Identifying, understanding and overcoming barriers to medication error reporting in hospitals: a focus group study

Nicole Hartnell,1 Neil MacKinnon,2 Ingrid Sketris,1 Mark Fleming3

ABSTRACT

Objectives: The under-reporting of medication errors can compromise patient safety. A qualitative study was conducted to enhance the understanding of barriers to medication error reporting in healthcare organisations.

Methods: Focus groups (with physicians, pharmacists and nurses) and in-depth interviews (with risk managers) were used to identify medication error reporting beliefs and practices at four community hospitals in Nova Scotia, Canada. Audio tapes were transcribed verbatim and analysed for thematic content using the template style of analysis. The development and analysis of this study were guided by Safety Culture Theory.

Results: Incentives for medication error reporting were thematised into three categories: patient protection, provider protection and professional compliance. Barriers to medication error reporting were thematised into five categories: reporter burden, professional identity, information gap, organisational factors and fear. Facilitators to encourage medication error reporting were classified into three categories: reducing reporter burden, closing the communication gap and educating for success. Participants indicated they would report medication errors more frequently if reporting were made easier, if they were adequately educated about reporting, and if they received timely feedback.

Conclusions: Study results may lead to a better understanding of the barriers to medication error reporting, why these barriers exist and what can be done to successfully overcome them. These results could be used by hospitals to encourage reporting of medication errors and ultimately make organisational changes leading to a reduction in the incidence of medication errors and an improvement in patient safety.

BACKGROUND

Medication errors (‘any preventable event that may cause or lead to inappropriate medication use or patient harm while the medication is in the control of the healthcare professional, patient, or consumer’1) have a substantial impact on the health of individuals, organisations and the healthcare system. Depending on data collection methods, the incidence of medication errors has varied from one error per patient per day in hospitalised patients2 to 24 errors per 100 admissions4 or approximately 20% of all medication doses administered.5 6 In their recent systematic review of the incidence of medication errors in the intensive care unit, Wilmer et al found that incidence rates vary widely in the published literature partially because of a lack of a standard definition for medication errors and standard methods for detecting them.7 A systematic review of 29 papers yielded an incidence rate of between 8.1 and 2344 medication errors per 1000 patient-days. That review strengthens the belief that the number of errors that occur in the daily provision of healthcare is likely much higher than currently thought, as Barach and Small estimate that 50–96% of errors are under-reported.8

While the clinical impact of medication-related problems is undoubtedly the main concern, the economic impact of these problems cannot be ignored. Medication errors have been associated with increased length of stay (4.6 days) and excess medical costs (US$5857) for hospitalised patients in the USA.9 Annual costs of medication errors were calculated to be US$3.5 billion in 2006.2 A broader estimate of the cost of medication-related problems (not just medication errors) was reported in 2001, when drug-related morbidity and mortality was estimated to cost the US healthcare system US$177.4 billion each year.10 In the same year, estimates were made quantifying the
cost of preventable drug-related morbidity in older adults to the Canadian healthcare system to be $C10.9 billion annually.11

Barriers to reporting are individual (fear, motivation, health), organisational (workload, staffing levels, policies and procedures), and cultural (inevitability of error, habit, collegial bond).8 12–30 Error reporting provides data that can be used to identify areas for progress, but without formal reports of errors opportunities to improve patient safety are hindered. Knowledge of what inhibits reporting could ultimately result in improved patient care.31 While numerous studies have examined the nature and rate of medication errors and adverse events, few studies have examined the determinants of these errors. What individual, organisational and cultural aspects are in place that allow the barriers to be in existence? Limited information is available on why these barriers still exist or about methods to successfully overcome these barriers. Such information must be obtained before improvements in patient safety can be realised, through lessons learned from the reporting of medication errors.

The objectives of this study were to identify incentives, barriers and facilitators to encourage medication error reporting as perceived by front-line hospital staff, to understand why certain factors serve as barriers, and to explore how some hospitals have successfully removed barriers.

METHODS

Because this research project was designed with the goal of comparing practices among different organisations that may or may not have been successful at breaking down barriers to medication error reporting, retrospective and prospective data helped construct an in-depth comparison of the medication error reporting beliefs and practices at four community hospitals in Nova Scotia, Canada.

An important component of qualitative research is the use of theory to inform and guide the process.32 Barriers to medication error reporting have been identified as individual, organisational and cultural. Thus, it was necessary to use a guiding theoretical framework that recognised the contribution of each of these three types of forces on error reporting. Safety culture theory recognises the role of individual, organisational and cultural factors on overall safety of an organisation.33 An organisation’s safety culture can be likened to its personality, is stable over time, and is independent of the current members of the organisation.34 Safety culture theory guided and informed each stage of this research.

Four community hospitals, of comparable size and demographics, were invited to participate based on data obtained using the Institute for Safe Medication Practices Canada (ISMP Canada) Hospital Medication Safety Self-Assessment (MSSA) tool.35 Data from this tool differentiated between hospitals that scored high and hospitals that scored low on specific questions related to safety culture and incident reporting. Of the four hospitals selected to participate in the study, two scored high and two scored low.

Key informant interviews and focus groups were completed with members of each study hospital. Guides for the interviews and focus groups were created and used to ensure uniformity across interviews and focus groups with respect to the information gathered. These guides are given in online appendices A and B, respectively. The director of risk management from each hospital participated in an in-depth interview with the primary investigator (NRH) to assess error reporting in each hospital from a managerial perspective. The interviewees were asked questions specific to the incident reporting systems at each hospital, including the number of reports filed each year, mechanisms for providing feedback to staff, the presence or absence of patient safety committees, the presence or absence of medication incident reporting policies, staff training or education about what should be reported, when to report, how to report, and the presence or absence of automated reporting systems, drug distribution systems, and electronic medical records.

One focus group consisting of physicians, pharmacists and nurses was conducted at each hospital to gain the perspectives of front-line healthcare providers. Attempts were made to recruit three physicians, three nurses and three pharmacists who were interested in the topic of medication safety for each focus group. No efforts were made to control for gender or age of participants. The key informant interviews and focus groups were audio-taped and transcribed verbatim by an independent third party.

Ethics approval for this project was sought and received from the Dalhousie University Health Sciences Human Research Ethics Board and from the research ethics board at each of the four study hospitals. Each participant signed an individual informed consent statement prior to the commencement of the focus groups and interviews.

Guided by the template style,36 the analysis process commenced with the creation of a preliminary code manual. As suggested by Crabtree and Miller37 and Miles and Huberman,38 the preliminary codes were created by taking information on barriers and facilitators to encourage medication error reporting from the published literature. Other preliminary codes were created based on the research objectives and study propositions. The resultant code manual was revised
throughout the analysis process by adding new codes and deleting or collapsing existing codes when appropriate. The initial code manual contained more than 40 codes. After the first round of coding all the transcripts, any codes that were included in the initial code manual that were not used were discarded. In addition, new codes were added and some were collapsed. The final code manual contained 36 codes.

After creating the initial code manual, all transcripts were imported into ATLAS.ti, a qualitative data analysis software program, to assist with coding and data management. Major themes were developed by examining coded segments of the transcripts and noting the most frequent or seemingly most important pieces of information. This study was completed as part of the first author’s PhD thesis. As such, one person (NRH) conducted the majority of the data collection and analysis. Legitimating the coding process was done by repeatedly returning to the text in an effort to confirm the internal consistency of coding and interpretation between transcripts (ie, between different focus group transcripts and between different interview transcripts) and by ‘check-coding’. Check-coding is described as the process of coding a few pages of a transcript initially and then re-coding the same pages a few days later to assess code-recode reliability, and is thought to be very useful when only one person is involved in the coding of textual data.38 Finally, every effort was made to adequately and accurately describe the perspectives and voices of the research participants. This was done by repeatedly listening to the audiotapes of the interviews and focus groups and reading the transcripts in an effort to get a feel for what the participants said. Particular attention was paid to the tones of voice, inflections, etc, and how these nuances corroborated with the text of the transcripts.

The results of one component of the overall study are presented below—the thematic analysis of transcripts from the four multidisciplinary focus groups and examples of corroboration of these data to information gathered from the in-depth interviews.

RESULTS

Summary information about the multidisciplinary focus group participants and four study hospitals can be found in Table 1.

The focus groups were designed to identify thoughts on multiple aspects of medication errors from the perspectives of front-line healthcare professionals. The coding of transcripts from the group discussions resulted in identification of themes in three areas: incentives for medication error reporting, barriers to medication error reporting, and facilitators to encourage reporting.

Incentives for reporting were factors that encouraged healthcare professionals to report errors at the time of the study as grouped into three themes. Patient protection highlighted incentives to reporting mentioned specifically for the benefit of the patient, and included reporting for immunity from legal action and out of fear of censure (harsh blame, criticism, or strong disapproval). “If you are a bad boy, you tend to not want to see it. If you know there is something going on and you can see it, and somebody else is (watching) you are more likely to report because you can be outside of the sphere of the big whip” (physician). Provider protection focused on incentives to reporting that included reporting to follow the rules or ensure accountability within the organisation, and reporting severe errors because of the belief it was expected.

Table 1 Study hospital and focus group information

<table>
<thead>
<tr>
<th>Type of hospital</th>
<th>Hospital A</th>
<th>Hospital B*</th>
<th>Hospital C</th>
<th>Hospital D†</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. beds</td>
<td>Community</td>
<td>Community</td>
<td>Community</td>
<td>Community</td>
</tr>
<tr>
<td>ISMP Canada medication safety self-assessment quartile</td>
<td>&lt;100</td>
<td>&lt;100</td>
<td>100–299</td>
<td>100–299</td>
</tr>
<tr>
<td>Number of focus group participants</td>
<td>Pharmacists: 2</td>
<td>Pharmacists: 0</td>
<td>Pharmacists: 3</td>
<td>Pharmacists: 2</td>
</tr>
<tr>
<td></td>
<td>Physicians: 3</td>
<td>Physicians: 1</td>
<td>Physicians: 3</td>
<td>Physicians: 2</td>
</tr>
<tr>
<td></td>
<td>Nurses: 3</td>
<td>Nurses: 5</td>
<td>Nurses: 3</td>
<td>Nurses: 3</td>
</tr>
<tr>
<td>Length of focus group (min)</td>
<td>65</td>
<td>60</td>
<td>~60</td>
<td>60</td>
</tr>
</tbody>
</table>

*This hospital did not have a pharmacy on site; therefore, no pharmacists were present at the focus group.
†Two pharmacists and one pharmacy technician participated in this focus group.
38 ISMP, Institute for Safe Medication Practices.

Barriers to reporting were grouped into five themes. **Reporter burden** barriers represented those that specifically dealt with various practical aspects of the medication error reporting process that made reporting difficult for healthcare professionals, including the extra time and work involved and unfavourable characteristics of incident report forms. A pharmacist said, “One time after I got one done (a report), I thought this is it. I am not doing this again because it’s too much. It’s just a lot of work.” **Professional identity** highlighted barriers to medication error reporting that might have threatened the professional identity of the reporter, and included a hesitancy to report someone else’s error, a fear of appearing incompetent to colleagues or patients, and anticipated negative reactions from patients. “No (we don’t worry about responses of patients), but if you’ve got a family that has historically threatened lawsuits and has been very difficult to deal with and a medication error occurs...you would probably just say, ‘no way, it’s not worth it. I’m not touching that one.’ And we would all just kind of go along with that” (nurse). **Information gap** provided information on barriers to reporting specifically resulting from a lack of information about the process in general, including guidelines on what to report, how to report and why to report medication errors. **Organisational factors** included barriers to error reporting that were related to how things were done within the organisation as a result of reporting. These barriers were the perception that the system is ineffective because nothing happens anyway, a lack of trust about how error reports might be used, and an assumption that reporting an error is someone else’s responsibility. **Fear** included barriers that provided evidence of the safety culture at play within the organisation, such as fear of reprisal and fear of exposure to malpractice suits. Table 2 summarises the codes identified within each theme.

After identifying both incentives and barriers to reporting medication errors at each study hospital, focus group participants were asked how their hospital could encourage more reporting. These facilitators were grouped into three themes. **Reducing reporter burden** focused on how to make the medication error reporting process easier, and thus more likely to occur. Three of the things that participants felt served as barriers to medication error reporting were the extra time it takes to report, the extra work it takes to report, and frustrations with cumbersome incident report forms. Not surprisingly, some of the suggestions for how reporting could be facilitated within these organisations focused on reducing reporter burden by making reporting easier, quicker, and in some instances, safer. The general feeling among participants who suggested making changes to the actual incident report form felt it was too

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**Table 2** Incentives and barriers to medication error reporting in four Nova Scotia hospitals as identified by focus groups of healthcare professionals

<table>
<thead>
<tr>
<th>Theme</th>
<th>Incentives to reporting</th>
<th>Barriers to reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient protection</strong></td>
<td>• Improved care/improved patient safety</td>
<td>• Extra time required to report</td>
</tr>
<tr>
<td><strong>Provider protection</strong></td>
<td>• To prevent patient from receiving wrong medication</td>
<td>• Extra work required to report</td>
</tr>
<tr>
<td><strong>Professional compliance</strong></td>
<td>• Provides immunity/protection from legal action</td>
<td>• Cumbersome incident report forms</td>
</tr>
<tr>
<td><strong>Information gap</strong></td>
<td>• Fear of censure (harsh criticism or blame)</td>
<td>• Hesitancy about ‘telling on’ someone else</td>
</tr>
<tr>
<td></td>
<td>• Perceived severity of error (more severe errors are more likely to be reported)</td>
<td>• Fear of loss of reputation/perceived incompetence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Anticipated negative attitudes from patients</td>
</tr>
<tr>
<td><strong>Organisational factors</strong></td>
<td>• Follow the rules or policies</td>
<td>• Perceived severity of error (less severe errors less likely to be reported)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensures accountability</td>
</tr>
<tr>
<td><strong>Fear</strong></td>
<td></td>
<td>• Ineffective reporting system</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lack of trust about how error reports will be used</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Reporting is the responsibility of someone else</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fear of reprisal from management/administration</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Fear of exposure to malpractice suits</td>
</tr>
</tbody>
</table>
long and not user friendly, and as a result, took too long to complete.

*Bringing the communication gap* focused on how to improve communication about errors among all levels of staff, from the senior management team to the health-care professionals directly caring for patients. One of the barriers to medication error reporting identified by participants in the four focus groups was the feeling that nothing happened as a result of reporting, or that the reporting system itself was ineffective. In short, some participants felt that they did not receive feedback from reports so administration must not be doing anything with the reports. In this same vein, when asked what could be done to improve or encourage the reporting of medication errors, many participants said they would like to receive some sort of feedback after the reports had been submitted. In essence, participants indicated a desire to receive feedback about errors that were reported, but felt that they were not getting any. Interestingly, during the in-depth interviews with the risk managers, each said they provided feedback in some form either to the unit or department managers or directly to the front-line staff, but the focus group participants gave conflicting information and indicated that either they did not receive feedback in any form, or did not receive direct feedback. After analysing the in-depth interviews of risk managers and focus group transcripts, it was discovered that the four hospitals do provide feedback in some form, but often this feedback is either not received or not recognised by the health-care professionals on the front line. This discrepancy documented that, at the time of this study, there existed a gap in communication at each of the study hospitals. Bridging this communication gap could positively facilitate the reporting of medication errors at the study hospitals.

*Educatings for success* highlighted the perceived importance of and suggestions for education and training about all aspects of the medication error reporting process. Focus group participants expressed a desire to receive education about all facets of the reporting system, including what to report, how to report, and why to report, and felt this education would encourage them to report errors more frequently. Similar to the gap in communication highlighted previously, there also seemed to be a disconnect between senior administration and front-line staff in the area of education. In essence, during their interviews, the risk managers indicated that staff members are educated about reporting via various avenues, particularly during new staff orientation, but the focus group participants claimed they did not receive any formal education about reporting. As one participant, a pharmacist from hospital D, said, “The right people aren’t hearing the messages. Right? It’s going to one level and that is where it stops.” Although the risk managers felt education was getting passed on from managers to front-line staff, the general feeling among focus group participants was that education about error reporting was delivered by colleagues when needed in a ‘learn as you go’ format.

**DISCUSSION**

One purpose of this study was to gain a better understanding of what factors within a hospital setting either encourage or discourage front-line healthcare professionals from reporting medication errors when they happen. This information is essential to developing procedures to improve patient safety. This study adds a unique dimension to the current literature studying incentives, barriers and facilitators in several ways: it focused specifically on medication errors rather than other types of medication incidents (such as adverse drug reactions or drug-related problems); it included pharmacists whereas the previously published literature did not; it is from a Canadian perspective; it used a qualitative approach rather than surveys; and it approached this issue in a multidisciplinary way rather than gathering information from one group in isolation. Since the completion of this study, others have included pharmacists in their research on this topic. Pharmacists are in an ideal position to contribute to, and possibly take leadership of, the expanding arena of medication error reporting and its related components.

The thematic analysis of the focus group transcripts resulted in development of various themes related to incentives and barriers to medication error reporting. The incentives that were not found in previously published literature on this topic were that the patient received the wrong medication, fear of censure, and following the rules. The remaining incentives to reporting identified by the participants of this study (improved care/improved patient safety, provides immunity/protection, and ensures accountability), along with a number of other incentives to reporting that were not mentioned in this study, have been previously identified in the published literature.

Another incentive for medication error reporting identified by these participants, perceived severity of the error, was not explicitly identified in the literature as an incentive to reporting, but was implied by Lawton and Parker when they published results showing that healthcare professionals are most likely to report a medical incident to a colleague when the outcome is ‘bad’ than when the outcome is ‘poor’. Similarly, ‘good’ outcomes were less likely to be reported than ‘poor’ outcomes.
Each of the barriers mentioned by the participants of this study could be identified in previously published literature. This highlights the fact that, although information about barriers to medication error reporting is available, these barriers still exist. Also, the findings from this study show that each healthcare organisation is a unique entity, with unique circumstances and factors at play that influence the error reporting practices and beliefs of its members.

Interestingly, all three facilitators for change (Reducing reporter burden, Bridging the communication gap and Educating for success) were identified at each of the four study hospitals, indicating that even though the issues surrounding medication error reporting vary between organisations, some seemingly simple changes could result in improved error reporting.

For people to report errors, the process has to be safe, easy and effective. In essence, when people report errors they should not have to worry about personal or professional liability in connection with errors not involving gross negligence, they should receive quick and useful feedback about reports submitted, and the actual reporting process should be easy to understand and use.43 This sentiment was shared by the participants of this study, as evidenced by the nature of the incentives and barriers to reporting that were identified, and the positive facilitators suggested by the front-line healthcare professionals: making the reporting process safer, easier and more effective. To make the process easier, participants from some hospitals asked for revised incident report forms, while others simply asked for more accessible forms.

Improved communication and improved education were the two changes participants seemed to want the most. Positive strides in these areas could make the reporting process safer and more effective for reporters. Better communication through direct, timely and department or organisation specific feedback was requested by participants at each of the four study hospitals. Many participants voiced frustration that they did not receive feedback about error reports that had been submitted. As the discussions progressed, some of these participants realised that they did in fact receive feedback but it was often indirect so they were unaware that changes made were a direct result of reported errors. Sometimes information was seemingly transferred from the risk manager to the unit or department managers, but then not passed on to the front-line staff. In other instances, feedback was in fact received by front-line staff but was not recognised as such at the time. An important finding of this research because it highlights an area where relatively simple changes in practice could have a meaningful impact on medication error reporting. Furthermore, as the number of healthcare professionals prescribing for a patient increases (physicians, pharmacists, dentists, optometrists, nurse practitioners, etc), it will be necessary to look at team processes and also how best to communicate errors in a team environment.

The other request participants had with respect to the facilitation of error reporting was education. Participants wanted education on how to report (especially in organisations where the incident report form was thought to be confusing) but even more so on why to report. Participants felt that they would be more inclined to report errors if their individual organisations would prove to them that medication errors are a real problem. Along these same lines, they wanted education about the importance of reporting in relation to their own departments or organisations. In addition, participants from multiple hospitals felt that education about all aspects of the reporting process could improve reporting because people might feel more confident if they knew more about why the organisation wanted reports submitted, and what the organisation did with reports once they were submitted.

Some limitations associated with this study include the subjectivity about medication error reporting held by the healthcare professionals who participated in the focus groups. Other participants could have given vastly different views on the status of error reporting at each study hospital. Multiple focus groups at each study hospital may have provided a better ‘picture’ of the status of medication error reporting at the hospitals. The small number of hospitals studied (four—all from one province) and the small number of interviews and focus groups also limits the generalisability of this research. That stated, generalisability is not typically a goal of qualitative research as every case is thought to be unique. Finally, the inter-professional nature of the focus groups could have limited the participants’ willingness to share perceived barriers, although any limitations attributed to this would be minor given that the focus of the study was to identify perceived barriers to reporting medication errors and not contributing factors to the occurrence of medication errors.

CONCLUSIONS

While barriers still exist and continue to hinder medication error reporting, our study notes that the issues surrounding medication error reporting are multifactorial, complex and often institution specific. Major changes to improve the process and thus improve
medication error reporting are not going to occur overnight but will require much deliberation, dedication and resource allocation. Our study suggests that the small number of positive facilitators suggested by these study participants indicates that some fairly simple changes could make a positive difference in medication error reporting at these institutions and others facing similar challenges. Specifically, reporting should be made as easy as possible (forms should be accessible and straightforward), people should receive timely feedback about reports submitted, and people should receive up-to-date education about all aspects of the medication error reporting process at their hospitals.

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Contributors NH, NM, IS and MF conceived the study design. NH collected and analysed the data. All authors were involved in the interpretation of the data. NH drafted the article, and all authors were involved in critical revisions and approved the final version.

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Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Audio tapes, notes and unpublished data from this study are securely stored and only available to Nicole Hartnell.

REFERENCES
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