

Australian Patient Safety Bulletin

Newsletter of the NHMRC Centre of Research Excellence in Patient Safety

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The NHMRC Centre of Research Excellence (CRE) in Patient Safety was established to create links and exchanges between researchers, workers and decision-makers in the health care system. As a multidisciplinary team of researchers, we are committed to providing assistance to people wishing to do research in the safety and quality arena.

Our last seminar was held on 23rd February and focused on Clinical Handover. It took place in Brisbane and was attended by in excess of 200 people. You can now download the presentations from our website: <www.crepatientsafety.org.au> The seminar was followed by a small group workshop to assist the CRE in Patient Safety to develop a research framework and agenda on clinical handover. A summary of this meeting can also be found on our website.

This issue of the Bulletin summarises articles relating to communication between the hospital and community and between doctors and consumers. Other summaries include: predicting risk of falls in people living in the community, ways in which to improve safety following high-profile disasters, and methods to measure performance in the health system.

In the next three issues of the Australian Patient Safety Bulletin we will provide some tips on things to consider when doing good quality research. In this issue of the Bulletin we discuss how to develop a research question.

In the June edition, we will outline the different types of study designs and when to use them. In the October edition we will discuss elements of research study development.

All comments are welcome and can be made to:
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Problems with transfer from the hospital to the community

Kripalini, S, LeFevre, F, Phillips, C.O., Williams, M.V. Deficits in communication and information transfer between hospital-based and primary care physicians. JAMA 2007; 297 (8): 831-841

The aim of this systematic review was to: (1) characterise the prevalence of communication problems; and (2) identify strategies to improve information transfer, between hospitals and primary practice (or general practice). Poor information transfer has been demonstrated to result in lower quality of care on follow up.

The discharge summary is the most common method for transferring information on test results, hospital management and post-discharge instructions to primary practice physicians. In the US, the accrediting organisation JCAHO require discharge summaries to be written within 30 days of discharge.

Handwritten discharge letters sometimes precede a formal summary and are delivered by either the patient or through the mail. Articles were included if they:

1. contained observational studies (audit and survey) examining communication and information transfer at hospital discharge (relates to aim 1);
2. tested an intervention to improve information transfer and had both control and intervention arms (aim 2);
3. were printed in English language;
4. were published in a peer-reviewed journal

Results: Fifty five articles investigated the prevalence of problems with handover to primary practice. Rarely did the hospital physician have direct communication with the primary care physician (3-20% of occasions). The availability of a discharge summary at the first post-discharge visit was low (12%-34%) and remained poor at 4 weeks (51%-77%). Eleven percent of discharge letters and 25% of summaries never arrived. This affected the quality of care in approximately 25% of follow-up visits and contributed to primary care physician dissatisfaction. Had pending test results been known by the primary physician, management would have changed in only 1-2% of discharges.

A minimum dataset of information that should be recorded in the discharge summary has been developed. Audit of summaries showed that on many occasions critical information was missing e.g. 33-63% of summaries lacked diagnostic test results, 17.5% did not have the main diagnosis, 21% did not have discharge medication and 65% did not record tests pending at discharge. Lack of necessary information in the discharge summary resulted in a non-significant trend towards a higher re-admission rate.



Eighteen interventions identified strategies to improve communication transfer, with most comparing computerised systems with manual discharge summaries. No two studies used the same quality indicators to assess the worth of the intervention. Computerised systems were more likely than manual summaries to contain fields deemed by the primary care physician as important. e.g. 100% vs 65% had discharge diagnosis, 47% vs 39% had radiology test results.

Take home message: Delays in transfer of information between hospitals and general practice are common and there is no magic bullet. A minimum dataset of information required to be transferred has been developed. IT capabilities offer the greatest hope of expediting the process and ensuring that information is sent. However, even with these systems in place, many fields in the minimum dataset are still incomplete.

Will my patient fall?



Ganz DA, Bao Y, Shekelle PG, Rubenstein LZ. Will my patient fall? JAMA 2007; 297(1):77-86.

Falls are the most common mechanism of injury among people who present to the Emergency Department with non-fatal injuries. Five to ten percent of falls cause serious injuries such as head injuries, fractures or major lacerations.

Previous studies investigating effective falls preventive strategies have found that thorough assessment of falls risk provides the best chance of reducing falls in people living in the community. The authors undertook a systematic review to identify which factors were capable of predicting future falls.

Articles were included if they:

1. used prospective data collection (cohort or RCT's);
2. measured falls as an outcome;
3. reported data specific to a community-dwelling or population-based sample;
4. enrolled people with a mean age of 65 years or older;
5. were written in English language;
6. followed up patients for between 6 and 12 months.

Results: Thirty seven papers met inclusion criteria, however only 18 studies performed multivariate analysis on at least one of the six potential risk factors. Of those 18, only nine studies had data which could be extracted to provide a likelihood ratio (LR) of the probability of a future fall. For all but one study, patients were followed up for one year.

Medication review: Eleven studies evaluated medication use. Patients taking benzodiazepine, phentiazine, or antidepressants increase the risk of having a future fall.

Orthostatic BP monitoring: Evidence is weak that this is able to predict future falls. One study showed that an increase in pulse rate of less than 6 per minute, measured 30 seconds after standing up, predicted falls (LR 1.4, CI 1.0-1.9).

Vision assessment: One study showed that if a person was unable to read a newspaper (even wearing glasses), they were twice as likely to have a future fall compared to those who were not vision impaired. Another study found that inability to recognise a face at 4m was associated with higher risk of sustaining a future fall.

Evaluation of gait and balance: Of 15 studies investigating the effect of gait on falls, 10 demonstrated that impairment of gait or balance significantly increased risk of falls. Gait risk factors predictive of future falls included: an inability to perform a tandem walk test (heel to toe walking over 2m) (LR 2.0, 95%CI: 1.7-2.4); self perceived mobility problems (LR 2.0, 95%CI:1.7-2.4); and, taking more than 13 seconds to walk 10 m (LR 2.0, 95%CI: 1.5-2.7).

Mental state assessment: People with dementia and those who made five or more errors on a mental status exam were at greater risk of future falls (LR 17, 95%CI: 1.9-149 for dementia and LR 4.2, 95%CI 1.9-9.6 for mental impairment).

Environmental risk assessment and history: Men (but not women) unable to rise from a chair without using the chair arms were at high risk of having a future fall (LR 4.3, 95%CI: 2.3-7.9). People who had a fall in the previous year were at high risk for a future fall (LR range: 2.3-2.4). Of 11 studies evaluating the effect of age on future falls, 4 found a positive association between age and future falls. Two of the three studies capable of assessing likelihood risk found no association between age and risk of falling at least once in the next year.

Take home message: It is possible to assess people for their risk of future falls. For people who have not previously fallen, undertaking a gait and balance assessment provided the best prediction for future falls. By identifying people at high risk, preventive strategies such as installing aids in the home and positioning people at high risk close to the nurses station, in nursing homes or hospital, might prevent future falls.

How to prevent another Bundaberg

Dunbar JA, Reddy P, Beresford B, Ramsey WP & Lord RSA. In the wake of hospital inquiries: impact on staff and safety. MJA 2007 Jan 15; 186(2): 80-83.

This MJA article focuses on methods to improve patient safety in the aftermath of events like the Bundaberg Hospital Inquiries. Regaining trust, at both the interpersonal and organisational levels, is crucial if inquiry recommendations are to be implemented appropriately.

The paper presents the results of in-depth interviews with key stakeholders involved in four of Australia's recent health system failures. It draws out common themes and a way forward.

Common themes associated with these highly publicised failures include a poor safety climate and inadequate clinical governance and policies for dealing with poor substandard performance.

The proposed way forward consists of renewing efforts to bolster trust relationships, particularly between clinical and management staff, in order to better support the implementation of robust internal systems for dealing with clinical competence concerns. For example, the authors suggest that regular "walk the job" tours are crucial if senior managers are to be seen to be fully committed to patient safety. Ultimately, it is crucial that there is a fair and open culture in place to foster systems which satisfactorily deal with performance-related complaints. Trust is integral to the success of such systems and needs to be considered.

Take Home Message: It is obvious that restoring trust in the aftermath of serious events is no easy task, which points to the need to take a more proactive approach to quality in healthcare. In particular, the failure to use quantitative data to monitor and evaluate clinical performance represents a missed opportunity to protect patients, staff and healthcare organisations alike.

Registry and administrative data, that is appropriately risk adjusted, can help alert healthcare systems of emerging problems at an organisational level. However, underpinning this, as stressed by Dunbar et al. is the need to support a culture of open reporting, where clinicians feel confident to escalate problems to their managers.

How to meet patients' needs and expectations



Bergeson SC & Dean JD. A systems approach to patient-centered care. JAMA 2006 Dec 19; 296(23): 2848-2849.

This JAMA article reports that US healthcare is still falling short of providing patient-centred care, with patients concerns and beliefs about their illness not consistently addressed by clinicians and management options not being routinely shared with patients. The authors propose four strategies to redesign the current system. They are:

1. improving access to and continuity with clinicians;
2. more active involvement of patients in the design of care and expressing concerns;
3. supporting patient self-management to increase patient and family confidence in self-care; and
4. establishing more efficient and reliable mechanisms for coordinating care among settings.

Although the authors claim that these strategies are supported by evidence from robust clinical trials, they highlight that their combined effect is unknown. What is apparent, however, is that the re-design of systems of care to increase the support of clinicians in their work is a useful adjunct to patient safety improvements which rely on training regimes alone.

Take Home Message: The medical profession needs to improve its approach to patient needs and expectations. The key premise behind the argument to re-design systems is that tasks not requiring direct physician input can be delegated to office staff or patients, thereby allowing physicians to invest more time in building relationships and rapport with patients. This should hopefully enable physicians to gather a more detailed and holistic picture of patients' needs and priorities. The issue of how better to provide co-ordinated care among settings is also crucial. There is a paucity of good, theoretically grounded research on clinical handover, particularly from a consumer perspective. Incorporating "the patient" into patient safety research is of vital importance, but continues to be largely overlooked.

Association between performance measures and outcomes for patients hospitalised with heart failure



Fonarow GC, Abraham WT, Albert NM, et al. Association between performance measures and clinical outcomes for patients hospitalised with heart failure. *JAMA* 2007; 297 (1): 61-70.

This article discusses the relationship between performance measures for patients hospitalised with heart failure and clinical outcomes. The use of these measures as criteria for pay for performance demonstration projects necessitates the need for valid, reliable and feasible process indicators with an established link to outcomes.

This study aimed to use data from the OPTIMIZE-HF registry to investigate the association between process measures developed by the American College of Cardiology and the American Heart Association (ACC/AHA) with 60-90 day mortality and the composite end point of mortality/ readmission. An additional indicator based on the use of β -blockers in eligible patients was also included. In total, the six measures being assessed by this study against an outcome of mortality and readmission were:

- heart failure patients discharged home with written instructions or educational material given to patient or caregiver at discharge or during the hospital stay addressing all of the following: activity level, diet, discharge medications, follow-up appointment, weight monitoring, and what to do if symptoms worsen;
- heart failure patients with documentation in the hospital record that left ventricular systolic function was assessed before arrival, during hospitalization, or is planned after discharge;
- heart failure patients with a history of smoking cigarettes, who are given smoking cessation advice or counselling during hospital stay;

- heart failure patients with chronic/recurrent atrial fibrillation and without warfarin contraindications who are prescribed warfarin at discharge;
- heart failure patients with left ventricular systolic dysfunction and without both angiotensin-converting enzyme (ACE) inhibitor and angiotensin receptor blocker (ARB) contraindications who are prescribed an ACE inhibitor or ARB at hospital discharge.;
- heart failure patients with left ventricular systolic dysfunction and without β -blocker contraindications or intolerance who are prescribed an β -blockers at hospital discharge.

Results: From the 259 hospitals contributing to the registry, the study focused on a cohort of 5791 patients from 91 hospitals (10% of registry) for 60-90 day mortality and readmission follow-up. The average age of patients was 72 years, 51% were male, 43% had diabetes mellitus and 78% of patients were white. Adjustments for significant co-variables were made using multivariable models, with Cox proportional hazard modelling used for mortality and logistic regression for the mortality/ readmission combined outcome. Adjustments were made for age, sex, race/ethnicity and co-morbidities.

None of the 5ACC/AHA heart failure performance measures were significantly associated with reduced early mortality risk. Only one measure (the ACE inhibitor/ ARB performance measure) was associated with a reduction in 60-90 day post-discharge mortality or readmission (OR 0.51, 95%CI 0.34-0.78, $p=0.002$). For eligible patients, prescription of β -blockers at discharge was found to be strongly associated with reduced risk of mortality. and mortality/readmission during follow-up (OR 0.73, 95%CI 0.55-0.96, $p=0.02$).

The results of this study indicate that the performance measures proposed by the ACC/AHA (with the exception of one measure) are not significantly impacting upon mortality or mortality/ readmission. The lack of an association between these measures and patient outcomes impacts upon their ability to measure quality of care as well as their usefulness as criteria for financing health centres. The authors conclude that additional measures which are more aligned with patient outcomes may be needed.

Take home message: In a consumer driven environment such as the US, public reporting of hospital performance as measured by such performance indicators may have different effects than in Australia. However, the underlying need for established links between process measures and patient outcomes is relevant for any organisation, agency or government which uses performance measures.

Improving the value of claim data

Pine M, Jordan HS, Elixhauser A, Fry DE, Hoaglin DC, Jones B, Meimban R, Warner D, Gonzales J. Enhancement of Claims Data to Improve Risk Adjustment of Hospital Mortality. *JAMA* 2007; 297 (1): 71-76

Rates of risk adjusted mortality are commonly reported and used to assess quality of hospital care and to evaluate pay for performance programs.

Frequently, these risk adjustment models are based on limited administrative data which do not include important clinical information which impacts upon patient outcomes. This study aimed to evaluate the relative benefits of including additional variables beyond the administrative data set when developing predictive models.

Results: A total of 188 hospitals were used to supply cases of various clinical conditions. Risk adjusted mortality for five conditions and three procedures were evaluated with four models. The first model used only administrative level data extracted from data contained on hospital bills (administrative), while the second used data abstracted from the medical record to incorporate the effects of conditions present on the patient's admission to hospital (POA). The third model used POA codes as well as laboratory information often gained by electronic transfer (termed laboratory e.g. haematocrit, creatinine etc). The fourth model built upon the third and added vital signs, additional laboratory data, key clinical findings from the medical record and composite clinical scores (termed clinical e.g. Glasgow Coma Score).

The total number of cases evaluated with each model varied from 5309 (abdominal aortic repair) to 200,506 (congestive heart failure). Models were evaluated with receiver operating characteristic curves and the c statistic which evaluates the models predictive ability. The average c statistic increased from 0.50 for the model without adjustment, to 0.79 for the administrative model, 0.84 for the POA model, 0.86 for the laboratory model and 0.88 for the clinical model.

The results demonstrate a significant increase in the performance of the risk adjustment models with the addition of further information not included in general administrative data sources. The authors concluded that the incorporation of POA data and selected laboratory findings into risk-adjusted mortality models was a valuable and feasible method for improving model calibration.

However, substantial improvements in the models with the addition of variables from further laboratory results or clinical findings was not noted. Routine and streamlined collection of additional variables by hospital staff either through paper based or electronic records reduces much of the financial and resource costs, while creating better risk adjusted models. More accurate models will ideally avoid incorrectly labeling a hospital or their staffs as high or low quality care providers.

Take Home Message: Risk-adjusting mortality models is vital when using such techniques to compare hospital or provider performance. Current models which rely solely on general claims data to develop risk-adjustment models would benefit from incorporating additional factors which are readily and cost-effectively obtained.

These improved models will therefore be able to provide a more accurate measure of mortality and quality of hospital care.

Guidance for guidelines

Steinbrook R Guidance for guidelines N Eng J Med 2007; 356 (4): 331-333

Guidelines are used to recommend practice in specific clinical circumstances. Good guidelines ought to be valid (measure what they say they measure), reliable (be able to be used by many people and yield consistent recommendations), reproducible, clinically relevant, flexible, clear and easy to use, developed through a multidisciplinary process, and provide good documentation.

There are currently more than 2000 guidelines available for clinicians to download and use from the National Clearinghouse in the US (website: www.guideline.gov). However, many guidelines are developed using funds from pharmaceutical and medical device companies, or are developed by people with a financial stake in the company which stands to either make or lose money as a result of what is recommended in the guideline. A survey of 685 disclosure statements by authors of guidelines concerning medications found that 35% declared a potential conflict of interest. This paper provides some examples of the powerful influence that large lobby groups have on directing and manipulating what treatment is recommended in guidelines.

The National Institute for Clinical Excellence (NICE) is an independent organisation in the United Kingdom which has produced 39 guidelines. Importantly, if a person working on guidelines within the NICE declares a conflict of interest, they are asked to stand down from any decision making process for that project.

In the US, the Agency for Healthcare Research and Quality (AHRQ) no longer develops guidelines, likely as a result of problems they have encountered with lobby groups. AHRQ now commissions approximately 20 systematic reviews of practice each year. Following the review, a public conference is held and a consensus statement is developed by a panel of people who have declared that they have no conflict of interest, including financial interest in any aspect of the project. Little is known, however, about how panel members are selected or supervised.

The author of this article concludes that guideline development should be sponsored by government or independent organisations and that they should be prepared with necessary financial and methodological support to ensure their quality.

Take Home Message:

A good guideline is one which has been developed by people with extensive knowledge of the field, who work in independent organisations and have no declared vested interest in the outcome of the guideline. If these criteria are met then guidelines should, in most cases, be widely generalisable.

While getting good quality guidelines based on consensus of what constitutes best practice is a huge challenge, perhaps an even greater one is ensuring that, once developed, they are implemented.

Can people accurately understand drug labels?



Davis TC, Wolk M.S., Thompson J.A, Tilson H.H. Literacy and misunderstanding prescription drug labels *Ann Intern Med* 2006; 145:887-894.

Medication errors are prevalent. The vast majority of work concerned with reducing medication errors has been directed at clinicians or health systems. Little attention has been paid to the role patients play in causing medication errors.

This study examined the ability of patients to read and understand medication labels. Five medications were examined: two antibiotics, an expectorant, an antihypertensive, channel blocking agent and a diuretic. Patients aged over the age of 18 years were recruited from three outpatients departments. People were excluded if they were vision or hearing impaired, were considered too ill to participate by their physician or did not speak English.

A structured interview was conducted with patients. Sociodemographic information was obtained. Patients were shown pill containers for the five different types of medicines and were asked to read the label. Each container had on its label different dosing instructions e.g. take one tablet once a day for one week, take two tablets twice a day for five days. For each pill container patients were asked, "How would you take this medication?" In addition, for one of the medicines patients were also asked the following: "Show me how many tablets would you take in one day?" Correct answers were those where the dosage and timing were provided by the patient. As a secondary element to the study, researchers investigated the patient's attentiveness to the warning labels on the pill bottles. e.g. take with food.

Results: A total of 395 interviews were conducted. Two thirds of patients were women, half were white, half were African American, 28% had less than high school level of education, 19% had only marginal literacy (assessed using a validated reading recognition test comprising 66 health-related words).

Almost half misunderstood one or more of the label instructions, 52% represented an error in dosage and 28% stated the wrong dose frequency. Low and marginal literacy was a significant independent predictor of misunderstanding the label instructions. Patients taking more than one medicine were also more likely to get the instructions wrong.

With regard to the one medicine they were asked to explain and demonstrate how many tablets they would take in a day, patients were more able to read instructions than to show the correct number of tablets they would take. Most patients paid no attention to warning labels, particularly those with low and marginal literacy skills.

Take home message: Doctors may assume that patients can understand instructions on pill containers. However, this study has shown that they often get it wrong. People with marginal or low literacy are at highest risk, however even among those with adequate literacy more than a third got at least one of the label instructions wrong.

Strategies to improve medication management should include getting patients to verify how they should take medicine and teaching patients the importance of reading warning labels.

Comparing casenote review with medical record review

Sari AB, Sheldon TA, Cracknell A, Turnbull A. Sensitivity of routine system for reporting patient safety incidents in an nhs hospital: retrospective patient case note review. *BMJ* 2007; 334(7584):79.

In this study a comparison was made between incidents reported through a voluntary incident reporting system and those identified through casenote review. The screening tool used in the Quality of Australian Health Care Study² was used to review 1006 admissions in a NHS hospital trust in England.

Results: Using both casenote review and incident reporting, a total of 324 patient safety incidents were identified (23% of hospital admissions). Casenote review identified 303 patient incidents (94%) while incident reporting identified 54 incidents (17%). Thirty three incidents were reported by both methods, of which three quarters related to patient falls. Of the 1006 admissions, 110 caused patient harm. All were identified using casenote review, while 5% were identified through incident reporting.

Take home message: This study shows that a screening tool is capable of identifying more adverse events than incident reporting. There have been other studies comparing casenote review to incident reporting, including one in an Australian context.³ All show that the reporting system detects different types of incidents compared to medical record review.

Screening casenotes is time consuming and therefore expensive, even using screening criteria as in this study. We need to develop ways of automatically capturing adverse events using better systems,⁴ and processes.^{5,6}

Can pay for performance improve health care?

Rowe J.W. *Pay for performance and accountability: related themes in improving health care. Annals Int Med* 2006; 145 (9): 695-699.

Pay for performance has been progressively introduced into health care in the US and UK over the past 5 years. Currently 84 health plans in the US sponsor more than 100 pay for performance initiatives (in the US consumers sign up to a health plan in much the same way as we sign up to health insurance schemes in Australia).

Pay for performance offers financial and other incentives to individuals or organisations who can demonstrate that they meet targets in relation to delivery of care. For example, in the US if physicians can demonstrate that they provide high quality care to diabetic patients (i.e. patients receive screening exams e.g. foot exams, eye exams and blood pressure checks and have certain key metabolic rates controlled e.g. lipid level, HbA1c level) then they receive US\$80 per person per year in bonus payments. In the UK, a general practitioner's income can increase by 25% if performance measures in relation to chronic disease management, patient satisfaction and organisation of care are met.

A survey of physicians suggests that most support a system which controls costs and quality through value-based purchasing. However the majority do not feel that the current reimbursement scheme rewards high quality care.

This article explores issues relating to the distribution of incentives under the pay for performance scheme. It considers the issue of whether pay for performance schemes should simply reward the superior performers or whether it should pay incentives to those who show relative improvement in performance over time. If a hospital has a high level of performance but does not improve on it, should they be rewarded more than a poorly-performing hospital which improves markedly even though its performance may not be superior? Most schemes start by rewarding hospitals simply for contributing data.

Most pay for performance schemes provide cash incentives to either the physician, disease management entities, hospitals or clinics. Other incentives include assisting physicians to attract patients to their clinics e.g. by reducing the out-of-pocket gaps that patients pay to see doctors.

An issue of concern with regard to pay for performance schemes is that of gaming. Gaming refers to the manipulation of data to make performance look good. In the UK, where pay for performance has been extensively implemented, it is possible and clinically reasonable for physicians to not have certain types of people included in their numbers. e.g. physicians are not penalised for not treating high cholesterol in patients with a terminal illness.

However, some clinics have extraordinarily high number of patients excluded from analysis.

Pay for performance may or may not stand the test of time. There are many health plans offering many different approaches to rewarding performance. Medicare, the largest single payer in the US, has adopted pay for performance and, like other plans, is exploring ways to make it work well. It is not only health plans collecting performance data. Many specialty boards now require physicians to undertake performance assessment to maintain specialty board certification.

Take home message: Does pay for performance work? Is it a fad or an important tool to improve care delivery and reduce the evidence-practice gap? In Australia we have a form of pay for performance in the form of the Medicare Practice Incentive Program, aimed at rewarding GPs for providing comprehensive quality care. However, currently we do not monitor quality of care delivery to anywhere near the extent that occurs overseas.

To effectively introduce and sustain a pay for performance system in Australia such as implemented in the US and UK we need good data and sophisticated systems to capture and analyse it. In addition, there needs to be clinician peer analysis and interpretation of data to ensure that findings are relevant and respected by those whose practice is being reviewed. Without this, such a scheme is doomed to failure.

Root Cause Analysis: views from those who have implemented it in hospitals

Braithwaite J, Westbrook MT., Mallock NA, Travaglia JF, Iedema RA. *Experiences of health professionals who conducted root cause analyses after undergoing a safety improvement programme. Qual Saf Health Care* 2006; 15: 393-399

Root Cause Analysis (RCA) refers to a procedure for identifying underlying reasons for adverse events. The process originated in aviation and has been modified for adoption into health care. In New South Wales, health professionals may chose or be nominated to attend a two-day training program to learn how to conduct an RCA.

This article discusses characteristics, attitudes and experiences of health professionals who, after undertaking a safety improvement program in which they were taught how to conduct RCAs, went on to be part of an RCA team in their workplace. A questionnaire was developed to examine (1) satisfaction with the 2 day training course; (2) skills gained while doing the course and transferred to the workplace; (3) attitudes regarding the training course and RCAs; and (4) experience when conducting RCAs.

Results: A total of 463 responses were received from the eligible health professionals who had undertaken RCA training (35% response rate). Of those, 252 had been members of at least one RCA team post training (average number of RCAs in which respondents participated = 3.7). Those who had undertaken RCAs in the workplace were representative of those who had attended the training course (12% doctors, 47% nurses, 12% allied health, 29% non-clinical management; mean of 21 years of professional experience, SD 8.5 years).

Three quarters of the 252 respondents who had undertaken the training and taken part in RCAs in the workplace reported that the most common barrier to conducting RCAs was lack of time. Other barriers were lack of resources (45%) unwilling colleagues (44%), lack of feedback (38%), and difficulties with RCA teams (34%), other professionals (27%) and management (17%). One quarter of respondents felt that their ideas during the RCA process were partly implemented. Almost a quarter were unsure whether recommendations from the team were implemented. The vast majority (85%) felt they would have benefited from post-training follow-up. There was no significant association between the number of RCA's performed and the identified problems experienced.

Most people who had participated in RCAs in the workplace thought they were worthwhile; they led to improved work practices and patient safety, better functioning teams, improved communication, improved patient outcomes and improved professional standing.

Only 2% of respondents reported that they always encountered unsupportive management.

Most thought the RCA training fostered leadership and improved error-reporting behaviour, however half of all respondents stated that organisational or cultural changes were required if benefits of undertaking the training were to be sustained.

Take home message: Most of the feedback from health professionals who did the training and then conducted RCAs was favourable. More than three quarters of people who had undertaken the training and participated in RCAs in the workplace were long-standing graduates of the RCA training. While understanding perception of the RCA process is important, the real question to be answered is whether RCAs have resulted in sustained changes in the workplace and improved patient outcomes. Have clinicians working at the coalface noticed changes in clinical practice as a result of RCAs?

Doing good quality research

STEP 1: Developing a research question

1. Scan the literature: The first thing to consider when undertaking research is to do your homework. Look at what has been published. A trip to the medical library is the first step you should take. Librarians are experts at navigating databases and identifying search strategies. There are many different databases available for use. The most popular is the Medline database (the major component of PubMed), compiled by the National Library of Medicine in the US. Medline references articles in more than 4000 predominantly health-related journals dating back to the 1950s.

Once you are aware of what's out there, you will be in a much better position to frame your research question. Trisha Greenhalgh, who has written many papers on how to do research, advises prospective researchers to ask this important question: "Does this new research add to the literature in any way?"⁶ This is the litmus test. It does not necessarily have to be ground breaking research: it might be doing research in a population which has not been previously studied.

2. Determine the research question/aims and hypotheses: Framing the aims and hypotheses are difficult. When thinking about your research question it is best to think of it as a question you want to solve. Write it down; it will take many drafts to get it right. Remember to keep it narrow. Aims should not be broad sweeping motherhood statements, but should be formulated to make it easy to generate hypotheses. For example, a research aim such as "To improve clinical handover" needs to be narrowed to something like "To determine whether implementation of a daily multidisciplinary team meeting in an orthopaedic ward within a metropolitan tertiary hospital in South Australia impacts on duplication of test results compared to conventional handover practices"

A hypotheses is something you think might occur as a result of the intervention. In this case, we would hypothesize that the intervention will result in a reduced length of stay, reduced adverse event rate as determined through analysis of incident reports and a reduction in the number of duplicated tests being ordered through the pathology service.

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