Can incident reporting improve safety? Healthcare practitioners' views of the effectiveness of incident reporting

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Abstract

Objectives. Recent critiques of incident reporting suggest that its role in managing safety has been over emphasized. The objective of this study was to examine the perceived effectiveness of incident reporting in improving safety in mental health and acute hospital settings by asking staff about their perceptions and experiences.

Design. Qualitative research design using documentary analysis and semi-structured interviews.

Setting. Two large teaching hospitals in London; one providing acute and the other mental healthcare.

Participants. Sixty-two healthcare practitioners with experience of reporting and analysing incidents.

Results. Incident reporting was perceived as having a positive effect on safety, not only by leading to changes in care processes but also by changing staff attitudes and knowledge. Staff discussed examples of both instrumental and conceptual uses of the knowledge generated by incident reports. There are difficulties in using incident reports to improve safety in healthcare at all stages of the incident reporting process. Differences in the risks encountered and the organizational systems developed in the two hospitals to review reported incidents could be linked to the differences we found in attitudes to incident reporting between the two hospitals.

Conclusion. Incident reporting can be a powerful tool for developing and maintaining an awareness of risks in healthcare practice. Using incident reports to improve care is challenging and the study highlighted the complexities involved and the difficulties faced by staff in learning from incident data.

Keywords: risk management, incident reporting and analysis, adverse events, quality culture, medical error

Introduction

Research into incident reporting

Incident reporting is well accepted in safety critical industries such as aviation, as a method for improving safety, and is now well established in healthcare in many countries, including the UK [1, 2]. In the UK, hospital incident reporting is a component of individual hospital risk governance processes [3] and a key requirement for National Health Service (NHS) organizations [4]. There is a national reporting system for England and Wales, the 'National Reporting and Learning System', to which all hospitals are required to report. The NHS Litigation Authority, which has defined risk management standards for hospitals, requires the hospitals it covers to have a documented process for internal and external reporting of all incidents and near misses [5]. Although the great majority of NHS hospitals have a reporting system, there is variation in their coverage and sophistication [6], and this is not surprising given that incident reporting schemes have technical and social components [7] that are shaped by and evolve to meet the needs of their host organization.

Despite widespread implementation of incident reporting, it is not clear whether incident reporting has resulted in improvements to safety and the utility of incident reporting has recently been extensively debated. Recent critiques of incident reporting suggest that its role in managing safety has been over emphasized [8], and call for less emphasis on counting incidents and more emphasis on the effective analysis of incidents and organizational learning [9–11].

Most studies of incident reporting have focused on factors associated with the reporting and analysis of incidents, such

as staff willingness to report incidents [12, 13], barriers to incident reporting [14, 15], the culture surrounding reporting [16], classifying and monitoring the number of incidents reported [17, 18], taxonomies for patient safety events [19, 20] and the design of incident reporting systems [21, 22]. Few studies have examined the effectiveness of incident reporting in improving safety, and there is little evidence regarding how incident reporting contributes to safety. In acute care, a study examining the relationship between rates of reporting to the centralized National Reporting and Learning System in England and indicators of quality found that high-reporting rates were positively related to a positive safety culture, but not to some other standardized measures of quality and safety [23]. Links between patient safety culture and the number of patient safety incidents have also been reported by others (see for example, [24]). However, there has been little research into the transmission mechanism between reporting and safety improvement, such as how staff perceive incident reporting and the factors that influence how incident data are used to improve safety.

In this article, we present the results of a qualitative study that investigated NHS staff members' views of whether incident reporting is effective in improving safety, in both acute and mental healthcare. Most previous studies of incident reporting in healthcare have focused on acute hospitals or units within acute hospitals [25]. Some studies have investigated incident reporting in primary care [26, 27] and the impact of adverse events in mental healthcare [28], but there is to our knowledge no comparative research on incident reporting in different healthcare contexts.

We used the perspective of systems theory to conceptualize incident reporting as a way to assess and improve system performance. Within this perspective, incident reporting constitutes a means of providing feedback on the operation of the care delivery system [3] and is conceptualized as a cycle of activities aiming to improve system performance [22]. Problems in the delivery of care are identified and reported, incidents are analysed to identify the most important contributory causes, changes are implemented in work practices and those changes are then evaluated for effectiveness [22]. Feedback to staff about incidents and action taken is also seen as an integral part of the cycle of learning from incidents [3] and of creating a culture of safety awareness [29].

The systems view of incident reporting is well suited to detecting problems in engineered systems such as power plants and aircraft. Although healthcare requires many engineered devices, the activity of clinicians is focused on a biological system (the patient's body), and the co-ordination of human activity to provide care. It is, therefore, crucial to consider whether and how incident reporting increases the safety of healthcare, which depends on the co-ordination of voluntary human actions to maintain safety.

Aims of this study

The overall aim of this study was to examine the perceived effectiveness of incident reporting in improving safety in mental health and acute hospital settings. Specific aims were to

(1) Investigate staff perceptions of the effectiveness of the incident reporting system in improving patient care.
(2) Investigate the challenges experienced when analysing incidents, implementing changes, evaluating changes and providing feedback to staff.
(3) Assess the effect of context in shaping incident reporting practices and effectiveness by comparing an acute hospital and a mental health hospital.

Methods

Settings

The participating organizations were two large teaching hospitals in London; one providing acute and the other mental healthcare. Both hospitals provide care and treatment for a local population, as well as specialist services to patients across the country. The acute care hospital offers specialist services in addition to general medicine and surgical care. The mental health hospital provides a wide range of mental healthcare and treatment including specialist treatment services in substance misuse, in-patient facilities and community care.

Participants

The participants were 62 healthcare practitioners; 31 in acute care and 31 in mental health. They included doctors, nurses and managers. In acute care, 39% were doctors, 39% were nurses and 3% were allied health and occupational health and safety staff. In mental health, 13% were doctors, 74% were nurses and 13% were allied health and occupational health and safety staff. Participants were invited to take part in the study through email, and by researchers attending local ward meetings to publicize the study. Purposive sampling was used to recruit practitioners who had knowledge of the incident reporting system, including those who did and did not regularly attend incident review meetings. Further, snowball sampling occurred when participants recommended others who could take part. In both hospitals, we sampled widely across the different divisions in the organization.

Procedure

Policy documents from both hospitals were identified and analysed to establish how the incident reporting system operated and how adverse events were handled. Semi structured interviews lasting between 45 and 60 min were conducted in private rooms at the hospitals. The interview schedule was developed following review of each hospital's incident reporting policies, and input was sought from each hospital's risk management department to ensure that the questions were appropriate and relevant. A pilot interview was conducted to refine the questions. Subsequently, interviews were conducted by two researchers (N.K. and R.W.) working independently; they conducted three interviews jointly during this process, to standardize their technique and increase the reliability of the interview data. Interviews were audio recorded for later analysis with the permission of the participants. Ethical

approval was obtained from the relevant research ethics committee and interview participants gave written consent to participate.

Data analysis

Interviews were transcribed verbatim and analysed using framework analysis [30]. Two researchers (N.K. and R.W.) worked together to iteratively develop the coding framework using the method of constant comparison [31]. Clear and detailed descriptions of the themes were developed to minimize the chances of misinterpretation. Coders jointly reviewed a sample of 10 interviews and discussed and resolved any differences in coding, thereby maximizing the reliability of the analysis.

Results

We first present a description of the main differences in organizational structures in relation to incident reporting between the two hospitals. We then describe the main themes identified in the interviews and how they relate to the research questions. We illustrate these themes by providing quotes from the interviews that were assessed by the coders as representative of the responses received.

Organization of incident reporting systems

In both hospitals, a hospital-wide reporting system was in operation, and reporting was voluntary and anonymous. Doctors, nurses and allied health professionals report incidents in both hospitals. Both hospitals had an electronic reporting system and the mental health hospital also operated a parallel paper-based system. The two hospitals had different systems for reviewing incidents. In the acute care hospital, risk managers were assigned to each department and worked closely with the department's risk lead who was usually a clinician. The risk lead chaired regular departmental meetings attended by clinicians, managers and the risk manager to discuss all reported incidents; take ameliorative action; assess any measures undertaken; and provide feedback to frontline staff. Discussion and investigation of serious incidents also occurred at cross-departmental safety and quality committees which, together with the board, monitored trends in adverse incidents. At the mental health hospital, there were no departmental risk managers. Safety managers in the central risk office received all incident reports and decided with the department manager whether further investigation should be undertaken. If the central risk office recommended an investigation, it was authorized by a high-level cross-departmental safety committee that received the investigation report for approval. Clinical staff were appointed to an investigation panel, supported by the central risk office safety managers. Apart from conducting investigations into serious incidents, there was a relatively low level of involvement of clinical staff in this process.

Nature of clinical risks

We asked interviewees to identify the biggest risks in their clinical area. We coded and categorized the responses to summarize the data. In mental health, the five most commonly cited risks were violence, absconding, medication errors, smoking/risk of fire and self-harm/suicide. In acute care the top five risks were competency and skills of staff, staffing levels, medication errors, system co-ordination and medical devices/IT.

The staff in acute care identified organizational factors, such as the work environment, continuity of care and resourcing as risks. In mental health, the term risk immediately evoked discussion of individual patients' conduct and the difficulty of providing clinical care and treatment when dealing with unpredictable behaviour. In mental healthcare, risk was more likely to be seen as arising from the behaviour of individual patients as illustrated by the quote below.

> Part of the difficulty that we have in psychiatry is that we have a hundred patients all saying they want to kill themselves, or kill others, or whatever. …. our difficulty is knowing really which one of those hundred will. (Manager, mental health).

Impact on care

Participants were asked whether incident reporting improves care. Table 1 shows their responses. Generally, staff were positive about the effects of incident reporting, more so in acute care than mental health. Respondents in both hospitals suggested incident reporting could be improved and highlighted the difficulty of gauging its effects. In addition, some expressed the hope that incident reporting 'should' work, given the resources devoted to it.

We asked them to give examples of perceived positive outcomes from incident reporting and these were thematically analysed and categorized according to whether they referred to organizational, team or individual outcomes. As shown in Table 2, staff generally viewed incident reporting as a positive safety tool, which was used in different ways to enhance safety. For example, in addition to using incident reports to improve processes, they viewed incident reporting as a catalyst for changing the way practitioners think about risks, for increasing vigilance and awareness of good practice, and for highlighting the need for more resources. Respondents also viewed incident reporting as an indicator of team culture and attitudes towards safety.

Challenges

In the following sections, we discuss themes concerning the difficulties faced by staff in implementing an effective incident reporting system.

Acceptance of incident reporting and blame. Mental health staff members were less willing to use the system, less experienced in using it and more likely to perceive the existence of a blame culture that they related to low levels of reporting, than acute care staff. In both hospitals, staff accepted that fair blame was necessary, but thought this depended on the individuals and

Table I Staff perceptions of whether incident reporting improves care

Response	n^a	Characteristic response
Acute care		
Yes	16	Well absolutely (Consultant)
		Yeah, yeah of course it does, yeah (Nurse Consultant)
		Absolutely yes. Not always immediately but I think it is a good evidence base for you to then look at how you can make improvements yes (Nurse Clinical)
Yes (with reservations)	6	I would hope so, given the amount of work that goes into it (Nurse Manager)
		Yeah, it does help. It does help, definitely. I think we could do more with it, but it does help. We're quite tight. We have our set infrastructures where we have to meet and it's quite clear you have to have your incidents closed by a certain date, so you've had to look at them. Yeah, I think there's not enough reflection on this whole thing about the culture and that side of it (Modern Matron)
No	5	It might make me more likely to fill it in if I thought any of them had any effect on anybody … because I don't really think they do (SHO)
		Ha, the million dollar question. In the ideal world it would. I don't know that I've ever seen any change from incident forms (Specialist Registrar)
Don't know	4	I have no way of knowing whether it does or not but I would like to think so (Nurse Manager)
Mental health		
Yes	11	I think it does. I think there are systems you can put in place to try and prevent future … and I think that is the case. It does happen (Team Leader)
		I think it informs practice (Nurse Advisor)
Yes (with reservations)	12	Yes, generally speaking I would say that, but I think it is a system that can improve (Nurse Manager)
		Improvements, yes, to the team, but how is it shared to the rest of the trust? (Clinical Nurse)
		Eventually (laughs). I think there is still a gap and I don't think we've closed the loop and I think it can be a bit hit and miss (Nurse Manager)
No	7	A lot of people seem to be spending a lot of time doing investigations which I'm not sure what the outcome is … you can flood people with information and contradictory messages and … you do have to ask that question: how much of this is actually leading to any change of practice? (Consultant)
Don't know	2	Reporting. I don't know, I just don't know (Occupational Therapist)

$^a n$ refers to the number of participants who made this response.

teams involved. In both hospitals, interviewees said that balancing the need for accountability and a no blame culture was sometimes challenging.

Investigation of incidents. Table 3 shows the challenges that staff discussed in relation to conducting investigations. The lack of dedicated time and resources was often mentioned as a major problem in conducting investigations. Respondents in mental health also discussed the difficulties of identifying the causes of incidents and, therefore, of determining the appropriate actions to prevent a similar incident from occurring again. Serious incidents in this hospital were reported in the media and the high public profile created pressure on staff members who were responsible for conducting an investigation.

Implementation of changes. Table 4 shows that many interviewees thought that a major factor hindering implementation of changes in both hospitals was the poor quality of the recommendations made in investigation reports. Staff members said that reports often contained too many recommendations,

which could be contradictory, or were too simple, leading clinicians to dismiss the recommendations as not likely to be effective. Changes often spanned departments, requiring co-ordination between teams to implement changes. An additional complexity in mental health was that some departments were geographically separated. Clinicians involved in implementing the changes were often not consulted about the feasibility and potential benefits of recommended solutions.

Evaluation of changes. Interviewees were asked what methods were used for evaluating changes implemented to improve safety and these are shown in Table 5. In both hospitals, there was reliance on informal methods of evaluation such as team discussions, management oversight and spot checks. Only two formal evaluation methods were mentioned—audits and scorecards, but even those who mentioned these methods were not necessarily using them.

Table 2 Examples of action taken following incident reporting

Organizational level	Action	Acute hospital examples	Mental health hospital examples
Hospital wide	Change of practice	• Introduction of standardized suction sets • Change to labelling of blood products in the laboratory to prevent errors	Development of a new absconding/observation pro forma
Hospital wide	Co-ordination of corrective action across departments	• Guidelines drawn up by two different divisions for draining fluid for palliation • Setting up an inter-departmental working group to investigate the pathway for pregnant women with pain	
Team	Change of practice	• Improved access to intubation drugs • Change of policy to enable staff to take action without waiting for the arrest team in the event of decompensation • Change of policy around clerking and admission	• Transfer of a drug trolley into a clinical room to prevent medication errors • Change of referral forms • New assessment forms for evaluating staff competency in assessing patient deterioration
Team	Reinforce good practice	Request that frontline staff re-read protocols	Emphasize current practices that are effective
Team	Goal-setting to reduce particular types of errors	• Introduce a post falls review form • Focus on reducing blood borne virus infections and sharps injuries	Introduction of zero tolerance policy in medication error
Team	Gain more resources	• Increase in staffing levels (i.e. consultants) • Provision of more cots	• Appointment of security officer in case of assault • Investment in facilities (e.g. security door)
Team	Measure of team culture and openness	• Assurance mechanism for checking if nurses are performing to our code of conduct for reporting of incidents • Barometer of staff vigilance	Change in reporting rates as a sign of improvement in culture
Team	Better understanding of risk	• Indicator of what's happening on the wards • Functions as an audit and a trigger for change of practice • Organizational tool to capture the catalogue of risks	Catalogue of risks in the unit
Team and individual	Increase vigilance/review practice	Provide sources for reflective learning	Re-evaluation of practice through writing of reports and investigations
Individual	Change of practice		• Adopting a more proactive approach with a high risk patient who had stopped attending outpatient clinics • Improvement in clinical notes after personal involvement in an serious untoward incident (SUI)

Table 3 Perceptions of incident investigation

Challenges	Acute care n^a	Mental health care n^a	Characteristic response
Resources—time and space	3	12	So in my office I could have five or six people in there and there's constant questions, constant interruptions [sic]. So actually not having a quiet place to go away and do your investigations and do your reports is actually a bit of an issue (Senior nurse, acute care) …it's an extra thing. So they've no actual timetable time to be free to do that. (Consultant, mental health)
Co-ordination with others	2	5	We can exchange it within teams but if it's a joint AI [Adverse Incident], it's both services that are investigating, and you get the report back from them and then they get ours back… (Consultant, acute care) I think the difficulty is that you don't do it by yourself, you're one of—or in that instance three people and you're going to interview X number of people, staff. So it's an incredibly bureaucratic process and very, very slow. (Consultant, mental health)
Poor quality of original incident report	3	1	The bit that's difficult to investigate is if it's filled in anonymously.. And sometimes that's difficult purely because you want to find out from somebody why they think, they have reported that and what they think the issue was (Nurse Manager, acute care) …it's inadequate or not clear you know what the role was, how were we involved, we were communicating with other services and so on and so forth. So I will send it back and say I need this information (Manager, mental health)
Skills, experience and input from experts	1	4	It [investigation] can actually bypass me, which I think is a bit odd. We had a death of a child … and I wasn't involved in that investigation at all. It was done at a higher level and then presented to the trust meeting (Consultant, acute care) Some of the managers involved have raised concerns that they don't have adequate training. The rota means that everybody has to do it (Consultant, mental health)
Balance between blame and feeling responsible	2	2	They really felt that they were being blamed. And the more you do it, the more you do the investigations the more, 'Oh, it's just another investigation. Right, we need to…'. I don't want people to go to the other extreme though because I think it's quite hard to get that balance between, Right, we're not blaming but actually we're accountable as well, aren't we, for what we've done (Modern Matron, acute care) I know that the people who write SUIs [investigations] work very hard not to blame and not to use names … (Team Leader, mental health)

$^a n$ refers to the number of participants who made this response.

Feedback to staff. Staffs who were not formally involved in the incident review process generally received little information about incident reports and related outcomes, and this was highlighted as a weakness by many respondents in both hospitals. In the mental health hospital in particular, many respondents said they did not receive any information about incidents and did not know how the system operated. Many interviewees discussed the difficulties of communicating this information in an effective way.

Discussion

The overall aim of this study was to examine how incident reporting in an acute care and a mental health hospital works in practice by examining staff perceptions and experiences. Although this study did not evaluate whether changes implemented as a result of incident reporting improved safety, it revealed detailed information about staff perceptions of whether safety improved, and revealed the complexities

Table 4 Factors affecting implementation of corrective action

Theme	Acute care n^a	Mental health care n^a	Characteristic response
Poor quality of recommendations—too much detail, too simple, lack of frontline engagement	22	21	It sometimes can seem so simple, some of the actions, that people think, well this is too simple an answer, and so they ignore the issue (Consultant, acute care) There are also some problems around recommendations which are not SMART [specific, measurable, achievable, realistic and timely] and therefore very hard to actually track and trace… (Consultant, mental health)
Resources—high staff turnover, workload, time for training	12	11	Training, there are often action plans linked around training, but training then links to time, it links to cost, it actually links to, how do we make sure that the ward is covered so that we can take these people out of that environment for training as well? (Nurse Clinical, acute care) If that's all I could have concentrated on for two months then it could be in and done and dusted. But it isn't because so much is being asked of them. (Team Leader, mental health)
Engagement with frontline staff	5	9	I would suggest that the biggest problem is communicating with the staff about the need to make the change, …and to get their compliance with the change (Manager, acute care) I suppose one problem with the time is that the solutions or the SUI findings are generated not by the staff team concerned, they're generated by the people coming in from outside, so they're not actually owned as solutions by the staff team. They're imposed on them, if you like (Consultant, mental health)
Organizational issues—spanning boundaries of specialty, complexity	4	8	What we try and do is, each consultant has got a specific area, specific specialty that they liaise with. So for example we've got somebody who links into intensive treatment unit (Nurse Manager, acute care) Coordination between different units is very important but it's very, very difficult to achieve… it's very difficult to get things cascaded down. Because it's such a big department (Team Leader, mental health)
Use of performance management—e.g. targets, score cards	6	3	Performance graphs, we're used to that here; hand washing; heat maps; developing visual ways of saying … having them as performance standards in the department, I've used that before in other trusts, so it's a weekly target, but perhaps, playing one shift off against another, it's a competition, there are various ways to get people to get involved and see what the issues are, so turning the AIs identified into something that's useful for management to achieve a goal (Consultant, acute care) We have very recently strengthened the link between the SUI Committee and the trust through the mechanism of performance management and, increasingly now, the way to get things done within the trust is to use the Performance Management Structures … (Consultant, mental health)

$^a n$ refers to the number of participants who made this response.

involved in using incident data in healthcare to improve practice.

There are three important contributions to knowledge from this study. First, the study found evidence that incident reporting was perceived by most staff as having a positive effect on safety, not only by leading to changes in care processes but by changing staff attitudes and knowledge. The knowledge generated by incident reports was used instrumentally to change practices and also led to conceptual changes [32]. Instrumental changes included changes in care

Table 5 Methods for evaluating interventions

Theme	Acute care n^a	Mental health care n^a	Characteristic response
Informal methods—keep on meeting agenda, management oversight, risk officer spot check	14	17	We review the action plans at the Risk Meeting, so we actually review the stages of their implementation but we also are reviewing the trends of the incidents reported. So every three months we will compare, there was, I would say one hundred and six medication errors, last three months there has been ninety six ....' (Nurse Clinical, acute care) You could mention it in supervision or we could talk through it in team meetings so, various ways. (Area Manager, mental health)
Audit	16	8	Yeah, basically, you need to do an audit. Well we keep our eyes open, we've got quite a good audit team (Practice Development Nurse, acute care) Well the only way you can do this is by an audit. We haven't done one, so no. So I think maybe that's something we need to look into, but I think we're all very busy with audits already and other things and this is probably not something that's very high in our agenda.... (Consultant, acute care)
Evaluation tools—scorecard	5	2	Because fractured neck of femur is part of our score card, and since then in fact we have had our operations done within twenty four hours and not within forty eight hours so that is how we have seen the change (Nurse Manager, acute care) We're currently looking at two particular ward safety issues, which are absconsions and threats or verbal or actual violence... So we actually do something called a Safety Cross ... Basically it's got the month and every day record at the end of the day at midnight ... whether or not there has been an incident that day... (Nurse Manager, mental health)

$^a n$ refers to the number of participants who made this response.

processes, management practices and individual behaviour. Conceptual changes included changes in risk perceptions and awareness of the importance of good practice.

These findings suggest that incident reporting can be viewed as a tool that focuses attention on safety and has multilevel influences on organizational, team and individual practices, knowledge and attitudes. Positive effects on worker awareness and knowledge are likely to be as important for safety as improved processes. Traditional engineering models of incident reporting may need to be expanded to encompass the cognitive and attitudinal dimensions of change discovered in this study.

Second, the study found that there are difficulties in using incident reports to improve safety in healthcare. Incident reports do not unambiguously provide data on how to improve safety. This study identified challenges at all stages of the incident reporting process: reporting, investigation, implementation of actions, evaluation of actions and feedback to staff. In operating the incident reporting system, staff grappled with the inherent complexity of the organization and the processes involved. In mental healthcare, there was an added layer of complexity involving the challenges of predicting and controlling risky patient behaviour.

Third, the study identified differences in the organizational systems developed in the two hospitals to review reported incidents, which could be linked to the differences found in attitudes to incident reporting. The acute care hospital used a system of risk managers embedded in clinical teams. Clinical staff were directly involved in reviewing incidents, and the interview data showed high levels of knowledge and ownership of the incident reporting system. In the mental health hospital, fewer clinicians were involved in reviewing incidents, and mental health clinicians were less willing to use the system and more sceptical of its value. Similar findings have been reported in relation to the reporting of incidents of assault in mental healthcare [14].

Staff perceptions of the types of risks encountered in each setting may have shaped their views of the effectiveness of incident reporting. Incidents involving the behaviour of patients in mental healthcare might not be amenable to the kind of causal analysis applied to other types of adverse incidents, suggesting that incident reports alone might not be the best method for learning about how to prevent such behavioural incidents [32]. The interesting question is whether there are system factors in these incidents that could be identified, for example by interviewing persons that were involved, and which could inform improvements. Increased clinician involvement in reviewing incidents in mental health could help to reduce blame and enable a focus on the influence of the care system on behaviour and incidents [33].

There were several limitations to this study. First, it is possible that the views of the participants we interviewed are not representative of the hospital staff in general. They volunteered to participate and so may have had a more positive attitude to incident reporting than other members of staff, although our interviews still elicited information about problems associated with incident reporting. Moreover, because we wanted to recruit staff who had experience with reviewing and learning from incidents, or had knowledge of how the incident reporting system operated, many of the participants were in leadership or managerial positions. Few frontline staff members participated because they did not have knowledge about incident reporting. Other studies have highlighted the importance of providing feedback to all staff about patient safety incidents, which this study underlines [3].

It is not clear whether the results of this study would generalize to other hospitals and other healthcare settings. The hospitals we studied were large teaching hospitals with well-developed systems for, and rates of, incident reporting. Results in smaller hospitals and those with a less well-developed reporting culture might be different. The same applies to other healthcare sectors such as primary care and care homes, and to healthcare organizations in other areas and other countries. However, all healthcare sectors, both in Britain and beyond it, face challenges to improve patient safety. The results of this study highlight both the benefits of working to improve incident reporting systems and the challenges that need to be addressed to fully realize their potential benefits.

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Appendix 1 Coding framework

Theme	Sub-theme
Communication	Between departments Between disciplines Meetings
Corrective action	Agreement with corrective action Criteria for corrective action Problems with implementation Referral to trust-wide body Verifying implementation Who's involved in corrective action
Impact of reporting system	Can be improved Improves practice
Investigation	Description of investigation Problems and challenges
Professional development	Barriers to improvement Disciplinary and remedial Motivation Performance management local Professional forums Training and supervision
Reporting system process	Alternative routes Completeness of reporting Easy or hard to complete Feedback to reporter Feedback to team Informal route Misuse of system
Risk	Differs between settings Risk assessment formal Risk assessment informal Risk register What risk
Trust-wide effort in patient safety	External bodies / national policies Information from trust-wide No-blame culture Performance management trust-wide Risk manager Trust-wide dissemination methods