

Australian Patient Safety Bulletin

Newsletter of the NHMRC Centre of Research Excellence in Patient Safety

June 2006 Issue 3

A number of articles in this edition of the Australian Patient Safety Bulletin relate to the use of information technology (IT) to improve patient safety and also the hazards of reliance on it. There is no doubt that from an international perspective IT is at the forefront of public and private sector efforts to improve healthcare safety, quality and efficiency. There is clear and compelling evidence that IT can play a critical role in addressing some of the challenges faced by our healthcare system. However, implementation and investment in IT in the Australian health system is patchy at best. Health care lags behind almost all other industries in adopting IT to enhance service delivery.

August Seminar

Our next seminar on August 7th 2006 is titled **The Role of IT in Improving Patient Safety**.

Invited speakers will discuss the current state of play in health IT at a national, state and organisational level. We will highlight some key areas where it has been used successfully in Australia, both in general practice and in the hospital setting. We will also investigate the perspective of clinicians and consumers on this very important and sometimes controversial topic.

See back page of this bulletin for further details.

The "Monitoring the Quality of Care in Hospitals" seminar held three months ago attracted in excess of 220 delegates. Keynote speakers were Professor Diana Horvath (Australian Commission on Safety and Quality in Health Care) and Professor Stephen Duckett (Queensland Health). Presentations from this and other seminars can be viewed and downloaded from our website: www.CREPatientsafety.com.au

The intention of the seminar series and newsletters is to raise awareness, provoke debate and disseminate important and evidence-based research in the field of safety and quality.

Comments are welcome and can be made to CREinPatientsafety@med.monash.edu.au

<http://www.CREpatientsafety.org.au>

The CRE in Patient Safety is funded by the Australian Council for Safety and Quality in Health Care and designated as a NHMRC Centre of Research Excellence. The CRE is based in the Department of Epidemiology & Preventive Medicine, Monash University, Alfred Hospital.

Collaborating institutions are Bayside Health, University of Queensland, La Trobe University, Melbourne Health, Austin Health, Southern Health, Wimmera Health Care Group, ACT Health, ANU Centre for Health Stewardship, Victorian Institute of Forensic Medicine, CSIRO, Medical Defence Association of Victoria and Peninsula Health.



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In this issue

Impact of health information technology on quality, efficiency, and costs of medical care.	2
Computerization can create safety hazards: a bar-coding near miss	2
Electronic medical handover: towards safer medical care	3
Using a pre-printed order sheet to reduce prescription errors in a pediatric Emergency Department: a randomized controlled trial	3
Use of a standardized protocol to decrease medication errors and adverse events related to sliding scale insulin	4
Certificate of needs regulation and use of coronary revascularization after acute myocardial infarction	4
Claims, errors and compensation payments in medical malpractice litigation	5
No-fault compensation in New Zealand: harmonizing injury compensation, provider accountability, and patient safety	5
The incidence and cost of adverse events in Victorian hospitals 2003-04	6
Public reporting of hospital outcomes based on administrative data: risks and opportunities	6
Saving 100,000 Lives in US hospitals	7
What's in the news	8
Seminar	8



Impact of health information technology on quality, efficiency, and costs of medical care

Chaudhry B, Wang J, Wu S, Maglione M, Mojica W, Roth M, Morton SC, Shekelle PG. Annals of Internal Medicine 2006; 144 (10): E-12-E22

Most information technology (IT) systems in health have focused on administrative and financial transactions rather than delivery of care. This systematic review evaluates the impact of health IT on quality, efficiency and cost of medical care.

Inclusion criteria: systematic reviews, qualitative and quantitated reports that addressed the workings or implementation of a health technology system and published in the English language.

Results: A total of 257 studies met inclusion criteria, 24% of the included reports came from four US institutions, making generalizability of findings uncertain. For a detailed description of each project undertaken in these four institutions look at Appendix 1 in the article. Half the studies assessed IT systems in the outpatient setting.

Impact of IT on quality

Review of the literature shows that IT can be used to:

- Increase adherence to guidelines or protocol-based care e.g. increased screening and vaccination and secondary preventive care such as for deep vein thrombosis, pulmonary embolism and post operative infections.
- Assist in assessing what types of care should be provided to patients e.g. lab tests for inpatients and treatment of hypertension.
- Provide clinical monitoring e.g. screening hospital admissions for adverse drug events or using large datasets to report quality of care (or performance) measures.
- Provide surveillance of infection outbreaks.
- Reduce medication errors, such as through use of computerised physician order entry systems.

Impact of IT on efficiency

IT has been demonstrated to:

- Improve coordination of care. It can decrease unnecessary or inappropriate tests through display of lab costs and provision of previous test results, calculate pre-test probability for diagnostic tests and provide computerised reminders. Most studies did not measure whether reduction in service delivery had any effect on outcomes nor did they directly measure cost savings.
- Have variable effect on provider time. In some instances IT has led to increased workload (especially for physicians) while in other situations it has resulted in greater streamlining of services.

Impact of IT on costs

Only three studies mentioned cost of IT; specifically cost associated with data storage (2 studies) and maintenance of equipment (1 study). Cost data are limited and inconclusive.

Most significantly, this study highlights what is not known about implementing IT: little is known on initial capital costs, effect on provider productivity, resources required to train staff and workflow redesign implications. In most cases, the cost-benefit is unknown.

Take-home message: While perhaps intuitively we expect that automation of systems, such as those provided by IT, will improve patient care and ultimately reduce costs associated with adverse events, this is not readily apparent from the literature. The true costs and realised benefits need to be more accurately measured.

Computerization can create safety hazards: a bar-coding near miss

McDonald CJ. Ann Intern Med 2006; 144:510-516

This article provides a case study of a patient who was mistakenly given the bar-coded identification wrist label of another patient who was admitted at the same time. It is estimated that for 1 in 1000 admissions information on the wristband will be incorrect, either because errors occur in data information at registration or that the wrong wristband is placed on the wrong patient. In this case, a nurse took a blood sugar level (BSL) at the bedside for patient A (a diabetic patient) and results were immediately transferred electronically to patient B's (a non-diabetic patient) electronic medical record. The BSL was 33.3mmol/l, prompting the intern to write the patient up for a sliding scale insulin regimen. It was only through a chance interjection by patient B's resident that the insulin was not given. It was a near-miss. Recommendations following investigation of the incident included double checking wrist labels when they are put on the patient's wrist (a control measure), and reiterating to doctors the importance of considering an error rather than assuming that the bar-coding system would not have caused the error.

This case study highlights the many little things that can go wrong to create a big problem. While computer systems have the potential to improve patient safety, they may create new kinds of errors if not accompanied by well-designed and well-implemented cross check processes.

Take-home message: Computer systems can create the effect of reducing human vigilance. In this case, staff had blind trust that the scanning system was accurate. This is the flip-side of the argument that computers improve patient safety.

Electronic medical handover: towards safer medical care

Cheah LP, Arnott DH, Pollard J, Watters DAK MJA 2005; 183(7) 369-72

There is increased recognition of both the hazards and advantages of shorter working hours by medical staff. A by-product of reduced hours is increased handover of responsibility for patient care by doctors.

This article outlines a strategy employed in a Victorian hospital to improve and standardise handover communication between doctors. Two databases, one established to generate discharge summaries, operation reports and drug prescriptions and the other to provide laboratory and radiology results, were linked to provide an electronic handover tool. A minimum dataset for handover was developed, and is outlined in the article.

Two outcomes were measured: how often the system was used and perception of it.

Results: On average it took 10 minutes to fill in handover information. Over the weekend, handover data was updated by 50% of medical staff. All recognised the importance of effective handover. The availability of recent lab tests encouraged use of the system. Results from this initial work have been used to further develop an effective handover tool.

Take-home message: Maintaining continuity of care is a major challenge to effective healthcare delivery. Information in modern hospitals is poorly integrated and represented. The time taken searching information systems for status and trend information is essentially time lost from clinical practice. This offers an opportunity to reduce this burden and improve information transfer.



Using a pre-printed order sheet to reduce prescription errors in a pediatric Emergency Department: a randomized controlled trial

Kozer E, Scolnik D, MacPherson A, Rauchwerger D, Koren G. Pediatrics 2006; 116(6) 1299-1302

In this article, the authors implemented a randomised controlled study to evaluate the effectiveness of a pre-printed, formatted order sheet for oral, IV and inhaled medication. The chart required staff to write the dose, weight-adjusted dose, total daily dose, route of administration, and frequency of administration. A figure showing the layout for the medication is in the article. The control group used the regular blank order sheets. Randomisation was used to determine the days for intervention and control chart use. The outcome being measured was the number of medication errors as judged by two assessors blinded to the study arm (this was possible because orders were transcribed into a database so that reviewers could not see the order form). Medication errors occurred if the drug regimen differed from recommended e.g. (1) dose differed by 20% or more; (2) administration deviated by 2 hours or more from interval between drugs; and (3) wrong units or route of administration.

Results: The study was conducted over 18 days. A total of 411 orders were written on the regular chart and 376 on the pre-printed intervention charts.

In most cases the intervention chart was filled in correctly and fully, despite concern by some that it took a long time to complete. By chance, fewer junior staff used the intervention charts compared to the regular charts. A total of 68 errors were identified using the regular chart versus 37 using the intervention chart ($p < 0.001$). In both groups, approximately half were significant.

Take home message: This simple and inexpensive chart did reduce errors. However, the study was conducted over a short time period and the novelty of a new form may have contributed to people being more vigilant when writing orders. In Australia, a standard medication chart has been developed. A pilot assessment of its ability to improve documentation (e.g. of allergy status, frequency, dose and identification of prescriber) and reduce prescription errors in 31 sites throughout Australia has led to some impressive findings.¹ Health Ministers have unanimously endorsed introduction of a common medication chart across all Australian states and territories. Details of this chart and some good links can be seen at <http://www.health.vic.gov.au/vmac/projects/nimc.htm#>

1 Leach H. National Inpatient Medication Chart implementation. J Phar Pract & Research 2006; 36(1):6-27



Use of a standardized protocol to decrease medication errors and adverse events related to sliding scale insulin

Donihi AC, DiNardo MM, DeVita MA, Korythowski MT. Qual Saf Health Care 2006;15:89-91

Sliding scale insulin (SSI) is commonly used in hospitals to manage hyperglycaemia. SSI orders often vary between physicians and it is the variability in dosing that has been associated with a high frequency of medication errors. In the hospital being studied there were more than 20 different types of SSI orders being used.

This study involved design and implementation of a standard protocol for management of insulin in the non-ICU setting. Consensus was used to develop the protocol, in which prescribers chose one of three regular insulin sliding scales for use with a scheduled basal/national insulin regimen.

Results: The protocol was well accepted by staff. The tool was used in 91% of orders and, overall, 86% of SSI orders followed the guidelines. Prescription errors as identified by chart review identified 1.2 errors per 100 SSI patient days; a reduction from 10.3 per 100 SSI days the year prior to introduction of the protocol. The number of hyperglycaemic episodes also decreased from 59 to 16 per 100 SSI patient days over this time period.

A copy of the physicians order sheet can be found in the article. This protocol was written for use in a US health service, where insulin dosage is measured as mg/dL. To convert to mmol/l, routinely used in Australian healthcare settings, the following conversion rates apply: 130mg/dl=7mmol/l, 180mg/dl=10mmol/l, 240mg/dl=13mmol/l, 300mg/dl=16mmol/l, 350mg/dl=20mmol/l, 400mg/dl=22mmol/l

Take-home message: Standardising practice in this way makes sense; the difficulty is getting consensus on dosage from clinicians. This is an excellent example and model for those contemplating a standardised protocol for insulin in their hospital.



Certificate of needs regulation and use of coronary revascularization after acute myocardial infarction

Popescu I, Vaughan-Sarrazin MS, Rosenthal GE. JAMA 2006;295(18):2141-47

Certificate of need programs in the US exist in some states to centralise care for certain conditions. It ensures that only certain hospitals can perform certain procedures. The premise is that this will (1) reduce costs associated with doing the procedure; (2) provide better quality of care because the sheer volume of procedures undertaken means that clinical skills are maintained; and (3) prevent overuse of services.

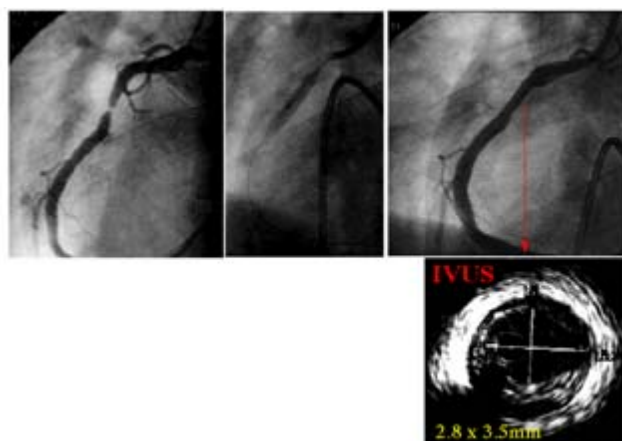
This cohort study examined states with and without certificates of need and evaluated what impact this had on outcomes of acute myocardial infarction (AMI). Specifically, it looked at use of coronary revascularisation using PCI or CABG surgery.

Results: The study showed that in states with certificates of needs, Medicare patients (the elderly and disabled) who suffered an AMI were more likely to require transfer to a hospital in order to have the coronary revascularisation. As a consequence it was more likely to take them more than two days to undergo revascularisation. However, even though it took them longer to receive the procedure, the risk-adjusted mortality at day 30 was no different for patients in states with and without certificates of need.

This lack of difference may be accounted for by the fact that (1) in these higher volume centres mortality is lower than in hospitals in which fewer procedures are performed; or (2) in states without certificates of need this procedure is more likely to be performed on patients who derive at best, only marginal benefit.

Take home message: This study has the potential for wider applicability than just the US alone. It demonstrates that while fewer services may result in delayed access to care (in this case coronary revascularisation), a delay does not necessarily equate to poorer outcomes. The editorial by EL Hannon¹ in the same journal also makes a worthwhile read.

1. Hannon EL. Evaluating and improving the quality of care for acute myocardial infarction: can regionalization help? *JAMA* 2006; 295(18):2177-9.



Claims, errors and compensation payments in medical malpractice litigation

Studdert DM, Mello MM, Gawande AA, Atul A, Gandhi TK, Tekal J, Kachalia J, Yoon C, Puopolo AL, Brennan TA. *NEJM* 2006; 354(19):2024-33.



There is evidence that a large number of claims in medical litigation lack evidence of injury, substandard care or both, suggesting that this is responsible for driving up the cost of health care.

A review of 1452 closed claims from five insurers in the US was undertaken by board-certified physicians, fellows or final-year residents in surgery (for surgery claims), obstetrics (for obstetrics claims) and internal medicine (for diagnosis and medication claims). Reviewers score outcome on a severity scale that ranged from emotional injury to death. They were *not* blinded to the outcome of the litigation.

Results: For 3% of claims there were no verifiable medical injuries and 37% did not involve errors. Most claims not associated with error (72%) or injury (84%) did not result in compensation. Claims where compensation was awarded averaged \$313,000. Most (73%) of those claims that did involve injury due to error were compensated.

Payment for these claims averaged \$521,000. Claims not involving error accounted for 13-16% of the system's total monetary costs. For every dollar spent on compensation, 54 cents went to administrative costs, including lawyers, experts and courts. Claims involving errors accounted for 78% of the total administrative costs. Of those claims with compensation paid, most (61%) were settled out of court.

Take home message: The fact that more than half of all compensation is spent on getting the money is of concern. Advocates of a no-fault insurance scheme such as that in place in New Zealand would believe this to be enough justification for its implementation. The following report by Bismark and Paterson (Chair of the Review Team for Review of Future Governance Arrangements for Safety and Quality in Health Care) provides an update on the New Zealand situation.

No-fault compensation in New Zealand: harmonizing injury compensation, provider accountability, and patient safety

Bismark M and Paterson R. *Health Affairs* Jan/Feb 2006; 25(1)278-283

In 1974, New Zealand introduced a government-funded compensation fund (the Accident Compensation Corporation-ACC). Funding was provided through taxation and an employer levy. The compensation scheme meant that all people who suffer personal injury while receiving treatment from a health professional relinquish the right to sue for damages arising from personal injury except in rare cases of reckless conduct in return for having a secure source of financial support.

Administrative costs account for approximately 10% of expenses as compared to 54% in the study by Studdert et al summarised above. As in the US, the most costly claims in New Zealand involve neurological injury to infants where fewer than seven percent of claims result in more than 16 percent of spending.

While the ACC has yet to demonstrate substantial gains in patient safety, there is evidence that that the system has produced more-timely compensation to a greater number of patients. All claims are resolved within nine months and a payment strategy ensures that similar injuries receive similar compensation. In the US and Australia, claims generally take years to resolve. Medical indemnity insurance in New Zealand is less than \$1000 regardless of specialty.

An independent watchdog (the Office of the Health and Disability Commissioner) was established in the 1990s to address concerns that the system lacked accountability. In addition to monitoring implementation of the scheme, the Commissioners Office also promoted widespread learning from medical errors.

There remain some concerns with the New Zealand system. Some feel that the compensation levels are inadequate, particularly for patients who are not employed at the time of their injury and are unable to claim earnings-related compensation. The average payment is less than \$30,000.

The system has also been seen as unfair, as people claiming through the ACC may receive more money than those claiming through the health and welfare system, in which no error occurred.

Finally, the system has not demonstrated improvement in patient safety, with medical errors identified through medical record review similar to Australia and the UK.

Take home message: It is difficult to know whether the cover provided by the New Zealand compensation scheme adequately cares for those suffering iatrogenic injury. It is disappointing that there has, to date, been no apparent measurable improvement in patient safety.

The incidence and cost of adverse events in Victorian hospitals 2003-04

Ehsani JP, Jackson ZT and Duckett SJ. MJA 2006; 184(11):551-555.

In this study, the authors report the findings of analysis of a patient-level costing dataset. The study determined (1) the incidence of adverse events in hospitalised patients in Victorian public hospitals; (2) the characteristics of those who suffered an adverse event; (3) the consequence of an adverse event on length of stay and mortality outcomes; and (4) the cost of adverse events.

When patients are discharged from hospital, their medical records are reviewed and all diagnoses and procedures are coded using the International Classification of Disease (ICD). If a complication occurred while the patient was in hospital, the ICD code is prefixed with a letter C by coders (the C-code).

Results: Nearly seven percent of all admissions had at least one C-code recorded. Compared to those without a recorded in-hospital complication, patients with one or more recorded complications were:

- more likely to be older
- more likely to have a higher Charlson score (the Charlson score provides a weighted sum of co-morbidities, where the weights are proportional to the risk of death from each co-morbidity. Higher values of the Charlson index indicate worse health)
- on average hospitalised for ten days longer
- seven times more likely to die in hospital
- on average likely to cost the hospital \$6800 more for each admitted episode

The most commonly recorded complication was dehydration and metabolic imbalances. Pneumonia and lower respiratory tract infections had the highest associated mortality rate. Complications following craniotomies have the highest associated cost to the inpatient hospital system.

Take home message: Patient level costing data can provide a clue as to the cost and incidents of complications for those adverse events that have an associated ICD code allocated. Causation cannot be determined, nor can extensive risk-adjustment be done on it. The fact that dehydration and electrolyte imbalance was the most common complication highlights the limitations of the data classification system to measure patient safety issues. Limitations of the use of this data are best summed up in the following article by Scott and Ward.

Public reporting of hospital outcomes based on administrative data: risks and opportunities

Scott IA, and Ward M. MJA 2006; 184(11):571-575

Queensland Health has widely adopted the principal of publicly reporting hospital performance data based on routinely collected administrative data. An expert panel has been established to develop and oversee the release of such reports.

The authors caution that, while public reporting of comparative data between hospitals might be intuitively appealing, "there remains uncertainty about its use by, and impact on, patients and providers." The following questions are raised:

- How accurate are administrative data? ICD data, upon which the comparisons between hospitals are made, is inaccurate, incomplete and provides insufficient clinical detail to enable good comparisons to be made. Accuracy of diagnosis coding is variable, and the extent of coding errors between hospitals has not been formally assessed. Determining whether a complication occurred in hospital or prior to admission is difficult to accurately determine in many cases, and often poorly documented.
- Have analyses controlled for differences in casemix and other relevant factors? Risk adjustment has been based on age and Charlson index (see above article by Ehsani et al). Some risk factors, over which hospitals have no control, may influence hospitals scores e.g. geographic location of the population and community support.
- Have the effects of random error been minimised? Smaller hospitals may score worse simply because it is more likely that in a small pool of patients, errors that occur purely by chance will have a greater impact on the outcome. By comparison, such chance errors in larger hospitals are more likely to be absorbed.
- Can true variation in outcome be reliably detected for hospitals that are similar? It may be that hospitals performance in relation to the ICD data should be assessed against comparable hospitals e.g. tertiary against tertiary, district against district (comparing apples with apples).
- Do differences in outcomes based on administrative data reflect true differences in quality of care? There is no clear evidence that there is a correlation between outcome (say death), and process of care measures.
- Do outcome data for selected diagnoses predict overall quality of care? Hospitals may perform very well on some indicators and poorly on others.
- Can the lay public access, interpret, and act upon hospital reports? Overseas data suggest that many consumers (and healthcare workers) do not use them or trust the data. Issues which may not be well explained to consumers include (1) the effect of sample size on outcomes; (2) the need to compare like-with-like hospitals; and (3) the fact that risk adjustment often does not take into account factors over which hospitals have

no control. Often consumers have no choice over which hospital they can attend.

- Do public reports motivate hospitals to improve quality of care? Even if consumers do not read and act upon report findings, higher quality care can still be achieved if the hospitals themselves act on findings. Public disclosure has been shown to result in closure and/or limitation of poorly performing services.
- Is there a potential downside of public reporting of hospital performance? There is evidence that gaming or manipulating figures or behaviour to improve outcome occurs when performance is measured. Early discharge, avoidance or outsourcing of high-risk patients, adoption of defensive strategies such as over-treating, and withdrawal or disengagement by clinicians are all factors that need to be considered.
- Could internal reports do just as well in improving quality of care? Professional peer comparisons probably drive most service improvement.

These questions are well addressed in the article. The authors advise that release of public performance data should proceed with caution.

They suggest criteria which should be used to:

- enhance validity and reliability of the data
- raise awareness
- assist the public, clinicians and managers in accessing and interpreting data
- safeguard against dysfunctional responses to public reports
- provide resources to enable hospitals to act on poor outcomes.

Take home message: This is an excellent summary of the issues to be mindful of when using administrative data to drive quality improvement.

Saving 100,000 Lives in US hospitals

CJ McCannon, MW Schall, DR Catkins, AG Nazem. BMJ 2006; 332:1328-30

A strategy to cut avoidable deaths in hospitals was introduced by the Institute for Health Care Improvement (IHI) in response to growing national consensus among key stakeholders about the inadequate pace of improvement in health care. The strategy aims to avoid 100,000 unnecessary deaths in US hospitals over 18 months initially, and every year thereafter. A life saved was one which would have resulted in death had the person received that hospital's pre-campaign (2004) level of care.

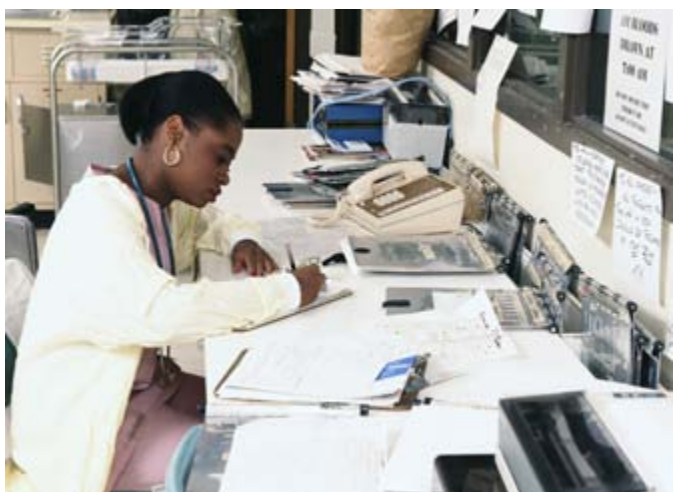
The campaign assists hospitals to adopt six interventions that, when implemented reliably, are known to significantly reduce harm and death. The campaign involved the following interventions: (1) deployment of rapid response teams to patients at risk of respiratory arrest; (2) delivery of reliable, evidence-based care to AMI patients; (3) prevention of medication errors through reconciliation (reliable documentation of changes in drug orders); (4) prevention of CVC infections; (5) prevention of surgical site infections; and (6) prevention of ventilator-associated pneumonia.

With three months to go, it is estimated that 84,000 lives have been saved as a result of the campaign. This article focuses on how the project has acted as a catalyst to change. All authors herald from the IHI and play an active role in the project's design and implementation. The article identifies essential components for spreading a healthcare initiative based on experience from within the IHI. These components include:

- Leadership commitment
- Setting clear aims
- Identifying and packaging proved ideas and practices
- Developing and executing a plan to communicate and implement the ideas
- Creating a system for measuring progress
- Establishing a process for refining the plan in response to learning during implementation.

Outlined in the article are the responsibilities of the various nodes at a national, regional and hospital level.

Take home message: The 100,000 lives campaign highlights the perceived importance of setting a deadline for action. It would be interesting to get a perspective from those at the coalface, to see whether they are as aware and motivated as those driving it!



Seminar

The Role of IT in Improving - Patient Safety

Monday 7th August 2006

Information technology (IT) is at the forefront of public and private sector efforts to improve healthcare safety, quality and efficiency. There is clear and compelling evidence that IT can play a critical role in addressing some of the challenges faced by our healthcare system. This seminar will discuss the current state of play at a national and state level and will highlight some key areas where it has been used in Australia, both in general practice and in the hospital setting. Also explored will be issues hampering the widespread use of IT in the health system, including the concerns and expectations of the consumer.

Who should attend: Quality and Safety personnel, clinicians, IT managers, Healthcare Administrators.

Venue

Charles Latrobe Lecture Theatre, Ground Floor, Royal Melbourne Hospital Function and Convention Centre
Grattan St, Parkville 3050.

Cost - \$88 (inclusive of GST) per delegate

Enquiries to Peta McLaughlin 03 9903 0245 or Sue Evans 03 9903 0017

Registration details and a full program available at www.CREpatientsafety.org.au

What's in the news?

Below are some links to some useful websites.

Media Doctor: <http://www.mediadoctor.org.au/>

This site was set up with the aim of improving journalistic practices. A group of academics and clinicians from the Newcastle Institute of Public Health provide independent and objective critiques of newspaper articles and television stories which relate to medical treatments and new medication. Reviewers assess the quality of news items using a standardised scale.

Massachusetts Coalition for the Prevention of Medical Errors <http://www.macoalition.org/initiatives.shtml>

This site contains some excellent patient safety initiatives, including safe practice recommendations for (1) reconciling medications (2) communicating critical test results (3) reducing ambulatory care medication errors (4) reducing restraint and seclusion use (5) reducing medication errors in acute and long term care facilities.

Agency for Healthcare Research and Quality <http://www.ahrq.gov/>

This site contains many reports, initiatives and fact sheets relating to research and quality. You can subscribe to an email alert via their Patient Safety Network (<http://psnet.ahrq.gov/>) which will notify you of articles relating to safety and quality. It won't enable you to access the actual article without payment, but it will give you the heads up on interesting articles so that you can then access them through your hospital, university or government library. Unfortunately it has quite a US flavour, so you won't find articles from more local journals (e.g. Medical Journal of Australia) on the alerts.

Institute for Clinical Systems Improvement: <http://www.icsi.org/>.

This site has some terrific resources and is well worth a visit. When you browse the Health Care guidelines topic area you will find guidelines you can download for a myriad of conditions e.g. pneumonia, acute pain management, coronary artery disease, depression, anticoagulant therapy, asthma, acne management, and atrial fibrillation, to name just a few.