DOCTORS ATTITUDES TOWARDS MEDICATION ERRORS AT 2002 & 2015

ABSTRACT: ORIGINAL RESEARCH

Purpose

This paper explores the attitudes and beliefs of doctors towards medication error reporting following fifteen years of a national patient safety agenda.

Method

This is a qualitative descriptive study utilising semi structured interviews. A group of ten doctors of different disciplines shared their attitudes and beliefs about medication error reporting. Using thematic content analysis, findings were reflected upon to those collected by the same author of a similar study 13 years before (2002).

Findings

Five key themes were identified: lack of incident feedback, non- user friendly incident reporting systems, supportive cultures, electronic prescribing and time pressures. Despite more positive responses to the benefits of medication error reporting in 2015 compared to 2002, doctors at both times expressed a reluctance to use the hospital's incident reporting system, labelling it time consuming and non-user friendly. A more supportive environment however where error had been made was thought to exist compared to 2002.

The role of the pharmacist was highlighted as critical in reducing medication error with the introduction of electronic prescribing being pivotal in 2015.

Value

To our knowledge, this is the first study to compare doctors' attitudes on medication errors following a period of time of increased patient safety awareness. The results suggest that error reporting today is largely more positive and organisations more supportive than 2002. Despite a change from paper to electronic methods, there is a continuing need to improve the efficacy of incident reporting systems and ensure an open, supportive environment for clinicians.

INTRODUCTION

Reporting Error

In 2000, the report *To Err is Human* (Committee on Quality of Health Care in America) outlined that more people died annually from medication errors than from workplace injuries. It stated that a comprehensive approach to improving patient safety was required from improving knowledge to breaking down cultural barriers.

Medication errors can occur at any point in the process of medicines use, from prescribing to administering to dispensing and monitoring. As the single most common preventable cause of adverse events in clinical practice, (European Medicines Agency, no date) by understanding precipitating factors that lead to medication errors, patient safety can be improved and clinical outcomes optimised.

To learn from any mistakes, identify underlying causes, and seek out opportunities for change, this commonly involves use of an incident reporting system enabling staff to communicate any safety concerns and errors arising.

An Organisation with a Memory (Department of Health Expert Group) in 2000, in the UK highlighted that National Health Service (NHS) reporting systems provided a 'patchy and incomplete picture of the scale of serious failures' and hence a lack of capacity to learn from and prevent future errors. It highlighted the need for unified mechanisms for reporting and analysis when things go wrong, a more open culture in which errors can be reported and that necessary changes are put into practice.

The National Patient Safety Agency (NPSA) was thus established in the UK in 2001, launching a nationwide incident reporting scheme. It is now the largest database in the world of patient safety incident reports submitted by organisations across the NHS for purposes of learning. In a review, (Cousins *et al.,* 2012) medication error was the second highest category of all incidents reported.

Despite this, National Health Service England highlighted the need for further improvement in reporting and subsequently published an alert (Medicines and Healthcare Regulatory Agency, 2014) to improve the quality and quantity of medication error reports to maximise learning. At this time, the World Health Organisation also published a template with a minimum set of common data categories to facilitate reporting ('Preliminary version of minimal information model for patient safety', 2014).

Barriers to error reporting

In order to realise NHS England's aim in improving medication error reporting for learning purposes, it is important to understand the difficulties faced in achieving this.

It is well recognised that there are considerable barriers to the successful use of incident reporting systems and significant levels of under-reporting, especially amongst physicians. The nature of the barriers to error reporting amongst doctors has been well documented (Kaldjian *et al.*, 2006; Lawton and Parker, 2002; Waring, 2005; Vincent *et al.*, 1999) and is seen to vary from practical issues such as time to more cultural issues like fear of retribution or loss of peer respect.

Kaldjian *et al*. (2006) sought to develop a system to comprehensively classify the factors that affect voluntary disclosure of errors by physicians. Barriers were classified into four over-arching groups. The first being attitudinal barriers where doctors doubted the benefits of reporting or believed others did not need to know of one's errors. The second group of barriers was helplessness such as lack of confidentiality or immunity after disclosure and well as a lack of support from institutions or colleagues. The third major barrier was cited as uncertainties in the actual error reporting and the final classification of barriers to error reporting was fear and anxiety such as professional discipline or loss of reputation.

Despite changes and developments in incident reporting systems across time there still remains unease about its full learning potential. In comparing the attitudes of consultants, nurses and managers towards one electronic system, consultants had the most negative beliefs and perceptions of its utility and efficacy in reducing the prevalence of medication errors. Unsurprisingly therefore, consultants were the participant group that used the system the least (Walsh *et al*., 2010)

Movement from a 'no blame culture' towards a 'fair blame' or 'just culture' has been discussed within healthcare contexts over the years (Khatri *et al*., 2009), yet there remains repeated emphasis on the urgent need to transform healthcare culture and create an environment where disclosure is the norm and clinicians feel supported by both their colleagues and institutions (Department of Health, 2015). This supports Cohen's (2000) claim that reporting will only occur when practitioners feel safe to do so and it becomes a culturally accepted activity within healthcare.

Similarly, studies on the views and beliefs by doctors on medication error reporting (McArdle *et al.*, 2003; Sanghera *et al.*, 2007; Hartnell *et al.*, 2012) highlight both incentives for reporting and barriers. McArdle's study found that whilst doctors believed that reporting errors were important to learn from, this was not borne out in practice. Reporting was considered too time consuming to complete and errors could only be a learning experience if relevant timely feedback was given. Disciplinary action was not felt to be a barrier to reporting yet there wasn't felt to be a 'no blame culture' outside of the organisation.

No studies in relation to medication error reporting were found to have considered changes in doctors' beliefs across a prolonged period of time of raised patient safety awareness. Therefore a qualitative study was conducted and the findings reflected upon those by McArdle et al in 2002.

AIM

To explore the attitudes and beliefs of doctors toward medication error reporting via a semi structured interview and reflect upon possible differences and similarities to a similar study in 2002 on the same topic. (McArdle *et al.*)

METHOD

Setting

The study was conducted in acute healthcare trusts in the South of England.

Study Design

A qualitative descriptive study using semi-structured interviews. An interview guide addressing five overall medication safety domains was used to allow free discussion of the potentially sensitive subject matter of medication error reporting.

Sample Population

A convenient sample of 10 hospital doctors in 2015 and 15 doctors in 2002. Doctors from different specialties and grade were asked to participate by either direct email contact /letter or to volunteer following promotion at departmental meetings. Doctors from Elderly medicine, Anaesthetics, General Medicine and Paediatrics were contacted similarly to the

previous study where renal medicine doctors were also invited. These specialities were chosen for a number of reasons

including the need for dose adjustments often due to reduced organ function, close drug monitoring, the use of

polypharmacy in the elderly and a range of pharmacy service input.

Interview Process

In 2015, doctors willing to participate were provided with a copy of the participant information sheet and consent form

following ethics approval. In 2002, doctors were provided with a copy of the interview questions to allow for reflection

beforehand. Interviews were arranged via telephone or email, and participants were met at a suitable location. Interviews

were audiotaped and transcribed verbatim.

Areas of Discussion

Questions were chosen to gain insight into doctors' attitudinal beliefs and barriers toward medication error reporting within

the context of their staff grade and experience. These were grouped into five domains below:

1. *Experience of medication error reporting*, where doctors were asked when they would report an incident and who to.

   By asking participants for their personal experiences of reporting, it allowed a better understanding of how doctors

   perceive the current reporting systems and their degree of utility.

2. *Benefits, barriers and importance of medication error reporting.*

3. *Personal experience of making an error.* Doctors were asked to recall medication errors they had been involved in

   and how this made them feel professionally. This emotive line of question offered invaluable insight into the

   participants' thought process surrounding error reporting.

4. *Support by colleagues and the organisation*. Doctors were questioned if they felt supported by colleagues both

   during and after an error and whether the organisation operated a 'fair blame' approach.

5. *Methods and measures employed in practice* to reduce medication errors as well as the role of the pharmacist.

Interviews took up to 30 minutes.

Analysis

Participants' responses were examined and analysed for recurrent themes by systematically reviewing transcripts of the interviews and noting the points that were raised repeatedly. Content analysis was used for analyzing the transcripts and involved methodology as described by Hsieh & Shannon, 2005.

Initially two members of the research team independently read all transcripts and identified key phrases/words in response to each question. Secondly, the two members of the team analysed these common phrases identifying main topics and agreeing in the identification of five recurrent themes. The team members compared notes after reading independently to reach agreement. Thirdly, the primary author read the transcripts independently and identified five similar themes. The five themes were then constantly compared to the results found in 2002 (McArdle *et al.*, 2003).

Rigour

Trustworthiness of the analysis was optimized by steps taken to achieve a) credibility, b) dependability, c) transferability, and d) confirmability (Lincoln & Guba, 1985). Credibility of the findings was established by conducting multiple interviews, using a consistent interview guide, asking participants to verify their ideas, and encouraging participants to share their views. Dependability of the analysis was increased by establishing agreement between the independent coders of the transcriptions and by having more than two people reading the transcripts. Transferability of the findings was established by providing a detailed description of the sampling strategy and research methods. Finally, confirmability of the analytic process was established by keeping detailed notes about the study procedures, by reporting information regarding the agreement among the researchers on emerging themes and by verifying the described findings with the raw data and providing the direct quotes.

RESULTS

Demographic details

Ten doctors were interviewed comprising of five consultants, two foundation year 1(F1) doctors, two core trainee (CT) doctors and one speciality doctor. Doctors' duration of practice within the trust spanned from eight months to twenty years. Specialities included elderly medicine, paediatrics, anaesthetics and general medicine.

This compared to six consultants, three registrars and six junior doctors (F2 equivalent) in 2002 with one month to ten years experience in specialities- renal and elderly medicine, neonatology and anaesthetics.

Domain 1: Experience in medication error reporting - how, when and to whom would you report a medication error?

On discussing their experience in reporting medication errors, most doctors had used the electronic reporting system although one consultant mentioned that their junior would always complete this on their behalf due to lack of technological know-how.

When asked of the circumstances in which participants would report errors, there was some variance in the interpretation of the question despite all doctors knowing how to report incidents using the electronic reporting system. Some participants (from F1 to consultant) answered the question in the most literal sense, stating that they would report all errors immediately as they happened. Most participants however commented on the degree of severity, stating that if actual harm had occurred or there was potential for severe harm, these should be reported. Some doctors said that they would not formally report minor incidents with one stating that '*it's very difficult because I think our reporting mechanism is too long to report that*'. This was experienced similarly by the group in 2002 whereby incident forms were only completed for serious medication errors; otherwise they were dealt with on ward rounds and departmental meetings which was felt more effective.

The process itself was said to be ''***incredibly time consuming''*** and "***non-user friendly***", each being identified as a recurring theme. A memorable metaphor used to describe the reporting system was "*too big a sledgehammer to crack a small nut*". All the participants seemed to regard the reporting system as a largely ineffective tool due to the logistical problems presented. As a result, participants stated that it was easier for them to speak directly with colleagues involved in medication errors as this was more efficient and potentially a better learning tool.

This was seen equally in 2002 where junior doctors had said that completing paper reporting forms was too time consuming, '*big and cumbersome*' and therefore they opted to inform a senior colleague.

Incident reports were felt to be of little use to individual practitioners, with one consultant stating that '*I don't have any great faith in the reporting system*'. Reports were said to be never followed up, with reporters not receiving feedback. The **_lack of feedback_** was the third recurring theme identified within this domain and additional participants' responses can be seen in table 1. This was a similar theme in 2002 despite a change from paper to electronic reporting systems where reports also fell into '*a black hole'* and '*you can report until you are blue in the face but if you hear nothing back, what's the point*?' The idea that the reporting system fails to achieve any changes on the ground was mentioned time and again, with clinicians wondering whether a report was going to make a difference as otherwise '*you're not going to bother after a while'*. Despite this, it is important to note that several participants explained that they understood it may not always be possible to provide an in depth response to each individual entry. However, even these respondents felt that some brief information on an error report outcome would be beneficial in improving practice as well as care.

Domain 2: Benefits & importance in medication error reporting and perceived barriers.

Doctors were asked what they felt to be the benefits of reporting. All doctors expressed either the need to prevent errors recurring, to ensure overall learning or improvement of practice. Further benefits are summarised in table 2**.**

Senior doctors were able to comment on the benefits of reporting in a wider context in identifying system failures, trends and identifying where to invest resources. '*The benefits may depend on who's asking the question…. both on a local and national level… the biggest benefit is for the organisation to get an understanding of the landscape and the trend of various medication errors, primarily to look for systematic failures.'*

In 2002, participants stated more negative connotations, not recognised in 2015 whereby the emphasis was on identifying poorly performing staff. Reporting was felt to be helpful in '*weeding out incompetent practitioners'*, '*identifying those that are woefully inadequate at their jobs*'.

The participants unanimously agreed that time constraints were the principal barrier to error reporting when patient care took priority. This recurring theme of **_time pressures_** was seen in similar responses in 2002 when the importance of dealing with the error was cited as more important than form filling.

The need for a more immediate**, <u>simpler user friendly</u>,** *<u>less 'clunky' reporting system</u>* was the recurring theme in reducing any barriers to medication error reporting.

Domain 3: Personal Experience of Medication Error

Aside from one F1 doctor, all participants readily admitted to having been involved with medication errors of varying severity. When asked how these errors made them feel professionally and their effects on clinical confidence, responses ranged from emotive "*awful, I lost sleep over it*", to candid "*you feel kind of disappointed in yourself*''. Feelings of inadequacy were echoed by several of the participants.

Two doctors explained that the errors they were involved in, proved to be invaluable learning points, and despite some of the errors occurring decades ago, the lessons learnt were still poignant in their minds and that they were much more fearful of recurrence. One consultant stated that with age and experience, errors are treated as a point of reflection, with less emphasis on personal failure and shortcomings.

Similar responses were cited in 2002 although at that time there was a recognition that doctors are fallible and it was often the response of others that determined how one felt after a medication error.

There were clear fears and worries associated with medication error reporting. Participants discussed the potential effects on relationships with colleagues. Embarrassment and pride and the fear of blame were also mentioned. This ranged from worrying about stigma in the workplace if labelled a poor prescriber to more serious consequences like losing one's medical license. Junior doctors cited disciplinary action as a principal concern. One doctor had concerns about the potential complexity of being involved in an error reporting process, labelling it "*complex and convoluted"* and two feared being a scapegoat. Again, such fears were cited in 2002. Some senior doctors however felt no qualms reporting medication errors and both attributed this to the lack of "retribution culture" at the trust.

No particular themes were identified within this domain but on the whole, the experience in making an error was associated with negative emotions.

Domain 4: Support from colleagues and organisational culture

When asked about the extent to which doctors felt they had been, or would be, supported by supervisors and colleagues during the error reporting process, participants universally agreed that there was an understanding of errors. This was credited to seniors' consideration of the 'stressful' circumstances in which prescribing is often done. The fourth theme identified was one of **_a supportive culture_** where error had occurred. One junior felt that should they find themselves in a situation where they had made an error that led to patient harm, they would be supported by their seniors. Such statements were in contrast to those in 2002 where half the group felt feelings of isolation, pressure and being 'on your own' with no support.

The existence of a 'fair blame culture' within the trust was explored; almost all of the participants stated that they had not found themselves in a situation in which they would be exposed to this and as such couldn't comment in full. Despite this, most doctors felt that the trust purported to maintain a supportive work environment. Moreover, several doctors commented that a patient centred culture exists, in which teams are collectively working toward the best care for patients, not seeking to punish or blame doctors but '*get the system working right'*. One participant felt however that the situation was not the same for nursing staff.

This contrasted to responses in 2002 where there was a feeling that there was not a culture of 'no blame' in society and as such it would be difficult to cultivate within the NHS. There was felt to be support amongst peers but not beyond that.

Domain 5: Methods and measures used in practice to reduce error and the role of the pharmacist

Table 3 summarises methods doctors stated that they incorporated into their daily practice to avoid medication errors. These were varied as in 2002 but half the group said they would check doses before prescribing using information sources such as the BNF (British National Formulary). Similar responses were noted in 2002 although calculations would equally be double checked.

although Environmental factors were only mentioned in 2015 whereby junior doctors stated that the best way for them to avoid medication errors was to find a quiet area to transcribe drug charts, as this would allow them to "*step back*

momentarily" and critically analyse the drug chart instead of "*monotonously copying it out*". No over-riding themes were identified at this point.

Doctors were then questioned on what they felt could be done to further reduce the incidence of medication errors. These are summarised in table 4.

In 2002 results were similar but emphasis was made on legibility of handwriting and improvements to paper drug charts. In 2015, the most discussed topic predictably with regard to minimising errors and the final theme identified, was the introduction of ***electronic prescribing***. Most felt that electronic prescribing would "*solve a lot of the type of errors that are currently high profile*". However, two consultants were slightly more wary of electronic prescribing, highlighting that it would not solve fundamental errors around the indication of specific drugs.

While junior doctors seemed to eagerly anticipate the arrival of electronic prescribing on their respective wards, some senior doctors said that prescribers must be careful to not "*lose their clinical judgement and become overly reliant on a computer*" or ''*switch off and not use their brains*''.

The final question explored doctors' perception of the role of the pharmacist in reducing medication errors. Participants ubiquitously agreed that pharmacists are key in reducing medication errors, with their role described as "*absolutely critical*", "*hugely valuable*" and "*tremendously supportive*". Checking drug charts for errors and interactions were deemed critical where drug charts are analysed by both prescribers and pharmacists.

A consultant commented on "*feeling more at ease when I see the purple (pharmacist) ink on the drug charts*".

Doctors commented on pharmacists being approachable reference points on the ward - it being imperative to integrate pharmacists better within the healthcare team in order to "*make the most of their unique clinical knowledge*".

Although no other themes were identified, responses resembled those in 2002 where pharmacists were considered a safety net and their presence on the ward central to improving prescribing.

DISCUSSION

The current study provided some insight into the attitudes and beliefs of doctors toward medication error reporting. In addition, by reflecting upon the present findings with previously reported findings on the same topic, it provided valuable information into possible changes over time and factors that might have influenced doctors' beliefs and attitudes.

As illustrated in table 1, five key themes were identified based on the responses of the participants.

The first recurring point was the lack of feedback when medication error reports were completed. All participants stated that they did not receive any follow up after completing incident entries and this ultimately became a barrier to using the system as it was seen to be a "vacuum". Responses in 2002 were similar despite a change from paper to electronic reporting methods which could be considered easier to utilise in providing an automatic feedback response.

In not receiving any feedback, doctors felt that they were unable to learn from their errors, and more importantly not be able to improve their practice and patient safety.

The incident reporting system (whether paper or electronic) was repeatedly perceived as redundant in achieving any changes on the ground due to the lack of feedback. Additionally, incident reports were felt of little use to individual practitioners resulting in a complete lack of incentive in reporting medication error.

This sentiment is echoed in the literature in the work done by Lawton (2002) whose findings suggest that one of the reasons that deter doctors from reporting errors is a sense of disengagement from the feedback process. This perceived sense of a lack of ownership of the process leads to doctors opting out of error reporting. Evans et al (2006) equally found that the most frequently stated main barrier to incident reporting was lack of feedback.

In a systematic review, Stavropoulou (2015) found some evidence of changes to clinical settings or processes as a consequence of learning from reporting but little evidence of either improvements in outcomes or changes in managerial factors involved in error production. This was in contrast however to Anderson et al (2013) who identified that 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. The overall benefits of incident reporting in 2015 were certainly felt to be more

positive than in 2002, perhaps as a result of raised awareness of reporting in spite of the participants' poor experience thereof.

In summary, despite the implementation and development of incident data reporting systems over the past 15 years, there appears to be a failure to close the loop in informing and engaging the reporter of the outcome and thus share any learning to a wider audience to improve patient care.

Another key theme that emerged was negative attitudes toward the utility of the incident reporting system itself. As a result, some senior doctors stated that they would ask their juniors to complete reports because they felt the system is not user friendly and detracted from time that could be better spent with patients. This was seen in 2002, despite a change in the reporting system from paper. Reporting systems (of any method) need to be simple to use.

In a study comparing the attitudes of consultants, nurses and managers, it was found that while all parties felt positively about the design and information collected by an electronic incident reporting system, doctors expressed more negative attitudes (Walsh *et al.,* 2010). The cynicism towards the reporting system of the participants who labelled the system as "*clunky*" and "*time consuming*" is also matched by the responses in the data collected by Waring, (2005). Here, doctors appeared to regard paperwork and form filling as a task more suited to be undertaken by different personnel. It is important to take these perceptions into account as this could be a subconscious attitudinal barrier that deters doctors from using the incident reporting system.

Some participants felt that directly contacting their colleagues to address medication errors was a more efficient manner in which to deal with mistakes. However, this would result in a lack of an electronic log of errors and as such, medication error themes would not be identified or acted upon.

It seems therefore that in spite of a change in reporting methods from paper to electronic systems, usability is still perceived poorly. This may be due to a lack of training but this was not fully explored.

The third theme surrounding attitudes and beliefs toward error reporting was doctors' personal outlooks on NHS culture and their professional conduct. There seemed to be an evolution in practitioners' beliefs when compared to perceptions in 2002 and in the report 'An Organisation with a Memory'**.** All the doctors, regardless of whether or not they had been involved

with an error, felt that the trust operated a fair blame culture and that their colleagues would be supportive in the event of

an error. This change may have arisen due to the different trusts studied or perhaps a change in health care culture. A

national patient safety agenda was in its infancy at this time and so a more receptive environment may be considered

following a period of time where a range of policy measures have been introduced including financial incentives, inspections

and standards together with a wider recognition of reporting systems and understanding of error following the introduction

of the National Patient Safety Agency.

Lawton's (2002) findings showed that by fostering a culture that moves away from blaming individuals and encourages

reporting of adverse events, patient care and professional development can be optimised. It is important to highlight that

this support was not perceived to stem from a desire to protect one but to "*make the system work for patients*" and draw

learning points from seniors. The participants' faith in an open and fair culture within their organisation is encouraging as it

eliminates a potential barrier to reporting errors and ensures doctors feel their clinical decisions are supported by

management teams.

Despite the absence of any direct questions in the interview questions on electronic prescribing, most of the participants

discussed its imminent introduction. The varying attitudes across professional grades are reflective perhaps of attitudes

toward technology, and the belief that over reliance on computer systems could be detrimental to clinical knowledge. As

primary prescribers, F1 doctors felt that the demanding nature of this clinical setting coupled with their inexperience, of their

own admission, can result in errors. This is well recognised by doctors of all grades and leads to a degree of empathy from

supervisors and colleagues when dealing with such cases.

Westbrook et al (2012) indeed identified statistically significant reductions in prescribing error rates with the introduction of

electronic prescribing systems, predominately by an improvement in incomplete and unclear paper prescriptions, thus

supporting the anticipated benefits felt by junior doctors.

However, one respondent stated that it this would not necessarily make the prescribing process easier, as one 'mis-click'

could lead to the wrong drugs being selected and prescribed. It is important to note that whilst electronic prescribing

reduces the likelihood of some errors, it may present a different set of complications that must be considered.

Electronic prescribing was not available in 2002 but the importance of legible handwriting and the design of drug charts were discussed as factors in minimising medication error as demonstrated in Westbrook's study.

As a final identified theme, all doctors in 2015 highlighted time pressures as a barrier to reporting. As a result, it was felt only worthwhile if it was going to make a difference. More time was needed when prescribing to prevent medication errors. One junior doctor stated that because medication errors rarely cause great harm, reporting wasn't a priority when pushed for time. This was seen similarly in 2002 where paper reporting systems were equally cumbersome in completion.

Consistent with the literature, time has been cited by many studies as a barrier to incident reporting (Jeffe et al 2004). Evans et al (2006) identified time, second to the lack of feedback as a key barrier. Where the individual was busy, then an incident was less likely to be reported as the reporting system was too complicated, requiring too much detail. Poor reporting practice by doctors was not as a result of cultural barriers but organisational, relating to structures and processes such as long reporting forms and insufficient time.

It is apparent that these organisational barriers have not improved since 2002 despite increasing technological advances, raised safety awareness and tools to address incident reporting.

Limitations

Both studies in 2002 and 2015 involved a small sample of doctors from two different hospitals and whilst they varied in grade, all doctors came from a medical background with one anaesthetic representative. The opinions of this small group of doctors may not reflect their surgical colleagues.

The identification of the key themes in describing doctors' attitudes is the outcome of the team's interpretation and dependent on the questions asked.

With regard to the interview process one must consider the existence of a social desirability bias; a sociological research phenomenon that describes participants' tendencies to give answers that seem socially acceptable and will be viewed positively by others (Lewis-Beck *et al.*, 2004). It is not uncommon for individuals to censor themselves in order to maintain what they feel is a professional and respectable approach.

Furthermore, there was some disruption with several of the interviews, including interruptions from bleeps. These

distractions can alter responses as doctors are not fully engaged with the questions, keen to complete the interview and

resume other tasks. The responses obtained may have been more thorough had the environment been consistently quiet or

the questions provided in advance.

Participants were not from identical specialities (or grade) with more general medical doctors interviewed in 2015.

Differences in responses may also be seen due to a change in the research location where local structures, governance and

leadership can influence the safety culture within.

 Questions were not strictly similar in each study as patient safety terminology changed with time such as a no blame and fair

blame culture.

CONCLUSION

The study provides some insight between two trusts into the attitudes and beliefs of doctors toward medication error

reporting after a 13 year period. Whilst many potential barriers and difficulties surrounding medication error reporting were

noted at each period (such as time and lack of feedback), there was a more positive belief by all the doctors in 2015 in the

benefits of reporting and that openness is key for improving clinical practice. The disregard for trust reporting systems with

minor errors (whether paper based in 2002 or electronic in 2015), which were likely to be discussed informally between

colleagues, indicates that the system could be re-designed to be more efficient and user-friendly.

Requests for better integration of the pharmacist into the healthcare team continued to be made in 2015. Electronic

prescribing was widely welcomed.

Importantly, there appeared to be a more supportive environment for doctors where medication error occurred compared

to 2002. This may be attributed to cultural changes within the NHS arising from a national safety agenda. It is crucial that an

open and honest reporting culture continues to thrive without fear of punitive reprisals and clinicians feel supported by their

colleagues and organisation.

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Table 1 : Participant Quotes on Key Themes

2015	2002
1. Lack of feedback from error reporting	
• "Because there is no immediate feedback to the people reporting the error, I never get the impression that actually anything changes" • "I've not seen a single response...you send the information into a vacuum and you don't see much come out" • "I think they (error reports) tend to go into a black hole. You don't really get feedback" • "..relative opaqueness to seeing any output "	• 'It's not worth the paper it's written on as it's not followed up. I have never had any feedback on them.' • 'You can report until you are blue in the face but if you hear nothing back then what's the point' • 'They don't achieve much'
2. Non-user friendly error reporting system	
• "It's too big a sledgehammer to crack a small nut....something simpler and more immediate would be a more effective intervention" • "I am put off by the clunkiness and the labour involved in completing a form" • ''I found it very non user-friendly"	• (the forms) 'are big and cumbersome'
3. Time-pressure as a general barrier	
• "It was incredibly time consuming with no real outcome" • ''The times in which you identify medication errors are typically the times in which.. you're preoccupied doing other things'' • ''When do you actually have time? Doing (a report) stuff like that, is such a pain''	• 'We're all so busy, sometimes filling out forms can be fairly minor to us' • 'You could be there all day'
4. Supportive culture identified	
• "The ward I work on is supportive full stop" • "There isn't a culture of retribution..nobody is going to come down on you like a tonne of bricks" • "We've had tremendous support on this ward"	• 'The error is yours, when it happens you're on your own; no support' • 'the problem is there is not a no blame culture; among your peers, yes, there's a support ethic but not otherwise' • 'Despite people saying they support you, you still lose respect'
5. Electronic Prescribing	
• "I think electronic prescribing is a step in the right direction" • "Electronic prescribing will make it more difficult to make mistakes with decimal points and allergies" • "I don't think we'll ever completely eliminate drug errors and I've been careful in not saying I think e-prescribing is going to be the answer, because I don't think it will be necessarily"	• Not available or discussed in 2002

Table 2
Benefits of reporting

2002	2015
'Weeding out incompetency'	Learning tool
'Identifying inadequate staff'	Improvement of practice
Continued education	Identify trends & system failures
Prevention of recurrence	Prevention of recurrence

Table 3
Methods used by doctors to reduce error

2002	2015
Check calculations	Double check doses, indications,
Use BNF & pharmacists	Use BNF & pharmacists,
Prescribe limited number of drugs	Find a quiet spot
Check handwriting/legibility	Review prescriptions

Table 4
Methods needed to reduce error

2002	2015
Write legibly	Electronic prescribing
Improvement in drug chart design	Standardisation of treatment and guidelines
Education	Education
More information resources	Better access to reference sources eg BNF
Pharmacists on post take ward rounds	Protected prescribing time

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DOCTORS ATTITUDES TOWARDS MEDICATION ERRORS AT 2002 & 2015

ABSTRACT: ORIGINAL RESEARCH

Purpose

This paper explores the attitudes and beliefs of doctors towards medication error reporting following fifteen

years of a

national patient safety agenda.

Method

This is a qualitative descriptive study utilising semi structured interviews. A group of ten doctors of different

disciplines shared their attitudes and beliefs about medication error reporting. Using thematic content

analysis, findings were reflected upon to those collected by the same author of a similar study 13 years

before (2002).

Findings

Five key themes were identified: lack of incident feedback, non- user friendly incident reporting systems,

supportive cultures, electronic prescribing and time pressures. Despite more positive responses to the

benefits of medication error reporting in 2015 compared to 2002, doctors at both times expressed a

reluctance to use the hospital's incident reporting system, labelling it time consuming and non-user friendly.

A more supportive environment however where error had been made was thought to exist compared to

2002.

The role of the pharmacist was highlighted as critical in reducing medication error with the introduction of

electronic

prescribing being pivotal in 2015.

Value

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To our knowledge, this is the first study to compare doctors' attitudes on medication errors following a period of time of increased patient safety awareness. The results suggest that error reporting today is largely more positive and organisations more supportive than 2002. Despite a change from paper to electronic methods, there is a continuing need to improve the efficacy of incident reporting systems and ensure an open, supportive environment for clinicians.

INTRODUCTION

Reporting Error

In 2000, the report *To Err is Human* (Committee on Quality of Health Care in America) outlined that more people died annually from medication errors than from workplace injuries. It stated that a comprehensive approach to improving patient safety was required from improving knowledge to breaking down cultural barriers.

Medication errors can occur at any point in the process of medicines use, from prescribing to administering to dispensing and monitoring. As the single most common preventable cause of adverse events in clinical practice, (European Medicines Agency) by understanding precipitating factors that lead to medication errors, patient safety can be improved and clinical outcomes optimised.

To learn from any mistakes, identify underlying causes, and seek out opportunities for change, this commonly involves use of an incident reporting system enabling staff to communicate any safety concerns and errors arising.

An Organisation with a Memory (Department of Health Expert Group) in 2000*,* in the UK highlighted that National Health Service (NHS) reporting systems provided a 'patchy and incomplete picture of the scale of serious failures' and hence a lack of capacity to learn from and prevent future errors. It highlighted the need for unified mechanisms for reporting and analysis when things go wrong, a more open culture in which errors can be reported and that necessary changes are put into practice.

The National Patient Safety Agency (NPSA) was thus established in the UK in 2001, launching a nationwide incident reporting scheme. It is now the largest database in the world of patient safety incident reports

submitted by organisations across the NHS for purposes of learning. In a review, (Cousins *et al.,* 2012) medication error was the second highest category of all incidents reported.

Despite this, National Health Service England highlighted the need for further improvement in reporting and subsequently published an alert (Medicines and Healthcare Regulatory Agency, 2014) to improve the quality and quantity of medication error reports to maximise learning. At this time, the World Health Organisation also published a template with a minimum set of common data categories to facilitate reporting ('Preliminary version of minimal information model for patient safety', 2014).

Barriers to error reporting

In order to realise NHS England's aim in improving medication error reporting for learning purposes, it is important to understand the difficulties faced in achieving this.

It is well recognised that there are considerable barriers to the successful use of incident reporting systems and significant levels of under-reporting, especially amongst physicians. The nature of the barriers to error reporting amongst doctors has been well documented (Kaldjian *et al.*, 2006; Lawton and Parker, 2002; Waring, 2005; Vincent *et al.*, 1999) and is seen to vary from practical issues such as time to more cultural issues like fear of retribution or loss of peer respect.

Kaldjian *et al*. (2006) sought to develop a system to comprehensively classify the factors that affect voluntary disclosure of errors by physicians. Barriers were classified into four over-arching groups. The first being attitudinal barriers where doctors doubted the benefits of reporting or believed others did not need to know of one's errors. The second group of barriers was helplessness such as lack of confidentiality or immunity after disclosure and well as a lack of support from institutions or colleagues. The third major barrier was cited as uncertainties in the actual error reporting and the final classification of barriers to error reporting was fear and anxiety such as professional discipline or loss of reputation.

Despite changes and developments in incident reporting systems across time there still remains unease about its full learning potential. In comparing the attitudes of consultants, nurses and managers towards one

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electronic system, consultants had the most negative beliefs and perceptions of its utility and efficacy in

reducing the prevalence of medication errors. Unsurprisingly therefore, consultants were the participant

group that used the system the least (Walsh *et al.*, 2010)

Movement from a 'no blame culture' towards a 'fair blame' or 'just culture' has been discussed within

healthcare contexts over the years (Khatri *et al*., 2009), yet there remains repeated emphasis on the urgent

need to transform healthcare culture and create an environment where disclosure is the norm and clinicians

feel supported by both their colleagues and institutions (Department of Health, 2015). This supports Cohen's

(2000) claim that reporting will only occur when practitioners feel safe to do so and it becomes a culturally

accepted activity within healthcare.

Similarly, studies on the views and beliefs by doctors on medication error reporting (McArdle *et al.*, 2003;

Sanghera *et al.*, 2007; Hartnell *et al.*, 2012) highlight both incentives for reporting and barriers. McArdle's

study found that whilst doctors believed that reporting errors were important to learn from, this was not

borne out in practice. Reporting was considered too time consuming to complete and errors could only be a

learning experience if relevant timely feedback was given. Disciplinary action was not felt to be a barrier to

reporting yet there wasn't felt to be a 'no blame culture' outside of the organisation.

No studies in relation to medication error reporting were found to have considered changes in doctors'

beliefs across a prolonged period of time of raised patient safety awareness. Therefore a qualitative study

was conducted and the findings reflected upon those by McArdle et al in 2002.

AIM

To explore the attitudes and beliefs of doctors toward medication error reporting via a semi structured

interview and reflect upon possible differences and similarities to a similar study in 2002 on the same topic.

(McArdle *et al.*)

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METHOD

Setting

The study was conducted in acute healthcare trusts in the South of England.

Study Design

A qualitative descriptive study using semi-structured interviews. An interview guide addressing five overall medication safety domains was used to allow free discussion of the potentially sensitive subject matter of medication error reporting.

Sample Population

A convenient sample of 10 hospital doctors in 2015 and 15 doctors in 2002. Doctors from different specialties and grade were asked to participate by either direct email contact /letter or to volunteer following promotion at departmental meetings. Doctors from Elderly medicine, Anaesthetics, General Medicine and Paediatrics were contacted similarly to the previous study where renal medicine doctors were also invited. These specialities were chosen for a number of reasons including the need for dose adjustments often due to reduced organ function, close drug monitoring, the use of polypharmacy in the elderly and a range of pharmacy service input.

Interview Process

In 2015, doctors willing to participate were provided with a copy of the participant information sheet and consent form following ethics approval. In 2002, doctors were provided with a copy of the interview questions to allow for reflection beforehand. Interviews were arranged via telephone or email, and participants were met at a suitable location. Interviews were audiotaped and transcribed verbatim.

Areas of Discussion

Questions were chosen to gain insight into doctors' attitudinal beliefs and barriers toward medication error reporting within the context of their staff grade and experience. These were grouped into five domains below:

1. *Experience of medication error reporting*, where doctors were asked when they would report an incident and who to. By asking participants for their personal experiences of reporting, it allowed a better understanding of how doctors perceive the current reporting systems and their degree of utility.

2. *Benefits, barriers and importance of medication error reporting.*

3. *Personal experience of making an error.* Doctors were asked to recall medication errors they had been involved in and how this made them feel professionally. This emotive line of question offered invaluable insight into the participants' thought process surrounding error reporting.

4. *Support by colleagues and the organisation*. Doctors were questioned if they felt supported by colleagues both during and after an error and whether the organisation operated a 'fair blame' approach.

5. *Methods and measures employed in practice* to reduce medication errors as well as the role of the pharmacist.

Interviews took up to 30 minutes.

Analysis

Participants' responses were examined and analysed for recurrent themes by systematically reviewing transcripts of the interviews and noting the points that were raised repeatedly. Content analysis was used for analyzing the transcripts and involved methodology as described by Hsieh & Shannon, 2005. Initially two members of the research team independently read all transcripts and identified key phrases/words in response to each question. Secondly, the two members of the team analysed these common phrases identifying main topics and agreeing in the identification of five recurrent themes. The

team members compared notes after reading independently to reach agreement. Thirdly, the primary author

read the transcripts independently and identified five similar themes. The five themes were then constantly

compared to the results found in 2002 (McArdle *et al.*, 2003).

Rigour

Trustworthiness of the analysis was optimized by steps taken to achieve a) credibility, b) dependability, c)

transferability, and d) confirmability (Lincoln & Guba, 1985). Credibility of the findings was established by

conducting multiple interviews, using a consistent interview guide, asking participants to verify their ideas,

and encouraging participants to share their views. Dependability of the analysis was increased by

establishing agreement between the independent coders of the transcriptions and by having more than two

people reading the transcripts. Transferability of the findings was established by providing a detailed

description of the sampling strategy and research methods. Finally, confirmability of the analytic process was

established by keeping detailed notes about the study procedures, by reporting information regarding the

agreement among the researchers on emerging themes and by verifying the described findings with the raw

data and providing the direct quotes.

RESULTS

Demographic details

Ten doctors were interviewed comprising of five consultants, two foundation year 1(F1) doctors, two core

trainee (CT) doctors and one speciality doctor. Doctors' duration of practice within the trust spanned from

eight months to twenty years. Specialities included elderly medicine, paediatrics, anaesthetics and general

medicine.

This compared to six consultants, three registrars and six junior doctors (F2 equivalent) in 2002 with one

month to ten years' experience in specialities- renal and elderly medicine, neonatology and anaesthetics.

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Domain 1: Experience in medication error reporting - how, when and to whom would you report a

medication error?

On discussing their experience in reporting medication errors, most doctors had used the electronic

reporting system although one consultant mentioned that their junior would always complete this on their

behalf due to lack of technological know-how.

When asked of the circumstances in which participants would report errors, there was some variance in the

interpretation of the question despite all doctors knowing how to report incidents using the electronic

reporting system. Some participants (from F1 to consultant) answered the question in the most literal sense,

stating that they would report all errors immediately as they happened. Most participants however

commented on the degree of severity, stating that if actual harm had occurred or there was potential for

severe harm, these should be reported. Some doctors said that they would not formally report minor

incidents with one stating that '*it's very difficult because I think our reporting mechanism is too long to report*

that'.

This was experienced similarly by the group in 2002 whereby incident forms were only completed for serious

medication errors; otherwise they were dealt with on ward rounds and departmental meetings which was

felt more effective.

The process itself was said to be ''*incredibly time consuming*'' and "*non-user friendly*", each being identified

as a recurring theme. A memorable metaphor used to describe the reporting system was "*too big a*

sledgehammer to crack a small nut".

All the participants seemed to regard the reporting system as a largely ineffective tool due to the logistical

problems presented. As a result, participants stated that it was easier for them to speak directly with

colleagues involved in medication errors as this was more efficient and potentially a better learning tool.

This was seen equally in 2002 where junior doctors had said that completing paper reporting forms was too

time consuming, '*big and cumbersome*' and therefore they opted to inform a senior colleague.

Incident reports were felt to be of little use to individual practitioners, with one consultant stating that '*I don't have any great faith in the reporting system*'. Reports were said to be never followed up, with reporters not receiving feedback. The lack of feedback was the third recurring theme identified within this domain and additional participants' responses can be seen in table 1. This was a similar theme in 2002 despite a change from paper to electronic reporting systems where reports also fell into '*a black hole'* and '*you can report until you are blue in the face but if you hear nothing back, what's the point*?'

The idea that the reporting system fails to achieve any changes on the ground was mentioned time and again, with clinicians wondering whether a report was going to make a difference as otherwise '*you're not going to bother after a while'*.

Despite this, it is important to note that several participants explained that they understood it may not always be possible to provide an in depth response to each individual entry. However, even these respondents felt that some brief information on an error report outcome would be beneficial in improving practice as well as care.

Domain 2: Benefits & importance in medication error reporting and perceived barriers.

Doctors were asked what they felt to be the benefits of reporting. All doctors expressed either the need to prevent errors recurring, to ensure overall learning or improvement of practice. Further benefits are summarised in table 2**.**

Senior doctors were able to comment on the benefits of reporting in a wider context in identifying system failures, trends and identifying where to invest resources. '*The benefits may depend on who's asking the question…. both on a local and national level… the biggest benefit is for the organisation to get an understanding of the landscape and the trend of various medication errors, primarily to look for systematic failures.'*

In 2002, participants stated more negative connotations, not recognised in 2015 whereby the emphasis was

on identifying poorly performing staff. Reporting was felt to be helpful in '*weeding out incompetent*

practitioners', '*identifying those that are woefully inadequate at their jobs*'.

The participants unanimously agreed that time constraints were the principal barrier to error reporting when

patient care took priority. This recurring theme of time pressures was seen in similar responses in 2002

when the importance of dealing with the error was cited as more important than form filling.

The need for a more immediate**,** simpler user friendly*, less 'clunky' reporting system* was the recurring theme

in reducing any barriers to medication error reporting.

Domain 3: Personal Experience of Medication Error

Aside from one F1 doctor, all participants readily admitted to having been involved with medication errors of

varying severity. When asked how these errors made them feel professionally and their effects on clinical

confidence, responses ranged from emotive "*awful, I lost sleep over it*", to candid "*you feel kind of*

disappointed in yourself''. Feelings of inadequacy were echoed by several of the participants.

Two doctors explained that the errors they were involved in, proved to be invaluable learning points, and

despite some of the errors occurring decades ago, the lessons learnt were still poignant in their minds and

that they were much more fearful of recurrence. One consultant stated that with age and experience, errors

are treated as a point of reflection, with less emphasis on personal failure and shortcomings.

Similar responses were cited in 2002 although at that time there was a recognition that doctors are fallible

and it was often the response of others that determined how one felt after a medication error.

There were clear fears and worries associated with medication error reporting. Participants discussed the

potential effects on relationships with colleagues. Embarrassment and pride and the fear of blame were also

mentioned. This ranged from worrying about stigma in the workplace if labelled a poor prescriber to more

serious consequences like losing one's medical license. Junior doctors cited disciplinary action as a principal

concern. One doctor had concerns about the potential complexity of being involved in an error reporting

process, labelling it "*complex and convoluted"* and two feared being a scapegoat. Again, such fears were

cited in 2002. Some senior doctors however felt no qualms reporting medication errors and both attributed

this to the lack of "retribution culture" at the trust.

No particular themes were identified within this domain but on the whole, the experience in making an error

was associated with negative emotions.

Domain 4: Support from colleagues and organisational culture

When asked about the extent to which doctors felt they had been, or would be, supported by supervisors

and colleagues during the error reporting process, participants universally agreed that there was an

understanding of errors. This was credited to seniors' consideration of the 'stressful' circumstances in which

prescribing is often done. The fourth theme identified was one of a supportive culture where error had

occurred. One junior felt that should they find themselves in a situation where they had made an error that

led to patient harm, they would be supported by their seniors. Such statements were in contrast to those in

2002 where half the group felt feelings of isolation, pressure and being 'on your own' with no support.

The existence of a 'fair blame culture' within the trust was explored; almost all of the participants stated that

they had not found themselves in a situation in which they would be exposed to this and as such couldn't

comment in full. Despite this, most doctors felt that the trust purported to maintain a supportive work

environment. Moreover, several doctors commented that a patient centred culture exists, in which teams

are collectively working toward the best care for patients, not seeking to punish or blame doctors but '*get*

the system working right'. One participant felt however that the situation was not the same for nursing staff.

This contrasted to responses in 2002 where there was a feeling that there was not a culture of 'no blame' in

society and as such it would be difficult to cultivate within the NHS. There was felt to be support amongst

peers but not beyond that.

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Domain 5: Methods and measures used in practice to reduce error and the role of the pharmacist

Table 3 summarises methods doctors stated that they incorporated into their daily practice to avoid

medication errors. These were varied as in 2002 but half the group said they would check doses before

prescribing using information sources such as the BNF (British National Formulary). Similar responses were

noted in 2002 although calculations would equally be double checked.

Environmental factors were mentioned in 2015 whereby junior doctors stated that the best way for them to

avoid medication errors was to find a quiet area to transcribe drug charts, as this would allow them to "*step*

back momentarily" and critically analyse the drug chart instead of "*monotonously copying it out*". No over-

riding themes were identified at this point.

Doctors were then questioned on what they felt could be done to further reduce the incidence of medication

errors. These are summarised in table 4.

In 2002 results were similar but emphasis was made on legibility of handwriting and improvements to paper

drug charts. In 2015, the most discussed topic predictably with regard to minimising errors and the final

theme identified, was the introduction of electronic prescribing. Most felt that electronic prescribing would

"*solve a lot of the type of errors that are currently high profile*". However, two consultants were slightly more

wary of electronic prescribing, highlighting that it would not solve fundamental errors around the indication

of specific drugs.

While junior doctors seemed to eagerly anticipate the arrival of electronic prescribing on their respective

wards, some senior doctors said that prescribers must be careful to not "*lose their clinical judgement and*

become overly reliant on a computer" or ''*switch off and not use their brains*''.

The final question explored doctors' perception of the role of the pharmacist in reducing medication errors.

Participants ubiquitously agreed that pharmacists are key in reducing medication errors, with their role

described as "*absolutely critical*", "*hugely valuable*" and "*tremendously supportive*". Checking drug charts for

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errors and interactions were deemed critical where drug charts are analysed by both prescribers and

pharmacists.

A consultant commented on "*feeling more at ease when I see the purple (pharmacist) ink on the drug charts*".

Doctors commented on pharmacists being approachable reference points on the ward - it being imperative

to integrate pharmacists better within the healthcare team in order to "*make the most of their unique clinical*

knowledge".

Although no other themes were identified, responses resembled those in 2002 where pharmacists were

considered a safety net and their presence on the ward central to improving prescribing.

DISCUSSION

The current study provided some insight into the attitudes and beliefs of doctors toward medication error

reporting. In addition, by reflecting upon the present findings with previously reported findings on the same

topic, it provided valuable information into possible changes over time and factors that might have

influenced doctors' beliefs and attitudes.

As illustrated in table I, five key themes were identified based on the responses of the participants.

The first recurring point was the lack of feedback when medication error reports were completed. All

participants stated that they did not receive any follow up after completing incident entries and this

ultimately became a barrier to using the system as it was seen to be a "vacuum". Responses in 2002 were

similar despite a change from paper to electronic reporting methods which could be considered easier to

utilise in providing an automatic feedback response.

In not receiving any feedback, doctors felt that they were unable to learn from their errors, and more

importantly not be able to improve their practice and patient safety.

The incident reporting system (whether paper or electronic) was repeatedly perceived as redundant in achieving any changes on the ground due to the lack of feedback. Additionally, incident reports were felt of little use to individual practitioners resulting in a complete lack of incentive in reporting medication error.

This sentiment is echoed in the literature in the work done by Lawton (2002) whose findings suggest that one of the reasons that deter doctors from reporting errors is a sense of disengagement from the feedback process. This perceived sense of a lack of ownership of the process leads to doctors opting out of error reporting. Evans et al (2006) equally found that the most frequently stated main barrier to incident reporting was lack of feedback.

In a systematic review, Stavropoulou (2015) found some evidence of changes to clinical settings or processes as a consequence of learning from reporting but little evidence of either improvements in outcomes or changes in managerial factors involved in error production. This was in contrast however to Anderson *et al.* (2013) who identified that 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. The overall benefits of incident reporting in 2015 were certainly felt to be more positive than in 2002, perhaps as a result of raised awareness of reporting in spite of the participants' poor experience thereof.

In summary, despite the implementation and development of incident data reporting systems over the past 15 years, there appears to be a failure to close the loop in informing and engaging the reporter of the outcome and thus share any learning to a wider audience to improve patient care.

Another key theme that emerged was negative attitudes toward the utility of the incident reporting system itself. As a result, some senior doctors stated that they would ask their juniors to complete reports because they felt the system is not user friendly and detracted from time that could be better spent with patients. This was seen in 2002, despite a change in the reporting system from paper. Reporting systems (of any method) need to be simple to use.

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In a study comparing the attitudes of consultants, nurses and managers, it was found that while all parties

felt positively about the design and information collected by an electronic incident reporting system, doctors

expressed more negative attitudes (Walsh *et al.,* 2010). The cynicism towards the reporting system of the

participants who labelled the system as "*clunky*" and "*time consuming*" is also matched by the responses in

the data collected by Waring, (2005). Here, doctors appeared to regard paperwork and form filling as a task

more suited to be undertaken by different personnel. It is important to take these perceptions into account

as this could be a subconscious attitudinal barrier that deters doctors from using the incident reporting

system.

Some participants felt that directly contacting their colleagues to address medication errors was a more

efficient manner in which to deal with mistakes. However, this would result in a lack of an electronic log of

errors and as such, medication error themes would not be identified or acted upon.

It seems therefore that in spite of a change in reporting methods from paper to electronic systems, usability

is still perceived poorly. This may be due to a lack of training but this was not fully explored.

The third theme surrounding attitudes and beliefs toward error reporting was doctors' personal outlooks on

NHS culture and their professional conduct. There seemed to be an evolution in practitioners' beliefs when

compared to perceptions in 2002 and in the report 'An Organisation with a Memory'**.** All the doctors,

regardless of whether or not they had been involved with an error, felt that the trust operated a fair blame

culture and that their colleagues would be supportive in the event of an error. This change may have arisen

due to the different trusts studied or perhaps a change in health care culture. A national patient safety

agenda was in its infancy at this time and so a more receptive environment may be considered following a

period of time where a range of policy measures have been introduced including financial incentives,

inspections and standards together with a wider recognition of reporting systems and understanding of error

following the introduction of the National Patient Safety Agency.

Lawton's (2002) findings showed that by fostering a culture that moves away from blaming individuals and

encourages reporting of adverse events, patient care and professional development can be optimised. It is

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important to highlight that this support was not perceived to stem from a desire to protect one but to "*make the system work for patients*" and draw learning points from seniors. The participants' faith in an open and fair culture within their organisation is encouraging as it eliminates a potential barrier to reporting errors and ensures doctors feel their clinical decisions are supported by management teams.

Despite the absence of any direct questions in the interview questions on electronic prescribing, most of the participants discussed its imminent introduction. The varying attitudes across professional grades are reflective perhaps of attitudes toward technology, and the belief that over reliance on computer systems could be detrimental to clinical knowledge. As primary prescribers, F1 doctors felt that the demanding nature of this clinical setting coupled with their inexperience, of their own admission, can result in errors. This is well recognised by doctors of all grades and leads to a degree of empathy from supervisors and colleagues when dealing with such cases.

Westbrook *et al.* (2012) indeed identified statistically significant reductions in prescribing error rates with the introduction of electronic prescribing systems, predominately by an improvement in incomplete and unclear paper prescriptions, thus supporting the anticipated benefits felt by junior doctors.

However, one respondent stated that it this would not necessarily make the prescribing process easier, as one 'mis-click' could lead to the wrong drugs being selected and prescribed. It is important to note that whilst electronic prescribing reduces the likelihood of some errors, it may present a different set of complications that must be considered.

Electronic prescribing was not available in 2002 but the importance of legible handwriting and the design of drug charts were discussed as factors in minimising medication error as demonstrated in Westbrook's study.

As a final identified theme, all doctors in 2015 highlighted time pressures as a barrier to reporting. As a result, it was felt only worthwhile if it was going to make a difference. More time was needed when prescribing to prevent medication errors. One junior doctor stated that because medication errors rarely

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cause great harm, reporting wasn't a priority when pushed for time. This was seen similarly in 2002 where

paper reporting systems were equally cumbersome in completion.

Consistent with the literature, time has been cited by many studies as a barrier to incident reporting (Jeffe *et*

al. 2004). Evans *et al* (2006) identified time, second to the lack of feedback as a key barrier. Where the

individual was busy, then an incident was less likely to be reported as the reporting system was too

complicated, requiring too much detail. Poor reporting practice by doctors was not as a result of cultural

barriers but organisational, relating to structures and processes such as long reporting forms and insufficient

time.

It is apparent that these organisational barriers have not improved since 2002 despite increasing

technological advances, raised safety awareness and tools to address incident reporting.

Limitations

Both studies in 2002 and 2015 involved a small sample of doctors from two different hospitals and whilst

they varied in grade, all doctors came from a medical background with one anaesthetic representative. The

opinions of this small group of doctors may not reflect their surgical colleagues.

The identification of the key themes in describing doctors' attitudes is the outcome of the team's

interpretation and dependent on the questions asked.

With regard to the interview process one must consider the existence of a social desirability bias; a

sociological research phenomenon that describes participants' tendencies to give answers that seem socially

acceptable and will be viewed positively by others (Lewis-Beck *et al.*, 2004). It is not uncommon for

individuals to censor themselves in order to maintain what they feel is a professional and respectable

approach.

Furthermore, there was some disruption with several of the interviews, including interruptions from bleeps.

These distractions can alter responses as doctors are not fully engaged with the questions, keen to complete

the interview and resume other tasks. The responses obtained may have been more thorough had the

environment been consistently quiet or the questions provided in advance.

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Participants were not from identical specialities (or grade) with more general medical doctors interviewed in 2015. Differences in responses may also be seen due to a change in the research location where local structures, governance and leadership can influence the safety culture within.

Questions were not strictly similar in each study as patient safety terminology changed with time such as a no blame and fair blame culture.

CONCLUSION

The study provides some insight between two trusts into the attitudes and beliefs of doctors toward medication error reporting after a 13 year period. Whilst many potential barriers and difficulties surrounding medication error reporting were noted at each period (such as time and lack of feedback), there was a more positive belief by all the doctors in 2015 in the benefits of reporting and that openness is key for improving clinical practice. The disregard for trust reporting systems with minor errors (whether paper based in 2002 or electronic in 2015), which were likely to be discussed informally between colleagues, indicates that the system could be re-designed to be more efficient and user-friendly.

Requests for better integration of the pharmacist into the healthcare team continued to be made in 2015. Electronic prescribing was widely welcomed.

Importantly, there appeared to be a more supportive environment for doctors where medication error occurred compared to 2002. This may be attributed to cultural changes within the NHS arising from a national safety agenda. It is crucial that an open and honest reporting culture continues to thrive without fear of punitive reprisals and clinicians feel supported by their colleagues and organisation.

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