Shine 2012 final report

Doctors in training leading quality improvement: Families reporting critical incidents and near misses in a children's hospital.

Great Ormond Street Hospital for Children NHS Foundation Trust

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The Health Foundation
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Part 1. Abstract

Project title:
Doctors in training leading quality improvement: Families reporting critical incidents and near misses in a children's hospital.

Lead organisation: Great Ormond Street Hospital for Children NHS Foundation Trust

Partner organisation: N/A

Lead Clinician: Dr Henning Clausen

ABSTRACT
Please describe your project as a narrative account (up to 800 words) that reflects the experience of the project team of implementing the project. You should include:

- *Background in brief including the local problem and intended improvement*
- *Description of innovation*
- *Methods used for testing / implementation so far including ethics, plans, measures, methods for evaluation & analysis*
- *What you achieved – (method, process, context, challenges)*
    - *What went well?*
    - *What have been the challenges and how have these been overcome?*

In completing this section please imagine this is the information that will be used to describe your project on your website.

Background:

Adverse events occur in approximately 10% of patients admitted to hospital in the United Kingdom (UK) [1] [2]. Of these, 37-51% have been judged preventable. Current reporting systems under-report adverse events. This project aimed to determine whether it is possible to develop a method for parents and families to report potential harm and near misses in order to decrease the possibility of adverse events. It was conducted in a large tertiary children's hospital in London, UK.

Methodology:
The improvement method used was the Model for Improvement incorporating Plan-Do Study-Act (PDSA) cycles. We applied process mapping to understand the process and statistical methods for data interpretation. We used safety methodologies based on the theories of high reliability and resilience engineering in which the concept of real-time attention to the activity on the frontline is key [3] [4].

[1] UK Parliament publications of the Health Committee on patient safety http://www.publications.parliament.uk/pa/cm200809/cmselect/cmhealth/151/15106.htm (accessed online 12/03/2014)

[2] Vincent C, Neale G, Woloshynowych M (2001) Adverse events in British hospitals: preliminary retrospective record review. BMJ 322(7285) 3 March pp.517-519.

[3] Weick KE, Sutcliffe KM: Managing the Unexpected: Resilient Performance in an Age of Uncertainty. http://books.google.co.uk/books?id=KLQYJTTTiz4C&printsec=frontcover&dq=inauthor:%22Karl+E.+Weick%22&hl=en&sa=X&ei=iFMEUI2oEqam0AXNzOyVBw&ved=0CEYQ6AEwAg#v=onepage&q&f=false (accessed 12/03/2014)

Intervention:

In the first stage, we tested a web-based electronic Family Questionnaire on a Paediatric Nephrology ward. We used quality improvement strategies to adapt a validated questionnaire locally. Ethics approval was obtained prior to the commencement of the study.

After identification by the nurse in charge and medical staff, families whose child's anticipated discharge was within 48 hours were asked to participate during weekday working hours. A dedicated project member trained in the application of the questionnaire applied the intervention. Participants gave written, informed consent. Families were asked to report safety concerns anonymously, as well as any positive safety experiences using a structured questionnaire. Questionnaire completion required spoken English language.

Areas identified were medication errors, communication problems, and complications of care. After selecting the type of event, families were prompted to enter free text comments illustrating concerns. We measured the number of reports, classified these according to types of harm and graded the severity of reported events. If needed, the Patient Advice and Liaison Services (PALS) provided support. Personal feedback would not take place due to the anonymous nature of the project design.

Positive outcomes and challenges:

Eighty five per cent of families and patients who were approached to complete the survey completed the web-based questionnaire. Thirty-three new safety concerns were raised and only 3% of these were matched by staff reports. This could indicate that families added new insight into safety issues.

Communication problems (31%) and medication errors (21%) ranked highest on the list of concerns raised by families and patients. We also saw a significant increase in overall staff reporting during the observation period from 1.29 reports per week to 2.05 reports per week ($p<0.05$). This may indicate that patient safety attitudes are shifting and more value is placed into the reporting of safety concerns by frontline clinical staff.

The completed questionnaire was analysed and reviewed within the project team and results fed back to the ward staff, divisional leaders and hospital risk management teams as soon as feasible to discuss family comments and concerns. A typical turn-around would include a daily brief verbal feedback to the nurse in charge about the number and overall type of reported events to enable ongoing risks to be eliminated immediately, followed by weekly and monthly summaries of events.

Feedback from families, patients and staff indicated that we should test an alternative to the web-based approach. We tested a paper-based 'real-time' questionnaire distributed and visible to patients and staff at the clinical bedside on the ward. This consisted of a single side of paper entitled "What are your safety concerns today?" Categories were similar to the initial electronic questionnaire and adapted to include the key concerns delineated in the preliminary project testing. This included hand hygiene and cleanliness. The child's nurse for the day collects completed forms near the end of daily shift and asked families to discuss

[4] Hollnagel E et al: Resilience Engineering Perspectives Volume 1: Remaining Sensitive to the Possibility of Failure.

any concerns. An action plan was agreed on the reverse of the page and clinical staff had to grade family comments using a standardised grid system similar to that used by the current hospital wide risk management software.

This process has raised new challenges. Families may feel more vulnerable to report problems of safety before nearing the end of their stay. Some participants may be concerned that their comments are no longer anonymous, or that they could be seen as being difficult and one who exaggerates problems. We are now exploring the use of a volunteer which will have dedicated time to talk to families about their safety concerns and act as an independent point of contact.

The positive outcome of the new approach has led to a more open discussion around patient safety at all levels and has placed safety discussions on the daily ward agenda. Family members who do not speak English or who have learning disabilities can benefit from this approach as help in completing reports may be possible. Real-time reporting may facilitate real-time solutions, with mitigation of risk. This could potentially create a stronger sense of situation awareness and lead to safer care.

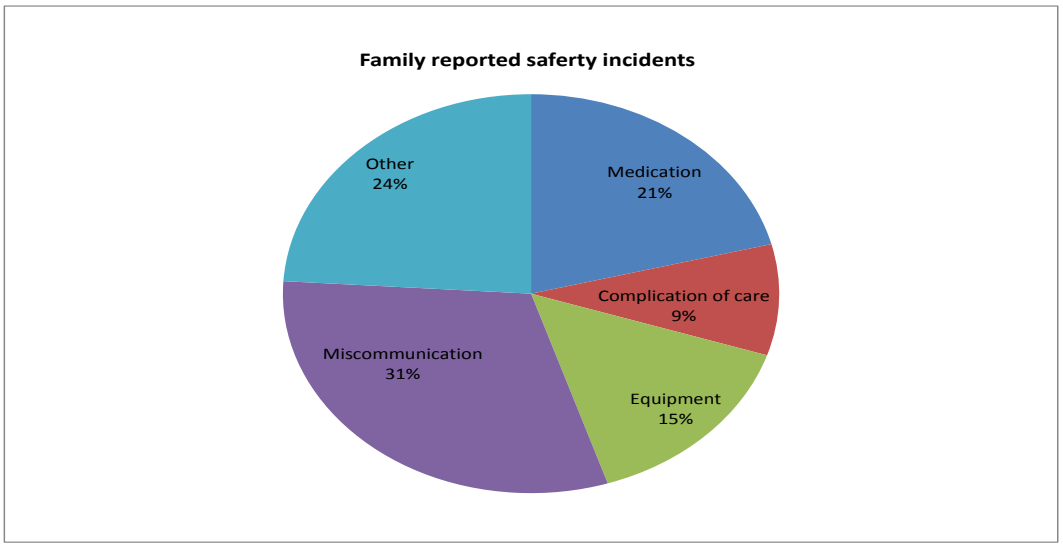
Part 2. Quality impact: outcomes

This section is intended to explain the measures of quality that you used and to detail the outcomes (up to 500 words). You should address the following points:

- Nature of setting and innovation i.e. description of where
- Course of intervention, tests of change, adjustments
- Please describe the primary and secondary data that you used to demonstrate impact on quality, including:
  a) The source of the data and how easy it was to access
  b) The validity and reliability of the data
  c) Changes made demonstrated by data (please summarise using run charts, bar charts, tables or any other format that best shows changes made)
- Description of confidence; to what extent is the data on quality that you have collected clear and in line with original targets? How satisfactory are your baseline numbers in terms of data quality?
- What adjustments, if any, have you made to outcome measures from your original application?
- What is your assessment of the effect of your project on the quality of the service and the experience of patients?

In the first phase an electronic questionnaire was made available to families and patients over 16 years of age. The degree of harm identified was generally speaking low, but very few of the family reported events also matched staff initiated reports. Patients and families reported near misses while staff are currently not required to report these events. This has opened up new learning possibilities at local ward level.

Family reported incidents by category:



Word cloud representing details of positive safety comments reported by families using anonymous questionnaire upon discharge:

We postulated that there would be a change in the culture of safety on the ward. We measured attitudes towards patient safety with the Manchester Patient Safety Framework[5] at the beginning of the project phase in 2013 and at the end of the project in early 2014. This included a workshop to discuss the scores. This approach is developmental and allows an examination of the culture and how it can be improved. Although the observation period was short and significant changes could not be observed there appeared to be an overall trend of nursing staff valuing team aspects higher than organisational safety aspects, which may correspond with their involvement in a proactive approach towards patient safety compared to other parts of the hospital.

2013	Band 4 nursing staff	Band 5 nursing staff	Band 6 nursing staff	Overall nursing staff
Team	3.5	4	4	3.8
Organisation	4.5	3.625	3.625	3.9

2014	Band 4 nursing staff	Band 5 nursing staff	Band 6 nursing staff	Overall nursing staff
Team	4.5	4	3.625	4.0
Organisation	4	3.5	2.75	3.4

MAPSaF Scoring options from 1 to 5 (A-E) with higher scores indicating higher level of safety climate.

The Safety Climate Survey (Sexton tool)[6] mean scores at the start and end of the project did not differ significantly (4.41 vs. 4.46) though a trend towards higher scores was seen for the tool's core questions focusing on safety climate (4.42 vs. 4.59). This indicates a relatively high safety level at baseline and our final results may be related to the relatively short observation period.

[5] Manchester Patient Safety Framework research team (2006) Manchester Patient Safety Framework (Acute). National Patient Safety Agency

[6] Sexton, J. (2002) Safety Climate Survey; Institute for Healthcare Improvement

It is reassuring that the project has not had an overtly negative effect on staff perception of safety. Nursing staff consistently scored their personal safety engagement high (4.85 vs. 4.86) and showed confidence in their nursing leadership (4.66 vs. 4.75). There was a slight increase in scoring the statement *'I would feel safe being treated as a patient in this hospital'* from 4.69 to 4.81.

The statement '*health and safety briefings within the organisation are common'*, was scored relatively low by respondents throughout the observation period (3.80 vs. 3.81). This may either be related to the perception that the hospital has not been sufficiently 'visible' enough to frontline staff when reporting on adverse events or may reflect a true difference compared to the rest of the institution. This would certainly be true as the project has not been spread to other parts of the hospital to date. It is unlikely that this project has caused this scoring level alone.

'Safety Climate' as viewed by families

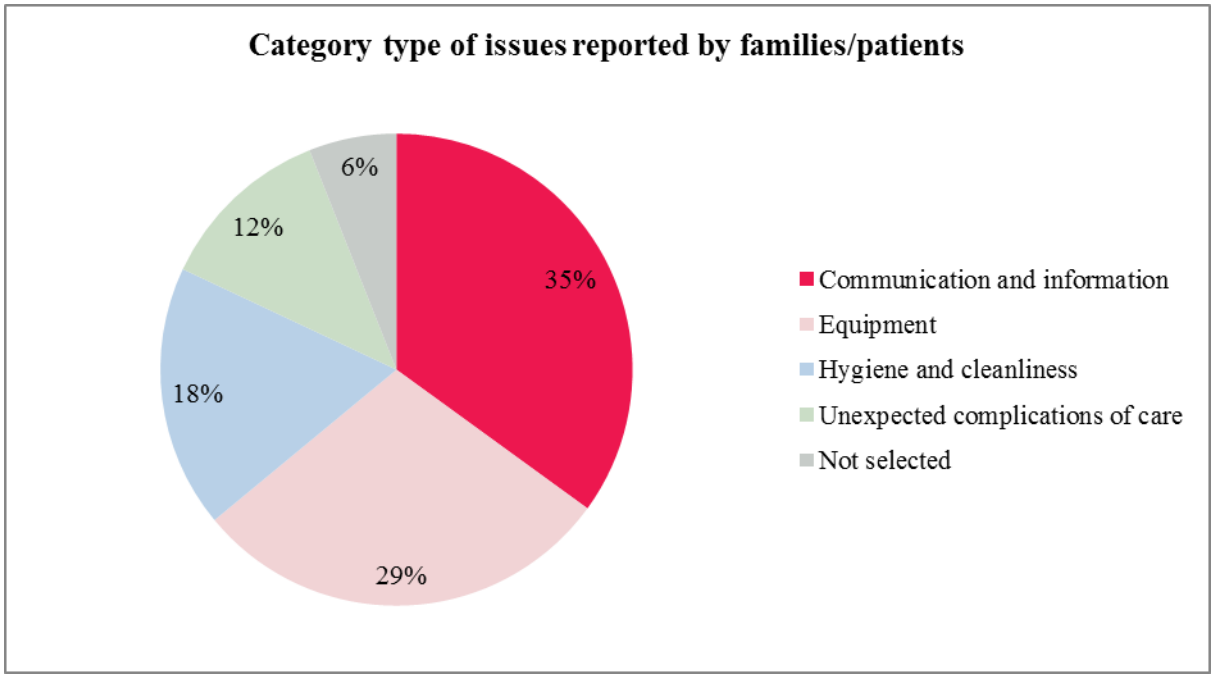
Families were asked to answer questions about their perceptions of safety using a Likert scale with higher scores indicating higher agreement with the statement (1 = strongly disagree, 5 = strongly agree). There were no significant changes and sample sizes were relatively small (<50).

Hospital safety climate domains	2013 (mean)	2014 (mean)
Overall Perceptions of safety	4.28	4.37
Staff Communication openness	4.11	4.33
Parent communication openness	4.44	4.27
Handoffs and transitions	4.06	3.91

Adjustments to initial project outline and real-time monitoring of patient safety results

Real-time monitoring of patient safety concerns would enable early mitigation of risks and should improve patient outcomes while still under the treating team's care. To test this approach, we designed a new paper-based single page questionnaire and tested this during the second phase of this project using PDSA cycles to evaluate the usability and optimise the response rate from families and patients.

Reports made by families using the real-time tool



Part 3. Cost impact

This section is intended explain the measures of cost you used and to detail outcomes (up to 500 words). You should address the following points

- *Please summarise your key cost measures and explain how your understanding of the financial impact has moved on since the beginning of your project.*
- *Describe how you have estimated the cost of existing services / pathways / packages of care. Are there any issues or limitations that need to be taken into account?*
- *How have you calculated the cost of the Shine intervention? Are there any issues or limitations that need to be taken into account?*
- *How have you accounted for the implementation costs (e.g. staff time for training and change management activity)?*
- *How have you demonstrated a cash releasing saving from your Shine project? Has a benefit been realised and who has benefited financially?*

The hypothesis is that if one pays attention to the detail of care in the front line, one can reduce harm, potential adverse events and ultimately length of stay. This project was not designed to directly reduce costs of patient care in the studied hospital setting.

We have seen an increase of reported safety concerns over the study period which may indicate a higher staff awareness of patient safety issues. The measurement of direct savings through error prevention and reductions in complications of patient care could ultimately lead to cost savings in a generative safety climate, but the low baseline number of harm does not lend itself to cost analysis in the short term.

The aim of the project has been to ensure that the intervention does not have a cost to implement - i.e. it becomes part of the normal day-to-day work of the clinical staff. This is the challenge we intend to emphasise as we spread the intervention.

Initially when we were considering an electronic reporting system we had potential IT hardware costs. The development of a paper-based system will make the spread of this intervention more possible due to its low cost.

By reducing potential harm, time will be released to nursing care and if one can get it right the first time every time, the unit cost of care will reduce.

Part 4: Learning from your project

This section is intended to summarise your achievements and the main changes observed in the quality of care (up to 850 words). Please address the following:

- *Did you achieve all of what you hoped to achieve at the start of the project? If so what helped you do so?*
    - *For example was it the contribution of a particular individual or group of people that made the difference? Why was this important?*
    - *How did you get staff buy-in to carry out this innovation? Were there any approaches more successful than others? Why do you think that was the case?*
    - *What have you learnt about how to collect financial information?*
    - *Was it an aspect of organisational culture, technology or policy (national or local) that helped you?*
- *Please tell us about the challenges and the things that didn't work out quite as planned*
    - *If you didn't achieve what you hoped for, what were the reasons for that?*
    - *Were there any aspects of organisational culture, technology or policy (national or local) that acted as a barrier?*
    - *Did staff change or leave? What impact did that have?*
    - *What did you do to try to overcome the challenges? How successful were these efforts?*
    - *Were your original ambitions realistic given available resources and timescales?*
- *What would you do differently next time when implementing an improvement project?*

To increase staff buy-in we participated in divisional staff 'Away Days' and used these opportunities to present the project's goal and results to frontline clinical staff. Small group discussions and workshops as well as hospital-wide lectures and 'Master class' presentations around patient engagement to improve safety were well received.

Additional recognition of the project's goals and results have come in form of Henning Clausen winning the Great Ormond Street Hospital Bethan Nancy Mount lecture award, the project team winning the HSJ National Patient Safety award in 2013 and being shortlisted for the current 2014 BMJ Awards Innovation category. The project has been presented at several conferences in London (IHI International Forum on Quality and Safety in Healthcare Experience Day 2013, Future for Health conference 2013). Future engagements will be at the National Patient Safety Congress in Liverpool and the IHI International Forum in Quality and Safety in Paris 2014.

Throughout the project, we had several discussions with different external IT providers, but could not achieve the goal of delivering a suitable mobile application based on the electronic questionnaire used in this project. We estimate that the cost in developing such a platform was too ambitious for the current financial budget.

We have, however, established the baseline requirements for such an approach and will continue our efforts to spread the tool as a real-time approach for reporting safety concerns. Internally, wards have approached the project leads for permission to spread within their local areas. External organisations from within the NHS and abroad have shown interest in this real-time reporting. We hope to establish a greater network of cooperation to move this process forward in the future.

As with all projects, sustainability is a challenge. We have completed testing and believe that the tool can be spread at limited cost. A project manager to supervise the spread both in the organisation and in a network of providers may be the next step. We are working with the Health Foundation to further discuss funding to aid future spread and sustainability.

We have had executive support and Quality Improvement infrastructure at Great Ormond Street Hospital which has ensured that the project will not end. Thanks to the tremendous support of our Transformation Team, the project's progress into the future appears promising and we have identified a new ward setting in which to test the current approach further. In addition, the tool could be used in the Closing the Gap project led by the RCPCH. Funding has been provided for the translation of the current questionnaire. We are hoping to complete the project with a collaboration event between families and staff to celebrate achievements and discuss new challenges for the future.

From a personal standpoint as the project lead, I feel privileged to have sparked this innovative idea at my place of work and I can only emphasise the fact that this project has provided a sound basis on which to build future quality improvement efforts. It has enabled me to experience at first-hand the challenges of positively influencing the patient safety culture in a big children's hospital. There will be more work to do and I am looking forward to being part of this journey towards harm-free patient care.

Summary of project effects:

We have shown that families and patients in a UK children's hospital setting can actively participate in the reporting of safety concerns. This may positively influence staff attitudes and behaviour in terms of patient safety and lead to an improved pattern recognition of harmful events and near misses. The partnership of families and clinical frontline staff has led to a significant increase in staff reporting of critical incidents despite the fact that the number and severity of case load and staffing levels was maintained during the project phase. Additional safety concerns reported only by families were common with medication and communication problems leading the list of concerns.

Clinical staff have embraced this new way of partnership in care and are continuing to use the tested tool with further plans to adapt this to changing pattern of safety concerns over time. Our aim is to spread the given experience and knowledge to other parts of the institution, making this available to a wider audience by providing a 'tool kit' summary of how to facilitate this in a different healthcare environment.

Part 5. Plans for sustainability and spread

This section is intended to communicate your plans for sustainability and spread (up to 500 words). You should include:

- *How realistic will it be to sustain the benefits of the project beyond March 2014?*
- *How do you plan to spread this innovation beyond the Shine award sites? What additional resources (and from who) will you need to support this activity beyond the Shine funding period?*
- *Please detail any external interest/potential contacts that you have identified that you need to pursue and those that you have already engaged with?*

Real-time monitoring of safety concerns has worked to raise a small number of minor safety concerns through family participation at this early stage and has also exposed areas for further development and improvement, such as testing an electronic version of the paper-based tool in the future.

The next step is to test this in another ward area, translate the tool and then spread the intervention in a staged way across the organisation. Several other wards and external healthcare providers have shown interest in this innovative approach of tackling healthcare related safety issues and patient. Family feedback has been very encouraging and overwhelmingly positive, as illustrated by the following quote form a parent: '*Are you going to make this [questionnaire] available at my local hospital as well*?

External interest has been growing since the initiation of the project. In particular winning the HSJ National Patient Safety Ward in 2013 may have positive impact for the future by raising awareness of this project.

We have developed a tool kit summary for interested external parties to enable them to learn from our experience and facilitate the implementation of this innovative patient safety approach in other healthcare settings. The training of hospital volunteers in the approach of families and application the questionnaire may lead to sustainability and higher acceptance amongst families and patients. This will require a structured and ongoing training programme within the organisation.

We have invited Mrs Carolyn Canfield, a 'patient citizen' and representative for the British Columbia Children's Hospital in Vancouver, Canada to share her experiences with us in April 2014 and to explore avenues for future cooperation. There is the potential to spread through the Paediatric International Patient Safety Quality Community (PIPSQC) an established network of national and international partners interested in patient safety. We have presented the project to medical colleagues in Cincinnati, USA and Sydney, Australia.

Success of the project has been dependant on many key factors.

- The contribution of our sensitive, dedicated and enthusiastic project team manager, Ms Charlotte Magness, has been crucial and demonstrates the need for good project management.

The critical role of the parent representative Andy Henderson has been fundamental to the success of this project. He has been a critical friend and has guided the project with insight that only a patient parent can bring to a project.
The success would not have been possible without the leadership of Lucy Thomas (Nurse Manager on Eagle ward) and Daljit Hothi (Consultant Nephrologist) who encouraged their staff to participate with enthusiasm.

The Darzi Fellow, Lynnette Linkson, played a vital role in supporting the project manager in the set up and development phase of the project.

However the real success has been due to the willingness of parents of children in hospital to partner with us to learn how to identify potential and actual events in order to improve safety and experience of care.

Appendix 2: Resources from the project

Please attach any leaflets, posters, presentations, media coverage, blogs etc you feel would be beneficial to share with others

1. Poster presentation for IHI International Forum on Quality Improvement & Patient Safety, Paris 2014. (attachment enclosed)

2. HSJ 2013 Awards (Patient Safety) media coverage at http://www.hsj.co.uk/news/hsj-awards-2013-winners-announced/5065465.article. (attachment enclosed)

3. BMJ 2014 Awards (Innovation) media coverage at http://thebmjawards.bmj.com/the-2014-shortlist-0

Appendix 3 PDSA cycles

Phase 1: Family reported incidents using electronic questionnaire
• 100 families were approached to participate
• 85 families agreed to participate
• 1 family approached the project manager to report an incident
• 27 families reported an incident by using the system
• 33 total safety concerns were raised by families

Place of reporting
63% reports completed in patient cubicle (two thirds of ward beds are within cubicles, 16/24)
33% of reports were completed in patient bay (one third of beds are located in bays, 8/24)
4% of reports were completed outside of the ward area i.e. interview room, patient's playroom.

Who completed report
66% mothers
15% fathers
6 % patients 16 or older
13% patients and parent together, or other relative
Types of incidents reported by families
31 % miscommunication (N=10)
21% medication errors (N=7)
15% Medical equipment failures (N=5)
9% complications of care (N=3)
24% others (i.e. confidentiality, cultural, hygiene, delays in treatment) (N=8)
Families alone reported 1.74 reports / week (33 events / 19 weeks)
Please refer to Appendix 2 for full detail of family reported incidents

Family safety concerns reported to staff
• 27/33 of these concerns/issues had been verbally notified to staff at the time
• 1/33 concerns/issues raised to staff could be found on the staff incident reporting system

Staff reported incidents during project phase of family reporting
41 reports in total (2.05 staff reports / week)
Most frequently reported event categories are medication and hospital infrastructure related problems
78% of staff reported events were severity grade 1 (=Incident occurred but there was no harm))
Baseline incident reporting within 12 months prior to intervention showed 1.29 staff reports / week (67 events / 52 weeks)

Detail of staff reported incidents (Phase 1 electronic family reporting questionnaire)

Severity type	Number of severity
1 Incident occurred but there was no harm	27 (75%)
2 Minor	8 (22%)
3 Moderate	1 (3%)

Category of incident	Number of reports submitted by staff
Infrastructure (incl. staffing, facilities, environment)	4
Medication - administration	4
Medication - prescription	4
Clinical assessment (incl. diagnosis, tests, assessments)	3
Infection control incident	3
Other	3
Theft (including alleged)	3
Consent, communication	2
Documentation (incl. records, identification)	2
Special feeds/Diet	2
Access, admission, transfer, discharge (incl. missing patient)	1
Electronic Prescribing Error	1
Environmental factors	1
Exposure to harmful agent	1
Incidents relating to fires or fire alarms	1
Lifting/handling injury	1
Medical device / equipment	1
Medication - storage / missing	1
Person collapses	1
Safeguarding/Child Protection	1
Slips, trips and falls	1
Grand Total	41

Severity of incident reported	Number of reports submitted by staff
1 Incident occurred but there was no harm	32 (78%)
2 Minor harm	8 (20%)
3 Moderate harm	1 (2%)
Total	**41**

The tables below illustrate the learning process while conducting multiple PDSA cycles in the studied environment.

Phase 2.1: Implementation of a paper-based tool for real-time data collection	
Aim of test	• Selected patients were asked to participate, as discussed with the Ward Sister on a daily basis • Paper based tool handed to families by Project Manager each day • Project Manager introduced the tool to selected families • Project Manager (independent non care giver) visited families daily to review the tool, discuss any issues raised by families and provide support where required • Paper based tool was replaced daily, regardless of if any concerns were raised • No agreed place for families to store tools, families could store the tools where they wished • 10 versions of the tool were adapted and tested through on-going PDSA cycles during this period. Main PDSA/changes to the tool included: **Reporting side** - Additional comments box added so that family/patient can add further information about the reported issue - Box added for family/patient to complete to state if any harm was caused from the issue reported. Following from this, a brief description box was added in conjunction for families/patients to describe the type of harm experienced **Analysis side** - Initially the analysis side was to be completed by staff member (tool versions 1, 2, 3). It was then tested if a family member could analyse/categorise the issue with the support of a staff member if required (tool versions 4, 5, 6). The process then was reverted back to the staff member completing the analysis side of the tool (tool versions 7, 8, 9, 10) - Section outlining contact details for PALS and Complaints was removed and replaced with a section where staff members can document the actions taken to resolve the issue raised by families.
Test population	• Starting small (initial test inclusive of one family) and increased during testing period • Majority English speaking • No outstanding complaint/safeguarding issues
Date of test	16th September 2013 – 30th October 2013 6.6 weeks* (* based on a 5 day week)
Outcome measures	17 reports were made by families
Support required to obtain outcome measure	• 88% (15) completed the tool with no support. • 12% (2) required support from the project manager
Average weekly reporting rate	17 reports / 6.6 weeks = 2.58 reports

Phase 2.3: Ward roll out of tool and test process	
Aim of test	• Each bed space had a laminated tool and instruction poster adhered to the patient white board  . • Daily care plans had a strap line pre-printed on the daily day and night care plans to remind staff to check the reporting too at the end of their shift • Project Manager will continue to introduce the tool to families and nursing staff to check the tool daily and manage any reports made by families/patients. • Version 11 of the tool was initially used. Slight amendments were made during this phase. Current version of the tool is version 13 (please see Appendix 2 for current tool and instruction poster) • Instruction poster slightly amended based on comments from a parent on the ward
Test population	• Whole ward
Date of test	27th November 2013 –17th December 2013 2.8 weeks
Process measures	Please see Appendix 3 for graphical representation of the below. • Average of 85% of correct test care plans in nursing folder • Average of 64% of day care plans completed the strap line tick box • Average of 56% of night care plans completed the strap line tick box
Outcome measure	11 reports were made by families
Support required to obtain outcome measure	• 73% (8) issue raised to project manager and supported to family to complete • 9% (1) issue raised to nurse who supported family in discussions about the issue. Back side not completed by nurse. The project manager supported

	the nurse to complete this • 18% (2) issue raised on tool but was not reviewed by nurse/project manager until days after (family had been discharged, tool not checked and the room had been empty until 5 days after) • One family raised a positive comment on the tool in the free text section
Average weekly reporting rate	11 reports / 2.8 weeks = 3.93 reports