these barriers and facilitators could also be relevant for the implementation of other quality improvement initiatives on paediatric wards.

**Research question 6**

What are the barriers and facilitators to the positive impact of the huddle? (see Chapter VII). This chapter is relevant to the ‘mechanisms’ and ‘context’ components of the theory of change (see Figure 2).

Drawing on the Time 1, 2, and 3 staff interviews, there appeared to be several common elements across the four qualitative sites that had helped to make the huddle as effective as possible. These included identifying a clear huddle leader, the use of a script or a standardised approach to ensure a structured and concise exchange of information, and ensuring that the information raised and discussed in the huddle was then translated or had continuation into ward practice. Interviewees also indicated that the huddle needed to be flexible and adaptable to each ward’s needs and schedule, in the sense that the time at which the huddle took place needed to fit around ward rounds and staff handovers, staff
attendance at the huddle was dependent on the ward situation and the level of dependency of patient care, and the information discussed in the huddle was based on staff interests or on gaps in information sharing particular to each ward. Finally, one could infer that potentially poor implementation of the huddle may have been a barrier to impact at the sites. Challenges around simply getting an intervention off the ground reliably are commonly cited in quality improvement initiatives to improve safety (Allen et al., 2006). Some sites certainly managed to implement the huddle more consistently than others. However, given that minimal differences between the four sites could be discerned qualitatively or quantitatively in terms of the impact of the SAFE programme on the wards, it is difficult to draw a firm conclusion in relation to this in the context of our evaluation.

**Research question 7**

To what degree has the huddle been embedded on each ward and spread to other wards at each site, and what are the barriers and facilitators to the sustainability of the intervention? (see Chapter VIII). This was a secondary research question, which arose as a question of interest over the course of the evaluation.

In general, facilitators to the embedding and spreading of huddles were cited by the staff interviewees to a greater extent than barriers, with innovation and process factors being most prominent. Leadership and contextual factors were slightly less talked about; however, these groups of factors seemed of greater importance for the spreading of the huddle than for the embedding of the huddle. In terms of facilitators for the embedding of the methodology, staff highlighted the need to ensure that the huddle fits into existing practices, that it is relevant for addressing needs and problems on the ward, and that everyone is aware of the benefits of the huddle (as a ‘selling’ point). Participants also described the need for commitment from all staff members on the ward at the outset and, in particular, the importance of getting both nursing staff and doctors on board. In addition, they emphasised the importance of having support from the executive leadership and senior staff, as well as nominating a ‘champion’ responsible for disseminating the innovation. Previous studies in particular highlight the importance of executive leadership for the safety climate, in particular through prioritising resources and providing incentives to hospital staff (Mc Fadden et al., 2015). Having a champion was much more about having someone responsible for making sure huddles and allied activities happened and were prioritised on a daily basis.

While communication about the innovation appeared to be equally as important for spreading the huddle, as it was for embedding, the process-related factors were, on the whole, more prevalent when staff members were discussing the spreading of the huddle, rather than its embedding. As would be expected, process factors related to planning and early implementation of the huddle and
were widely discussed by the interviewees in the context of the spread of the intervention to other wards. With regard to other wards starting to implement the huddle methodology, participants emphasised the importance of a careful choice of evaluation measures and a focus on emphasising the long-term benefits of the intervention, as opposed to immediate change. Other facilitators for the spread of the intervention, as identified by the interviewees, included being open to feedback about the huddle and being flexible in making any necessary adaptations of the innovation. Interviewees also emphasised that the spreading of the huddle ought to be a collaborative process where teams are advised to implement the innovation, rather than it being imposed.

Research question 8

What were the approaches to implementation and evaluation at the Wave 2/3 sites, and how do they compare with Wave 1? (see Chapter IX).

This was a secondary research question, which arose as a question of interest over the course of the evaluation, as more sites joined the SAFE programme. The Wave 2 and 3 sites, in comparison with the Wave 1 sites, appeared to make more rapid progress in the early stages of their involvement with SAFE. Reports from sites themselves and from the implementation team indicated earlier establishment and embedding of huddles and allied practices. The Wave 2/3 sites also appeared to begin planning for the further spread of these practices earlier. Possible explanations for the differences between these later waves and the Wave 1 implementers included:

- Different processes for joining the evaluation: strategic leads for Wave 1 sites were invited to join the programme prior to programme start up, whereas the Wave 2/3 sites were required to submit an application demonstrating some existing knowledge of quality improvement methodology, prior experience of implementing huddles or other similar practices, and a clear plan for implementation
- Clearer articulation of the programme theory and core components for implementation by Waves 2 and 3, resulting in a more informed and self-selected group applying for participation in these later waves, as compared to Wave 1
- Potentially better buy-in from consultants and other relevant staff at the Wave 2 and 3 sites.

Overall, there appeared to be clear advantages for the Wave 2/3 sites stemming from the fact that the roll-out of SAFE in these sites drew on the momentum from, experiences of, and learning from the first wave of the programme. This reflects the idea of the wave-sequence approach, in which the spread of the innovation is built on the first wave of the implementers, which has been proven to be successful (Newton, et al., 2010).
Challenges, limitations, and lessons learned

No quality improvement programme evaluation is without its challenges (Dixon-Woods, 2014), and the SAFE evaluation is no exception. The nature of the implementation of the SAFE programme led to some pragmatic decisions around the nature of the evaluation. Implementation began within a large number of heterogeneous settings, so finding common measures of outcome that were relevant to all sites was a challenge for the evaluation. Indeed, the variety of wards involved led to rich learning about the role of context, but this also led to quite different models of implementation, meaning that the intervention looked quite different across sites. This raises questions about the degree of the transferability of our findings to huddle implementation on other paediatric wards in England, and also poses challenges around giving concrete recommendations for how to improve the huddle. For instance, what works for one site might be that there are set times for the huddle to take place, whereas for another site some flexibility in timing may be important. This variability percolated through to the collection of ward level safety indicators. Challenges included: (1) sites having started the intervention at different time points; (2) definitions of the indicators varying across certain sites (particularly in terms of the ‘unplanned transfers to higher level of care’ safety indicator); (3) seasonal differences in outcomes; (4) wards varying greatly in terms of size, specialties, and existing procedures (e.g., in terms of how care is escalated). On reflection, an alternative approach might have been to support each site in finding the safety indicators most pertinent to their own SAFE approach and their own context, which may have been more sensitive to change of time. However, difficulties of using this evidence to speak to the overall effectiveness of SAFE as an overall programme would have remained with this approach.

Another challenge involved staff members on wards not being directly funded through the SAFE programme, which meant that any measures proposed for use in the evaluation had to be incredibly low-burden, otherwise data collection would not have been feasible. This meant that measures of outcome were typically measures that were routinely collected (such as cardiac arrests and transfers to ICU), which were low-frequency events at most sites and so there were challenges to showing change over time with these indicators. It should also be acknowledged that the chosen method for analysis, namely run charts, may not have been sensitive enough to small shifts in outcomes over time so it is possible that smaller effects existed but were not detected using this approach. Therefore, the use of statistical analysis such as interrupted time series regression analysis might be considered for similar future analysis.

Related to the issue of limited resources were issues of staff time to participate in the evaluation, which meant that there were significant challenges to participant recruitment. While the number of staff members recruited at each site was satisfactory, the ease of recruitment at the sites greatly varied
depending on staff members’ levels of engagement with the programme and extremely busy workloads. Due to this limited capacity, it is possible that those who completed the staff safety climate survey and participated in the qualitative interviews were in some way more motivated to participate, possibly leading to overrepresentation of staff members with more positive views of the huddle. It is possible that some cost allocations for staff time and/or clear formal agreements about expectations for measurement being built into programme start-up may have improved engagement in the evaluation.

It is also important to note the following limitations of the qualitative evaluation. First, as noted above, the degree of the transferability of our findings to huddle implementation on other paediatric wards in England, beyond the four included in the qualitative component of our evaluation, is uncertain, as other wards may differ contextually (including in terms of patient populations, ward specialities, and ward size). Second, it is possible that our sample included an over-representation of staff members with more positive views of the huddle, as the staff members with the more negative views of the huddle may have felt less comfortable about being interviewed by the evaluation team. Third, the time limitations of many of the interviews conducted, as the staff members were interviewed during their working hours, meant that at times the interviews followed a more structured format, rather than semi-structured, with less time available to follow up on particular ideas that participants expressed, as per a semi-structured interview format. This meant that while a relatively large sample of interviews was conducted over the course of the study, the interviews varied in terms of the level of depth reached by the interviewer. Finally, the staff interviews at Times 2 and 3 were either follow-up interviews or conducted with new interviewees, which meant that any differences found over time in the themes emerging from the interviews could have been due to the new interviewees’ perspectives, as well as to changes in original interviewees’ perspectives.

Furthermore, while distinctions could be drawn between the sites and over time, in terms of what huddle implementation looked like and what other safety improvement initiatives were being implemented at the sites, it is important to bear in mind that these differences could have arisen in part from what the interviewees chose to or remembered to say about this. For instance, according to the staff members at one of the sites, the occurrence of the huddle was more variable at weekends, compared to on weekdays. However, it was not necessarily possible to definitively conclude that the huddle by contrast occurred regularly at the weekends at the other sites, as it may just be that the interviewees at these other sites did not choose to discuss what the huddle was like at weekends in their interviews. In a similar vein, huddles at a certain time of the day (evening or night) were not always observed across all three time points at given sites, even though they may have taken place at these times.
The interviews with the parents and patients as part of the evaluation were conducted on a continuous basis over the course of the programme, as and when the evaluation team received completed parent/patient expression of interest forms from the four qualitative sites. It was not possible to conduct interviews with the same families pre-implementation of the SAFE programme and post-implementation of SAFE, which would have allowed us to qualitatively explore the possible impact of the programme on ward safety and experience of care from the parents’ and patients’ perspectives.

Finally, although we had anticipated triangulating the qualitative data with the quantitative data at the outset of the evaluation – for instance, to try and explain our quantitative findings relating to change in ward safety culture using the interviews with the staff members to delineate the mechanisms behind this – we were ultimately unable to do this. This was because we did not find any significant patterns within our quantitative data. Thus, any attempts at triangulation in this way would have resulted in us using the qualitative findings misleadingly to explain random or spurious patterns arising in the quantitative data.

Conclusions, implications, and future research

Given the dearth of published evidence about the implementation and impact of the huddle and allied approaches, the information discussed in this report provides much needed learning around what implementation looks like, key barriers and facilitators, and potential effects on ward safety culture and patient care. While no clear pattern in our more distal outcome measures, such as cardiac arrests and transfers to ICU, was found, staff could give clear examples of the benefits of implementation, particularly in terms of staff communication and teamwork, organisation and efficiency, and awareness of patient risk and safety issues. The picture was not universally positive; some sites continued to report challenges of implementation towards the end of the programme, particularly around the lack of involvement of particular groups of staff, and there was clearly variation in how embedded the huddle methodology was across the sites as the programme drew to a close. Commonly cited barriers included the lack of leadership and ownership of the methodology, and the lack of perceived fit between the methodology and the way that the ward works.

However, there was a clear will among the sites to continue to embed and spread SAFE practices after the completion of the programme. Teams were also confident that evidence of the benefits of SAFE were emerging from their own locally collected improvement data, particularly when the outcome was locally defined and its operationalisation was developed with time. As a result of the SAFE programme, a clearer model for implementation has now emerged for the use of huddles in UK paediatric settings. The evaluation and improvement tools
developed through the programme, together with the learning described here, provide useful indications for future implementation of SAFE and similar programmes.

The benefits of the huddle described by staff suggest that the methodology may benefit other paediatric settings in the wider NHS. Staff identified an earlier anticipation of deterioration, improved patient flow and quicker discharge, improved continuity of patient care, and greater reassurance for parents and patients, in terms of the impact of the programme on patient care. However, the staff interviews also indicated that the huddle had not been equally successfully implemented across all wards, as a result of various barriers to implementation, also noted above. Notwithstanding this variability, a number of universally important factors have emerged in terms of successful implementation, including senior staff member leadership, awareness among all staff members of what the methodology involves and its importance, and the time efficiency of the huddle. A full investigation of factors required for successful spread of practices would require longer term follow up.

Overall, while the qualitative study showed clear changes in practice centring around the introduction of huddles and a number of benefits reported by staff, the overall positive skew to patient experience measures and staff safety culture scores likely affected the extent to which quantitative change over time in outcomes could be demonstrated. The reason for the lack of clear patterns in safety cross data (arrests and transfers) remains unclear; it is possible that huddles do not have an impact on these outcomes or it could be that it takes a longer period of time for patterns of positive change to emerge from these data. This, coupled with the varying approaches and different contexts within which SAFE was implemented, raises a number of questions for further research (see the box below). Nonetheless, the rapid spread in SAFE practices within and beyond the original hospital sites, and the perceived benefits described by nursing and medical team staff members on the wards, are testament to its popularity and the perceived benefits of the programme.

Questions remaining for SAFE:

- Do SAFE practices remain embedded in participating sites after completion of the funded programme?
- How does the implementation of SAFE develop in Wave 2 and 3 sites?
- Does measurement of the impact of SAFE on more distal indicators, such as cardiac arrests and transfers to ICU, require a longer follow-up period in order to demonstrate effects?
- Can huddles be successfully applied to settings other than inpatient paediatrics?
Bibliography


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Appendices

Appendix A: Huddle Observation Tool paper
Appendix B: Staff interview schedules across three timepoints
Appendix C: Parent and patient interview schedules
Appendix D: Safety cross (an example)
Appendix E: Staff safety climate survey
Appendix F: Parent and patient surveys