Formalized prescribing error feedback from hospital pharmacists: doctors' attitudes and opinions

Doctors have reported a lack of awareness of their prescribing errors with lack of feedback considered a system failure. This article summarizes the views of hospital doctors about receiving formal prescribing error feedback from ward-based pharmacists.

Medication errors are a leading cause of mortality (Phillips et al, 1998) with prescribing errors predominating (Velo and Minuz, 2009). Prescribing error rates in the hospital setting vary in the literature from 1.5% to 51.4% depending on study design and prescriber grade (Dornan et al, 2009; Lewis et al, 2009; Ross et al, 2009). The majority of errors are often considered minor or will not result in patient harm (Moyen et al, 2008). However, even minor errors can compromise care, delay treatment (Franklin et al, 2007), result in inefficient use of staff time and undermine patient confidence in health care.

Prescribers have reported being unaware of their own errors (Dornan et al, 2009; Velo and Minuz, 2009), with lack of feedback identified as a system failure contributing to prescribing errors (Franklin et al, 2011).

Raising awareness of prescribing errors can highlight learning needs, reducing the gap between perceived and actual performance (Jamtvedt et al, 2006; Randolph et al, 2009). Feedback has been suggested to reduce prescribing errors (Dean, 2002) with studies reporting favourably on feedback as an intervention (Thomas et al, 2008; Chan et al, 2010; Booth et al, 2012; Sullivan et al, 2013). Evidence from systematic reviews (Jamtvedt et al, 2006; Ivers et al, 2012) suggests that feedback can have small to moderate positive effects on practice such as prescribing and that feedback can be as effective as educational interventions. However, the views of doctors towards receiving formal feedback are limited.

Franklin et al (2007) reported that generic feedback at the specialty or consultant team level was acceptable although this approach was not individualized; a key characteristic reported elsewhere to make feedback actionable (Hysong et al, 2006). More recently, in the study by Bertels et al (2013), junior doctors reported that feedback is valued but inconsistent and that individualized feedback is preferred.

This study used semi-structured interviews to ascertain the views of doctors towards receiving formalized prescribing error feedback, specifically to explore what the impact has been on them as prescribers, and their views on pharmacists as facilitators of prescribing error feedback.

Methods

Prescribing was audited in August 2014 by pharmacists on two 32-bed medical wards in a large district general hospital in the north west of England. Both wards had a high turnover of patients (40–50 and 60–80 patients per week). All prescriptions were audited over a 5-day period during routine pharmacist visits and processing in dispensary. Detailed feedback was provided by ward-based pharmacists to their doctors using a standardized proforma. Further, successive timely feedback (typically within 1 day but as soon as practically possible if unavailable) was provided by five ward-based pharmacists for any error classified as significant, based on established definitions (Dornan et al, 2009).

All pharmacists and doctors involved delivered and received feedback respectively on prescribing errors as part of an enhanced service delivery. Participation was agreed with the head of pharmacy and both medical and clinical directors in advance. Following 3 months of feedback, a qualitative study using semi-structured interviews was undertaken to provide in-depth data regarding doctors' views and experiences of receiving formal prescribing error feedback.

Population

Doctors who had received feedback were eligible to be interviewed and were invited to take part in the study via e-mail and verbal communication at an educational meeting. Participation was voluntary and information sheets were provided to all potential participants. All participants had received feedback on their overall prescribing with further feedback delivered at least once on an individual, specific error (*Table 1*).

Semi-structured interviews

A topic guide was used (*Table 2*) by the researcher to ensure consistent issues were raised. Question design was informed by the research aims and researcher insight to illuminate three key areas:

1. General views on the feedback process
2. The impact on doctors themselves
3. Perceptions of pharmacists as facilitators of prescribing error feedback.

Open-ended questions and further prompting were used to allow the spontaneity for participants to elaborate and articulate views with greater qualitative purpose (Oppenheim, 1992). The flexibility of this approach to engage in discussion

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was also desirable to encourage rapport and facilitate interactive, open conversational exchange from interviewees (Cohen et al, 2011), illuminating what could be hidden by closed questions (Basit, 2010).

Ethics

Relevant hospital and University of Liverpool ethics research committees approved the study. Written consent was obtained from participants before commencing interviews and confidentiality was assured.

Data analysis

Interviews were transcribed verbatim by ML, the sole exception being to anonymize person and place names. Doctors were allocated codes R1–R10. ML listened, re-listened, read and re-read the transcripts for immersion in the data before any 'sifting or sorting' of the data (Ritchie and Spencer, 1994). Manual coding was undertaken before performing a thematic analysis using a framework approach (Furber, 2010; Gale et al, 2013) which involved five key stages (Ritchie and Spencer, 1994): familiarization, identifying a thematic framework, indexing, charting and mapping, and finally interpretation. Transcripts were independently read and analysed by SDW and SVOB. Themes and codes were discussed after an initial analysis for consistency of findings (Plummer-D'Amato, 2008) with discrepancies resolved for an analytical consensus. This 'second coding' provided greater validity for the results while safeguarding against any subjective, selective, researcher perception.

Results

Interviews were conducted face-to-face by ML, typically in a private seminar room on the ward, and lasted approximately 30 minutes. Ten doctors (*Table 1*) volunteered to participate in interviews between October and December 2014. Doctor grades reflected the skill mix on the ward; foundation trainees (n=4), core trainees (n=4) and consultants (n=2).

Analysis of transcripts revealed five key themes:

1. The feedback process
2. Work environment
3. Feedback facilitator
4. Education and learning
5. Prescriber impact.

Feedback process

All interviewees expressed that feedback was welcomed and valued with benefits for patient safety and professional practice outlined. Formalization of the process created an expectancy and open culture where they would receive feedback as one doctor described:

R4: The fact that it becomes a normality means then people are much more open to receiving and delivering feedback as opposed to people closing up because they don't like it and are not used to it.

Formalization of feedback provided a consistency and structure allowing prescribers to learn from their mistakes. Doctors felt that feedback was delivered informally by pharmacists which supported the process by reducing potential anxieties. The standardized proforma contributed to the consistency and learning exercise with some doctors including it as evidence in their training portfolios. Some doctors reported sharing of feedback results, creating a benchmarking process and allowed shared learning:

R5: …having the paper copies helps to reinforce things so I think that helped … the percentages were good and gave you an overview and allowed you to compare yourself to others.

It was acknowledged that training grade doctors would probably derive most benefit from feedback as they complete most prescriptions and have less experience than more senior grades. However, some trainee doctors astutely suggested that consultants would probably learn just as much as they prescribe less frequently. While feedback should be delivered for all prescribing errors, it was considered that minor errors, unless repetitive, should be delivered once only, with subsequent feedback on significant errors.

Feedback was considered timely which was unanimously considered important for situational and patient recall, both of which appear to influence reflection and learning from the error as described below:

R7: You remember it much better if you can put a face to it. We don't actually spend that amount of time with the patient on the ward round so it does help to remember the face definitely.

Doctors described how the process created a change in practice from pharmacists intercepting errors and getting them corrected, to a counter culture of interception, correction and feedback. The former was suggested to have limited impact on prescribing practice while the latter facilitated memory recall and was more likely to prevent error repetition as it is a memorable encounter.

R10: in a good way personally for me because when you are on a ward round you are changing medications as you go along and sometimes it is very difficult I mean ok I might have done this for a different patient or I

Table 1. Prescriber details who participated in the interviews

			Overall feedback			Individual error feedback sessions
Doctor code	Grade	Gender	Items	Errors	% error rate	
R1	Third year specialty trainee	Male	1	0	0	2
R2	Foundation year 1	Female	4	1	25	4
R3	Foundation year 1	Female	82	7	8.5	10
R4	Foundation year 2	Female	34	4	11.8	3
R5	Foundation year 1	Female	188	39	20.7	9
R6	Consultant	Male	3	1	33	1
R7	First year core trainee	Female	57	14	24.6	8
R8	Consultant	Male	3	2	66.7	1
R9	Second year core trainee	Female	143	32	22.4	11
R10	Foundation year 1	Female	126	23	18.3	7

have done this for this patient. But when you sit down like this the significant outcomes, the significant impacts then I remember the setting about why the formal discussion was being held.

Work environment

Feedback was delivered typically in a quiet area which afforded increased focus and attention to the feedback. Time pressures and workload were potential barriers to receiving feedback, although the process was considered non-intrusive and a worthy investment of their time requiring little investment for large gains, as described by one doctor:

R7: I think it is a very useful intervention with little impact on our workload. I mean … it's a high impact intervention for us that I haven't had before.

Doctors were unanimously enthusiastic about the process continuing but questioned the impact on pharmacists' workload and the sustainability of monitoring prescribing and delivering formative feedback.

Doctors reported that feedback was delivered constructively and objectively without judgement with a clear purpose to benefit each doctor. Doctors were clear in advocating the need for this non-punitive approach to limit potential anxieties around receiving feedback.

Feedback facilitator

All doctors considered pharmacists credible facilitators of prescribing error feedback. This was influenced by their expert knowledge with some doctors also suggesting that it was a pharmacist's role to provide feedback on prescribing errors. Advancing on this, some doctors reported increased teamwork and role awareness of their pharmacist as a result of prescribing error feedback. Rapport appeared integral to receiving feedback openly, suggesting an element of trust is needed to facilitate the process. Building on this, the ward pharmacist was considered the most appropriate facilitator for this reason as well as having patient knowledge and understanding relevant situational context as described by one doctor:

R2: So I think it should be from the ward pharmacist because they know the patient and the prescription

Table 2. Interview guide

Area	Question	Prompt
Perceptions of formalized prescribing error feedback	Is the formalized process an improvement on the current system?	
	What have been the main advantages and disadvantages of the formalized process?	
	How important is receiving prescribing error feedback to you?	What are the main benefits?
		Who benefits?
	What do you think are the benefits of receiving feedback on prescribing errors?	
	Have there been any practical barriers to receiving feedback on prescribing errors?	Have you been able to find the time to receive feedback?
		Has there been adequate support at ward level?
	Has feedback been timely?	
	Do you think that timely feedback is important?	
	Was the delivery of feedback on overall prescribing useful?	Did it allow you to consider positive aspects of your prescribing too?
		Is this important for learning too?
	Do you think that feedback should continue to be formalized?	
	Was provision of the feedback proforma useful in any way?	
Perceptions of impact of receiving feedback on themselves	What has been the impact, if any, of feedback on your own prescribing?	Can you think of any specific examples, positive or negative, on your own prescribing?
		Do you think that you may make fewer prescribing errors as a result of feedback?
	Are you more aware of risks of prescribing errors as a result of feedback?	For example error causation or root cause analysis
	How has this informed your practice?	
	Have you used any examples of feedback for your training portfolio?	If yes has this made you prescribe any differently?
		If no, then why not? Could you?
Perceptions on receiving feedback from pharmacists	Is feedback delivered consistently?	
	What are your views on receiving feedback on prescribing errors from pharmacists?	Are they suitable?
		Did you find it useful or not useful?
	How was feedback delivered by your pharmacist?	i.e. was it constructive, educational?
	Do you receive feedback on the quality of your prescribing from any other colleagues?	If yes, does this differ at all from feedback delivered by pharmacists?
	Has formalized feedback changed or had any impact on your working relationship with your pharmacist?	Has the process of feedback changed how you seek advice from your pharmacist?
		Has it affected your rapport?
Future delivery of error feedback	Should a formalized feedback process be rolled out trustwide?	Why is that?
	Could prescribing error feedback be delivered any differently?	
	How would you prefer to receive feedback on your prescribing?	Face to face?
		e-mail?
		Letter?
	Can the system of formalized feedback be improved at all?	

because it's better not necessarily to be rapport [sic] but because they know the situation.

Education and learning

Doctors were unanimous in advocating feedback as an educational process to facilitate reflection and learn from error, and as essential for their professional development. Indirectly, doctors reported pharmacists delivering bespoke educational sessions to junior doctors as an outcome of feedback sessions. Doctors were divided on the need for positive feedback with some suggesting it was as valid as constructive feedback (performance-oriented behaviour). Others argued that it was only the constructive element that was relevant (learning-oriented behaviour), with absence of feedback positive in itself.

R8: I don't think that I need the positive feedback as a person but then that depends on the personality. For trainees I think that it may be relevant but for me what is constructive is more important than what I am doing good... Just say to me look [name] we've looked through your prescriptions and these are the ones that we thought we just wanted to highlight or draw your attention to.

Prescriber impact

All doctors reported a raised awareness of prescribing errors with some surprised by the frequency with which errors occur. Training grade doctors reported increased information- and feedback-seeking behaviour at the point of prescribing, using pharmacists more as medicines information providers.

R4: I didn't realise before this feedback how easy it is to make at least the minor errors on a daily basis and not know about it because no one has told you about [sic]. Even with the more significant errors you wouldn't necessarily have been told about it so I don't know over the past year how many significant errors I've been making because not until this project have I ever been fed-back about any errors so I think that it was really important for my own awareness of prescribing to have the feedback.

Most doctors reported spending less time correcting errors and increased focus on their prescribing with a greater discretionary effort applied. The discretionary reward appeared to be multifaceted with potential embarrassment, benchmarking and competitiveness, monitoring and desire to improve all influencing factors.

Discussion

Feedback was universally valued and accepted by all doctors interviewed who reported both direct and indirect benefits of receiving feedback. The process was considered feasible with little impact on doctors' time. Pharmacists estimated that initial feedback took 5–15 minutes per prescriber with subsequent feedback for individual errors taking less than 5 minutes.

Formalization of feedback facilitated consistency in its timely delivery, enabling reflection and memory recall to make feedback actionable and useful (Hysong et al, 2006). Reflecting previous findings (Bertels et al, 2013), individualization of feedback, delivered face-to-face, was preferred. This could encourage 'a full circle of shared responsibility' (Sullivan et al, 2013) through active participation and dialogue. Verbal dialogue was supported through structured written feedback, an augmented approach endorsed in the literature (Ivers et al, 2012). Individual feedback was shared by some doctors, creating potential for shared learning or benchmarking, although evidence regarding such comparisons is conflicting (Kiefe et al, 2001; Schneider et al, 2008; Ivers et al, 2012). Equally, although the potential for shared learning from prescribing errors has been reported (Franklin et al, 2007; Booth et al, 2012; Gordon and Bose-Haider, 2012), empirical recommendations (Hysong et al, 2006; Ivers et al, 2012; Bok et al, 2013) advocate that individualized feedback is more effective, although shared learning could be adopted as an augmented approach (Shaw et al, 2003).

While all prescribing errors should be addressed, significant errors appeared to have greater learning potential. Feedback could be limited on minor errors because the task performance is considered uncomplicated with feedback becoming cognitively or motivationally inhibiting (Bangert-Drowns et al, 1991). It is also possible that there is less urgency to avoid minor errors so doctors are less motivated to change their behaviour. Delivery of feedback away from the clinical area is clearly important for privacy but also to allow dedicated time, free from distraction, to discuss prescribing error feedback as reported elsewhere (Bertels et al, 2013).

Feedback should be educational with a clear focus on learning and professional development, echoing the suggestion that feedback is the 'cornerstone of effective clinical teaching' (Hesketh and Laidlaw, 2002). Such performance measurement and feedback are integral in identifying problems, benchmarking to 'best practice' and improving performance (Randolph et al, 2009), and endorse the need for a 'safe learning climate' (Bok et al, 2013). This non-punitive process is less likely to be resisted by the recipient (Kluger and DeNisi, 1996) making the process more useful and actionable (Hysong et al, 2006). Real-time audit and feedback are suggested to foster a blame-free 'culture of safety' (Ursprung et al, 2005).

A safe climate is also conducive to facilitating active dialogue to question and clarify any feedback, an important caveat of successful feedback (Bok et al, 2013). There was a clear paradigmatic shift from a system where pharmacists intercept and correct errors, to one where prescribing errors are intercepted and corrected with feedback. Doctors astutely recognized this, which is in contrast to the findings of Sullivan et al (2013) where doctors asked: 'Why do we need this summary information every 2 weeks when pharmacists already call us for each error?'. Both processes could be considered as 'feedback', with correction a 'directed feedback' and the provision of constructive feedback 'facilitative feedback' (Archer, 2010). If directed feedback is merely corrective, evokes an automatic prescriber response and does not facilitate reflection, then it may be received mindlessly with potential benefits negated and highlights the need for constructive feedback.

Doctors reported a greater focus and afforded more time to prescribing tasks. In part, this was because of feedback and raised awareness of errors. However, indirectly, it was also clear that doctors had greater discretionary effort for prescribing tasks influenced by the monitoring process itself, a desire to be viewed competently, a

sense of guilt of their impact on other team members, and risk of embarrassment and comparison to peers. They outlined their lack of awareness of prescribing errors before this study, findings consistent in the literature (Dornan et al, 2009; Bertels et al, 2013), and highlighted the need for an external assessor, in this case a pharmacist, to raise awareness of any deficits in prescribing competence (Davis et al, 2006).

Feedback can increase awareness of the role of pharmacists as a safety net and medicines information provider. While this can provide prescriber reassurance, it can also encourage greater pharmacist–doctor interaction and information-seeking behaviour at the point of prescribing, fostering a greater sense of teamwork and collaboration.

Pharmacists are credible facilitators of feedback influenced by their expert knowledge and perceived role in intercepting prescribing errors. Equally, pharmacists are not part of a doctor's hierarchy allowing delivery of objective feedback without judgement. Ward-based pharmacists in particular have greater credibility from their observation of prescribing practice, a key caveat of accepting feedback as described previously (Bok et al, 2013).

Limitations

The study is entirely descriptive without quantification of themes while the sample size is also small. Hence, results may not be generalizable to other settings. However, a range of doctor grades was recruited and data saturation and redundancy was achieved. Equally, the inductive methodology was ideally suited to illuminate what little is known on the subject. Finally, this study was conducted in one clinical setting. It is possible that the process and experiences of feedback would differ in other ward areas while the generalizability of results to other organizations is limited.

Conclusions

This qualitative study has reported that formalization of feedback on prescribing errors is well received by doctors. Feedback was considered a high-impact educational intervention to support professional development and doctors were enthusiastic about receiving further feedback. Doctors reported a raised discretionary effort for prescribing tasks as well as increased information-seeking behaviour from pharmacists at the point of prescribing. Pharmacists are credible facilitators of prescribing error feedback although the sustainability for pharmacists to perform regular audit and feedback sessions was questioned and requires further exploration. **BJHM**

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KEY POINTS

- Doctors have reported a lack of awareness of their prescribing errors with lack of feedback considered a latent error causation factor.
- A structured process of prescribing error feedback was introduced for hospital doctors, delivered by ward-based pharmacists.
- Doctors were interviewed to explore their attitudes of receiving formal feedback on their prescribing.
- Feedback was unanimously welcomed and valued by all grades of doctor interviewed who iterated that the process should continue.
- Feedback was considered an educational intervention to direct personal development while doctors reported increased information and feedback seeking behaviour as a result of feedback.
- Doctors reported a raised discretionary effort towards prescribing as a result of the feedback and monitoring process.
- Pharmacists were considered suitable facilitators with the process improving doctor–pharmacist team work and communication on prescribing.

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