



OPEN ACCESS

A qualitative study of emergency physicians' perspectives on PROMS in the emergency department

Katie N Dainty,¹ Bianca Seaton,¹ Andreas Laupacis,¹ Michael Schull,² Samuel Vaillancourt¹

¹St Michael's Hospital, Li Ka Shing Knowledge Institute, Toronto, Ontario, Canada

²Institute of Clinically Evaluative Science, Toronto, Ontario, Canada

Correspondence to

Dr Katie N Dainty, St Michael's Hospital, Li Ka Shing Knowledge Institute, Toronto, Ontario, Canada M5B 1W8; kndainty@gmail.com

Received 17 August 2016

Revised 5 January 2017

Accepted 14 January 2017

Published Online First

9 February 2017

ABSTRACT

Introduction There is a growing emphasis on including patients' perspectives on outcomes as a measure of quality care. To date, this has been challenging in the emergency department (ED) setting. To better understand the root of this challenge, we looked to ED physicians' perspectives on their role, relationships and responsibilities to inform future development and implementation of patient-reported outcome measures (PROMs).

Methods ED physicians from hospitals across Canada were invited to participate in interviews using a snowballing sampling technique. Semistructured interviews were conducted by phone with questions focused on the role and practice of ED physicians, their relationship with their patients and their thoughts on patient-reported feedback as a mechanism for quality improvement. Transcripts were analysed using a modified constant comparative method and interpretive descriptive framework.

Results Interviews were completed with 30 individual physicians. Respondents were diverse in location, training and years in practice. Physicians reported being interested in 'objective' postdischarge information including adverse events, readmissions, other physicians' notes, etc in a select group of complex patients, but saw 'patient-reported' feedback as less valuable due to perceived biases. They were unsure about the impact of such feedback mainly because of the episodic nature of their work. Concerns about timing, as well as about their legal and ethical responsibilities to follow-up if poor patient outcomes are reported, were raised.

Conclusions Data collection and feedback are key elements of a learning health system. While patient-reported outcomes may have a role in feedback, ED physicians are conflicted about the actionability of such data and ethical implications, given the inherently episodic nature of their work. These findings have important

implications for PROM design and implementation in this unique clinical setting.

INTRODUCTION

Emergency departments (EDs) are a major point of access to the healthcare system for all types of patients, from the critically ill to patients seeking treatment for minor aches and pains. Capacity challenges in the primary care systems in Canada have forced EDs to operate at the interface of outpatient and primary care; this includes being staffed by health professionals trained to manage a wide range of problems, being open 24 hours a day, 7 days a week, and increasingly caring for stable patients who cannot access their primary care physician.¹ At the same time, there is growing demand from governments and citizens for increased accountability for and improvement of the quality and value of healthcare services provided.² The importance of including patients' perspective in quality-of-care measurement and improvement has received tremendous interest recently, and significant work has been done in fields such as orthopaedics, mental health and cancer where reliable survey instruments have been developed to capture patient-reported outcomes.³

Patient-reported outcome measures (PROMs) are 'measurement instruments, completed by patients, and provide information on aspects of health status, such as pain, functionality and mental well-being as determined by the patients'.⁴ The systematic use of PROMs as part of the care planning process has been purported to improve patient outcomes in a number of ways including: (1) providing access to information only the patients can assess and (2) facilitating improved



CrossMark

To cite: Dainty KN, Seaton B, Laupacis A, et al. *BMJ Qual Saf* 2017;**26**:714–721.

communication between doctors and patients.⁵ Nelson *et al*³ outline several examples of PROMs in practice including a programme in England where standard PROMs are used to track outcomes of patients with four common surgical conditions⁶ and care teams in the Netherlands who are using web-based applications and mobile health to monitor the quality of life of children with cancer.⁷ What is common among PROMS implemented to date is that they are almost exclusively used in longitudinal follow-up of patients with chronic or long-term disease.

To date, quality measurement in EDs has typically focused on data collected from patient experience measures and clinical process measures.⁸ PROMs are distinct from patient experience or satisfaction measures which tend to focus on capturing the patient's view of what happened during their healthcare visit, that is, processes of care such as timeliness, cleanliness, etc. In ED care, PROMs could offer promise since 80% of patients are discharged without any other way to track outcome, but their development has not been widely explored.

In particular, there has not been much work done regarding ED clinicians' perceptions of the usefulness of different types of data feedback, specifically in relation to their conception of their professional role. During the course of a larger project aimed at developing a PROM for use in the ED, we undertook an investigation of the specific goals of a PROM in the ED setting and the impact of ED physicians' perspectives on such a tool's utility in practice.

METHODS

Study approach

The study was designed and conducted using an interpretive theoretical approach. This paradigm embodies the ontological assumption that social reality is constructed by the people that are part of it and the epistemological view that social reality can only be studied by eliciting the perspectives of these people.⁹ We chose this approach as it allowed us to answer our primary research question: how do ED physicians conceptualise their own role and professional duties, and how do they use feedback data to inform their practice?

Participant recruitment

Emergency physicians affiliated with the 37 member hospitals in the Strategies for Post Resuscitation Care (SPARC) Network¹⁰ were invited to voluntarily participate in interviews. This group was chosen to leverage existing relationships and ensure representation of opinions across several geographical and institutional experiences (urban, rural, academic, community, etc). An initial invitation email was sent from the research team to the ED physician leads in each of the SPARC hospitals. Physicians willing to participate were

directed to contact the research coordinator directly to set up an interview time. One reminder email was sent to non-responders, after which if no response was received it was assumed there was no interest in volunteering. We also employed a snowball sampling approach by which we asked each lead to pass on the invitation to their physician colleagues or to suggest the name of other physicians who may be willing to participate. Research ethics board approval for this study was obtained from St. Michael's Hospital Research Ethics Board.

Interview methods

Individual interviews were conducted by telephone to allow physicians from different geographical regions to participate without the barriers of travel. A semi-structured interview guide, developed by the study team and based on the literature and input of experts in emergency medicine (EM) and qualitative research, was used to provide broad topic areas to guide the discussion (appendix A). The interview guide was piloted with two ED physicians from the local hospital. Interviews began with a brief discussion of the use of PROMs in healthcare, described as a questionnaire completed by patients with questions about their health status and well-being, as well as the larger project (to develop a PROM for use in the ED) that inspired this study. The guide was used to keep the discussion as focused as possible, and probes such as 'Could you explain that further?' or 'Would you give me an example?' were used to access more in-depth information and discussion. Interviews were conducted until the authors felt thematic saturation had been reached and no new insights would be gleaned from talking with further participants.¹¹

Sessions lasted approximately 30 min and were conducted by the same PhD-trained qualitative research coordinator (MBS). All interviews were digitally recorded and transcribed verbatim by an external transcription service for analysis.

Analysis

Data analysis was conducted using a constant comparative approach in order to continuously monitor emerging themes and identify areas for further exploration. Initial analysis of the first five interviews was done independently by two of the authors (KND and MBS). A coding framework was developed, and the interview guide was refined in order to explore developing concepts in subsequent interviews.

Once thematic saturation was felt to have been achieved, the entire data corpus was analysed according to standard thematic analysis techniques.¹² Descriptive codes were attached to segments of text in each transcript.¹³ The descriptive codes were then grouped into broad topic-oriented categories, and all text segments belonging to the same category were compared.¹² Versions of the analysis were reviewed

with the research team at regular intervals. We also looked for negative or non-conforming responses in order to ensure we considered the range of variations in developing thematic concepts. Ultimately, the topic-oriented categories were further refined through an inductive, iterative process.

The research team

The interviewer was not personally familiar with any of the physicians interviewed. Both the lead author (KND) and research coordinator are non-clinician, PhD-trained social scientists with interest in the impact of context and perception on quality improvement interventions. The remainder of the research team was made up of clinician-scientists from EM and palliative care and a PhD expert in outcomes measurement. Constant comparative analysis was conducted by the lead author and research coordinator and discussed with the rest of the team at various time points.

RESULTS

Over the course of 6 months, we interviewed 30 emergency physicians from across the province of Ontario, as well as the cities of Halifax, Nova Scotia and Montreal, Quebec. Respondents represented various practice locations and years in practice. More detail on the characteristics of the sample can be found in [table 1](#).

In general, there was a positive response to the idea of developing PROMs for ED patients as the physicians felt it exemplified a desirable ‘patient-centred approach’. However, several unique insights were shared with regard to concerns about the goals of such feedback, the logistics of obtaining the feedback, issues with subjectivity and the legal implications for physicians in having this knowledge—all specifically framed with regard to the unique context of EM. These insights appeared to be significantly shaped by the participants’ view of their role and work as EM physicians. This provides important insight about the relationship between context and feedback and its influence on implementation and uptake. In the following sections, we first explore the impact of how they perceive their professional identity, and then present the participants’ perspectives and concerns about PROM-type feedback within this frame.

The practice of emergency medicine

Almost unanimously, the physicians we interviewed described themselves as acute ‘problem-solvers, whose most important job is to ‘keep patients safe’ by diagnosing, stabilising or ruling out life-threatening conditions. The physicians often shared that they were drawn to the unpredictability of EM and appreciated being able to apply their broad medical knowledge and procedural skills to treat the variety of cases that present to the ED. They explained that people come

Table 1 Characteristics of participants

Characteristics of participants	Number of participants (N=30)
Age	
20–30	1
30–40	16
40–50	6
50–60	3
60–70	4
Gender (%)	
Male	22 (73)
Female	8 (27)
Training (%)	
EM residency	17 (57)
Family medicine and EM certificate	11 (37)
Other	2 (6)
Years in practice (avg=12.7; range 1–35)	
Residency years	1
<5 years	8
6–10 years	5
11–20 years	9
21–30 years	3
30+ years	2
Did not state	2
Other professional activities	
Clinical EM sole focus	10
Trauma	4
Research	5
Administration	3
Education/teaching	2
EMS/prehospital	2
Other	4

EM, emergency medicine.

to the ED seeking an explanation or treatment for painful and worrisome symptoms, the vast majority of which are benign and will resolve without medical intervention. In their opinion, it is the ED physician’s job to ascertain whether or not the presenting symptoms represent something ‘truly serious’, respond with appropriate treatment or referral for patients who need it, and provide an explanation, instructions and reassurance to all others that they will be okay.

The most important aspect of my job is the ability to quickly attend to people who are actually very, very sick and either treat them or get them in touch with people who can treat them on an immediate basis. That’s the true business of the emergency department, and everything else I’d say is gravy that we’re able to offer society. [P4]

The participants also discussed the fast pace, high volume and episodic nature of care in the ED as intrinsic and attractive features of this job. They described the brief duration of medical encounters in

the ED and emphasised that EM physicians are expected to have strong communication and time management skills, as well as up-to-date medical knowledge, so that they can connect with patients quickly, get to the ‘heart of the matter’ of why the patient is seeking care and respond appropriately before moving on to the next patient. They highlighted the short-term, time-limited relationship that EM physicians have with patients as an advantage of this role, facilitating the objective decision-making and emotional boundary work needed to manage the high volume of patients with an incredibly broad variety of conditions that present to the ED.

In Emergency, most people, I’m never going to see them again. I don’t know what happens to them after they leave... But I think there are a lot of pluses to that model. I don’t think you would want—you know, if somebody, I don’t know, gets shot in the chest, I’m glad I don’t know them. You know what I mean? I think it makes it easier. [P3]

The high volume of patients and short duration of the medical encounter have additional consequences of relevance to EM physicians’ perception of their role. Participants reported feeling a time-limited sense of connection and responsibility to those under their care. Many identified the moment of first contact, when the physician picks up the patient’s chart and walks into the room, as the point at which someone ‘becomes’ their patient, and specified physical departure from the department (discharged or admitted to hospital) as the point at which they are no longer ‘their patient’. Unlike other types of physicians who have long-term relationships with patients based on the need for follow-up or monitoring, participants explained that they typically do not get much, if any, feedback about patient outcomes after discharge, the accuracy of their diagnoses or the efficacy of the care plans offered, nor do they usually have any follow-up responsibilities. These aspects of the EM physicians’ job are both accepted and considered to define EM.

And whether they followed up or have done what they’re supposed to, again that’s not—you know, I treat them as adults. And they choose to follow up or not. I’m not going to intervene. I don’t feel it’s my responsibility to call them and say, ‘I told you that you should do such and such or did you not understand that you were supposed to do such and such?’ I don’t think that’s my job. [P1]

The role of a PROM in emergency medicine

Most of the physicians expressed some interest in receiving more feedback about patients who had been in their care. Because they view themselves as, first and foremost, a potentially life-saving resource for critically ill patients and a source of reassurance and referral for all others, feedback about patient outcomes is seen as somewhat of a ‘treat’, an appreciated,

but not necessary, tool for professional learning and constructive practice change. Participants identified morbidity and mortality information, consult notes from other physicians, as well as information about patients who return to the ED within a few days of receiving care (‘bounce backs’) as particularly interesting.

There’s a balance between an emergency department wanting to get somebody out, and the hassle of a patient having to return. Anyway, that, I think, is valuable information, to present the physician with bounce-back rates. Are they able to be more efficient with decreasing bounce-backs so, you know, the patient is better, and there’s less resource utilization, had you just spent, I don’t know, spent an extra two minutes or something with the patient in some form of interaction. [P3]

Several participants conveyed interest in the potential to receive feedback on patient outcomes, but many were unsure of how they could interpret and apply it for improvement given the nature of their practice. Some physicians expressed general interest in outcomes information related to patient follow-up, for example, adherence with discharge instructions and subsequent treatment at outpatient clinics, explaining that it might inform how they communicate with patients about the importance of follow-up.

Many of the EM physicians we interviewed also felt that a significant portion of their ED colleagues would not necessarily welcome such information and believed that getting universal buy-in for a PROM in EDs would be a major challenge. One physician stated that

for the most part, emergency physicians have a personality where once they see a patient and they go home, they don’t think about those patients. That’s our personality base, so to make them care about a patient [reported] outcome measure, it’s not going to be an easy task.

Participants were also concerned about how patient-reported outcome data could potentially be used against them in an evaluative capacity, for example, if linked to other physician performance outcomes at either the individual level or as a comparison tool between physicians within a department. They explained that EM physicians have tended to resist formal feedback about their performance or how their performance compares with that of their colleagues because most cases are unique and the environment is so demanding. Participants conveyed their preference for individual physician control over which patient outcome information they would review, and several mentioned that they could more easily envision the utility of PROM data at the department or system level in an aggregated format with a view to informing higher level quality improvement or educational initiatives rather than individual practice change.

When we talk about instituting information, or follow-up information etc for physicians, I think it can be a great tool for improvement, if an individual physician is in control of the information. I think it becomes immediately repellent to a physician when there is no benefit to the physician or it's not based on a [more] comprehensive score. [P3]

Issues of timing and selection of patients

In order to benefit from the purported advantages of feedback, in general, it must be provided in a timely fashion and in a way which evokes meaning for the recipient.¹⁴ According to our participants, the issue of the time lapse between when the patient is discharged, when their outcome information is collected and when these data are fed back to the provider would be crucial. A typical EM physician in a busy department might see 30 patients over the course of an 8-hour shift, and so the expectation of recall and ability to thoughtfully consider PROM-type feedback was a source of significant concern for the participants. We repeatedly heard that they would prefer to receive feedback about patients within 3 days or a week at most in order for it to be relevant to them in promoting individual practice change.

In addition, participants described the large proportion of patients who present to the ED as the 'worried well', people with symptoms expected to resolve without any medical treatment or those whose outcomes were expected to follow a similar known trajectory (eg, healing from an ankle sprain). For the most part, feedback about this 'unremarkable' group of patients, particularly after more than a week, was seen as irrelevant and a potential source of information overload. In general, the participants were most interested in feedback about a small, specific subset of patients, typically those with acute illness or challenging diagnoses, and several physicians indicated that they would like to identify exactly which patients to receive feedback about, perhaps by checking a box within the medical record, rather than receive PROM data about all patients.

So, there are patients that I personally don't feel like I need to know what happens to them, and if that information kept getting sent back into my mailbox, it would be bothersome on top of all the dozens and hundreds of letters that come in the mailbox anyway. I guess there would be only certain patients that I would want feedback from. [P10]

Questioning subjectivity

When reminded that a PROM tool would be 'patient-reported', the EM physicians we interviewed expressed major reservations, sharing their perception that patient feedback could be influenced by other factors, including social desirability bias and experiential variables. Several participants indicated that PROM data would need to be triangulated with other

corroborating objective metrics in order to be sufficiently interesting or trustworthy at either an individual or departmental level.

If it's really sort of highly selective, I think it could be valuable. Around specific cases that may be areas that I wanted, that could be helpful. If there's a lot of sort of subjectivity to it, I'm not sure how helpful—so I'd like the feedback and the outcomes to be as objective as possible. [P10]

Oh, the patients would report it? I would definitely trust it less. I think there could be agendas and biases that creep in there. So, yes, but I would trust it less than if it was from, you know, some sort of other database I guess. [P20]

Several participants shared the sentiment that a good emergency physician needs to be quite calculating, precise and decisive. Accordingly, many felt that while information about patient outcomes post discharge would satisfy their general curiosity and might be interesting in intellectually challenging cases, they did not see how information about one patient's outcomes could inform the care of others.

I'm always very interested to know if what we did for them got them on the path towards making them better. It's not an important part of my practice, but I do think it's nice in terms of validating that what you're doing is the right thing...but seeing that it works well or doesn't work well for one patient doesn't tell you whether it was the right or wrong thing to do. But my relationship as far as being that patient's doctor is over at that point in time. And so, having access to that is not important for me, as far as that goes, no. [P4]

Responsibility and liability implications

Finally, a very distinctive concern that participants raised relates to the resulting legal responsibilities and ethical implications of having this outcome information, knowledge that they normally would not be party to unless the patient happened to return to the ED on their subsequent shift. The physicians expressed concern about what they would be expected to do with feedback about patients for whom they would no longer normally have any connection with or sense of responsibility towards, particularly in the case of reports of poor outcomes. Several participants highlighted this as potentially anxiety-provoking, with comments such as 'am I supposed to worry about them now?' [P1], while others noted that they would not possibly have the time to follow up with patients if this is what was expected. In some ways, a PROM may create a new type of relationship between EM physicians and their patients, a longitudinal one that would not be welcomed by many of the participants in this study.

This is kind of specific information about asking people how they're doing....it might create a new

obligation, and I'm speaking kind of morally and ethically and probably—and maybe legally...to follow up in a more direct way if things are not going well. And then they may sort of expect us to follow up with them and give them more specific advice or call them and you know—it would be a problem if the ball and the responsibility of seeking more advice if they're worse, came back into the Emergency physician's hands again. [P13]

DISCUSSION

Routine use of PROMs by healthcare providers in their practice may help to improve the quality of care, but it seems they are a significant cultural change and may face unique challenges in the ED setting. The findings of Marshall *et al*¹⁵ from their structured review suggested that a general lack of clarity in the field, especially regarding appropriate goals for PROMs and the mechanisms by which they might achieve them, was a clear barrier to their uptake. Our findings align particularly well with this based on our participants' concerns about the goals for PROMs in the ED setting and the mechanisms of feedback to ensure applicability. In addition, we heard several concerns about the legal and ethical implications once physicians have such data.

To theoretically query the assumptions of how a system of patient-reported feedback may work in the ED setting requires us to specifically consider how it is expected to work against the context into which it would be introduced and the expected outcomes.⁵ Flott *et al*¹⁶ recently highlighted that while the theoretical foundations of why patient-reported feedback should be used are logical, the exploration of survey methods, data collection, analysis and feedback and user perceptions is sorely lacking. Previous evaluation has shown that PROMs can function to improve doctor–patient communication, help detect unrecognised problems, monitor the impact of treatment or have an impact on treatment adherence, simply via the act of giving patients a proactive role.¹⁷ However, in the ED setting, patients do not remain in the care of their treating physician or the department; by definition, it is an episodic encounter.

So, while the above mechanisms and anticipated outcomes might be valid mechanisms for PROMs in longitudinal patient–provider relationships, they may not necessarily hold true in an episodic care environment like the ED. For example, a PROM completed after ED discharge would not have a mechanism by which to improve doctor–patient communication, since the patient is unlikely to see the same ED physician again. In terms of detecting unrecognised problems, this could be helpful, although this intersects with the concerns raised by our participants regarding responsibility for follow-up.

And, finally, using a PROM to monitor the impact of treatment could potentially be informative to a

physician, but may not necessarily be seen as reliable enough to change practice based on individual patient outcomes in the absence of matched objective measures. The more distal outcomes of patient health status and outcomes are from care, the more intermediate processes need to occur before any impact can be realised. The existing evidence suggests that for many of the applications described above, the feedback of PROM data to clinicians has a much greater impact on the discussion and detection of issues within the consultation than on the ways in which clinicians subsequently manage these problems or on the patient's eventual health outcomes.⁵ Given this, along with the findings we have reported here, their utility in an episodic context like EM may require significant adaptations such as the nature of the questions asked of patients, clarifying the expectations for clinical follow-up by physicians and education of physicians on how to analyse feedback for practice improvement.

Physician resistance to PROMs has been reported by several other authors, including in the findings of a systematic review by Boyce *et al*.¹⁸ Limited clinical utility, difficulty with interpretation, concern about bias and delayed reporting are just a few of the issues listed against the use of PROMs. However, conceptualising how emergency physicians construct and perceive their role and obligations to patients and their influence on the uptake of such outcome measures in this area is a novel consideration. The emergency physicians we spoke to were not simply resistant to innovation or behaviour change, but described significant obstacles rooted in their reality and the expectations of the care they provide. Their concern for the potential change in the physician–patient relationship, their ability to remember the patient in question given the volume of patients they would see before receiving the data and the ambiguity regarding their responsibility for following up on reported outcomes are legitimate concerns based on their conception of their work in the ED.

This discussion in no way is meant to say that emergency physicians do not *care* about the outcomes of their patients. Rather, it draws attention to the importance of unpacking the assumptions that exist with regard to the expectations of the outcomes of a PROM and of developing a realistic theory of change as part of the implementation planning process.¹⁹ Following on Flott's conclusions,¹⁶ careful consideration of the unique structure of the context and the feedback process may be necessary to ensure that the provision of outcome information to clinicians in specialised environments such as the ED can actually assist with improvements in patient management. Also, similar to the suggestions made by Van Der Wees *et al*,²⁰ it seems the implementation of PROMs would benefit from working out a shared vision between developers, healthcare providers and patients

regarding the aims and purposes of the measure, and the establishment of trust among stakeholders concerning the prudent use and liability of such feedback. The role of PROMs may necessarily be to make care more patient-centred and to allow clinicians and managers to use data from patients seen at their institution, rather than using evidence produced in different institutions and environments.

Strengths and limitations

This is the first study to our knowledge to consider the influence of the context and expectations of medical care on the utility of patient-reported outcomes in the ED. The interviews and analysis employed standard qualitative methods and were conducted in a rigorous and systematic manner; so, it is felt that the findings presented here are reliable and valid.

The findings reported here are based on one-time interviews with a small sample of emergency physicians from within Canada. However, because of the variety of physicians we were able to recruit based on years in practice, practice location and training, we believe it to be representative of typical practitioners in the field of EM in North America. In addition, none of the physicians we interviewed had direct experience with receiving patient-reported outcome data, and so their preconceptions about their value may be different than if they had had experience with such a tool.

CONCLUSION

The findings presented here regarding context-specific issues of utility, timeliness and actionability of patient-reported outcome data as well as legal and ethical implications of such knowledge for ED physicians challenge the assumptions made about the generalised benefit of using patient-reported outcomes for quality improvement. Implementing PROMs in an ED setting may require a significant shift in how emergency physicians view their role, how outcome feedback is framed and how data are used for practice improvement. These raise important considerations for clinicians, managers and policy-makers regarding the design and implementation of PROMs in the ED setting.

Contributors KND and MBS conceived of and designed the study, conducted the data collection and analysis and drafted the manuscript. AL, MS and SV contributed expertise to the design of the study, interpretation of the data and editing of the manuscript for submission.

Competing interests None declared.

Ethics approval St Michael's Research Ethics Board.

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Unfortunately, the additional unpublished data related to this study are contained in

confidential qualitative interview transcripts, and therefore are not available for sharing.

Open Access This is an Open Access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

REFERENCES

- 1 Canadian Institute for Health Information. *How Canada compares: results from the commonwealth fund 2015 International Health Policy Survey of primary care physicians*. Ottawa, ON: CIHI, 2016.
- 2 Porter ME. What is value in health care?. *N Engl J Med* 2010;363:2477–81.
- 3 Nelson EC, Eftimovska E, Lind C, *et al*. Patient reported outcome measures in practice. *BMJ* 2015;350:g7818.
- 4 Canadian Institute of Health Information Land Newsletter. <https://www.cihi.ca/en/land/in-focus/advancing-patient-reported-outcome-measures-in-canada> (accessed 11 Aug 2015).
- 5 Greenhalgh J, Long AF, Flynn R. The use of patient reported outcome measures in routine clinical practice: lack of impact or lack of theory? *Soc Sci Med* 2005;60:833–43.
- 6 Devlin NJ, Appleby J. Getting the most out of PROMs: putting health outcomes at the heart of NHS decision-making [Internet]. *Health Econ* 2010. <http://www.kingsfund.org.uk/publications/proms.html>
- 7 Haverman L, Engelen V, van Rossum MA, *et al*. Monitoring health-related quality of life in paediatric practice: development of an innovative web-based application. *BMC Pediatr* 2011;11:3.
- 8 Cameron PA, Schull MJ, Cooke MW. A framework for measuring quality in the emergency department. *Emerg Med J* 2011;28:735–40.
- 9 Green J, Thorogood N. *Qualitative methods for health research*. 2nd edn. Los Angeles: SAGE, 2009:304p. xv.
- 10 Dainty KN, Scales DC, Brooks SC, *et al*. A knowledge translation collaborative to improve the use of therapeutic hypothermia in post-cardiac arrest patients: study protocol for a stepped wedge cluster randomized trial. *Implement Sci* 2011;6:4.
- 11 Francis JJ, Johnston M, Robertson C, *et al*. What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychol Health* 2010;25:1229–45.
- 12 Denzin N, Lincoln YS, eds. *The handbook of qualitative research*. 2nd edn. Thousand Oaks, California: Sage Publications, 2000.
- 13 Kuckartz U. Case-oriented quantification. In: Kelle U, ed. *Computer-aided qualitative data analysis*. London: Sage Publishing, 1995:158–66.
- 14 Brehaut JC, Colquhoun HL, Eva KW, *et al*. Practice feedback interventions: 15 suggestions for optimizing effectiveness. *Ann Intern Med* 2016;164:435–41.
- 15 Marshall S, Haywood K, Fitzpatrick R. Impact of patient-reported outcome measures on routine practice: a structured review. *J Eval Clin Pract* 2006;12:559–68.
- 16 Flott KM, Graham C, Darzi A, *et al*. Can we use patient-reported feedback to drive change? The challenges of using patient-reported feedback and how they might be addressed. *BMJ Qual Saf* 2017;26:502–7.

- 17 Greenhalgh J. The applications of PROs in clinical practice: what are they, do they work, and why? *Qual Life Res* 2009;18:115–23.
- 18 Boyce MB, Browne JP, Greenhalgh J. The experiences of professionals with using information from patient-reported outcome measures to improve the quality of healthcare: a systematic review of qualitative research. *BMJ Qual Saf* 2014;23:508–18.
- 19 Connell JP, Kubisch AC, Schorr LB, *et al.* *New approaches to evaluating community initiatives, vol. 1, concepts, methods and contexts*. Washington DC: Aspen Institute, 1995.
- 20 Van Der Wees PJ, Nijhuis-Van Der Sanden MW, Ayanian JZ, *et al.* Integrating the use of patient-reported outcomes for both clinical practice and performance measurement: views of experts from 3 countries. *Milbank Q* 2014;92:754–75.