

The successful use of clinical practice improvement in a rural health service

Jon Mortimer, Southern Area Health Service, New South Wales

ABSTRACT

Clinical practice improvement is a formal model for improving the processes and outcomes of care. It involves the identification and diagnosis of a problem, identification and implementation of interventions, and re-measurement to ascertain whether interventions have been effective. As a tool for dealing with organisation of care issues it parallels the approach commonly used in the management of clinical problems. The methodology has been promoted in New South Wales through a now well established and successful Clinical Practice Improvement Program, with guidance and teaching from Dr Brent James, Director of Intermountain Health Care and a physician internationally recognised in managing quality improvement of clinical processes in hospitals.

The application of the clinical practice improvement methodology in a rural health service is specifically examined in this paper, through the use of examples of successful projects. The barriers to implementation are examined and successful approaches to overcoming these barriers identified.

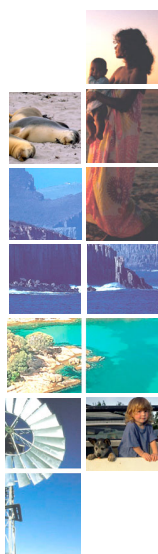
It is concluded that clinical practice improvement can be an effective tool for improving the quality of care in rural hospitals and health services.

BACKGROUND

Clinical practice improvement training was first introduced by the New South Wales Department of Health in 1998 and the program is now well established and successful. The aim of the training program is to give clinicians the skills and support to take a leadership role in improving the delivery and outcomes of clinical care.

Clinical practice improvement is a formal model for improving the process and outcomes of care. In dealing with the organisation of care issues it uses an approach familiar to clinicians in the management of clinical problems (NSW Health Department 2001 p.17). That is, an initial identification and diagnosis of a problem, identification and implementation of interventions, and re-measurement to ascertain whether interventions have been effective.

The application of the clinical practice improvement methodology in a rural health service is specifically examined in this paper, through the use of two examples of successful projects. Barriers to implementation and strategies for success are identified. The purpose of this paper is to demonstrate that clinical practice improvement can be an effective tool for improving the quality of care in rural hospitals and health services.



IMPROVING OUTCOMES IN THE ANAESTHETIC SERVICE

The Post Operative Nausea and Vomiting (PONV) Clinical Practice Improvement (CPI) Project Team was established following discussion of the clinical problem at a meeting of medical staff at Cooma Hospital. There was a perception that postoperative nausea and vomiting was a problem in the patient group having elective surgery at the hospital.

Cooma Hospital is a forty bed rural district hospital providing general medicine, general surgery, obstetrics, paediatrics, rehabilitation and emergency services for residents in the Monaro region in southern New South Wales. Patients in hospital are largely managed by general practitioners. The anaesthetic service for visiting specialist surgeons is provided by general practitioners.

Nausea and vomiting after surgery remains a difficult clinical problem, despite substantial research and the introduction of new anti-emetic agents. It can lead to poor patient satisfaction and additional treatment cost for the health service. The CPI Team followed a series of formal steps that make up the clinical practice improvement methodology. The success of the project is indicated on the run chart in this paper. The aim of reducing the incidence of moderate and severe post operative nausea by 50 % was achieved.

Aim

A team was formed of those people with a fundamental knowledge of the care process, and included an anaesthetist, Operating Theatre Clinical Nurse Specialist, Day Surgery Unit Registered Nurse, Manager of Inpatient Services, Health Information Manager and the hospital pharmacist. The Health Service Manager attended the first meeting to give a visible commitment of support. The Area Deputy Director of Medical Services and the Area Director of Clinical Services facilitated the process.

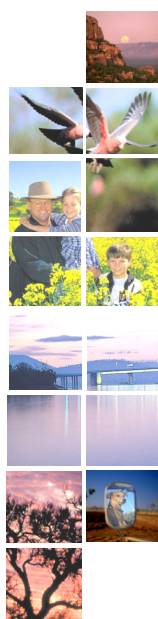
The project team initially disagreed on the extent of the problem and some questioned the necessity to address the issue at all. Information collected from patients through the completion of nausea visual analogue scales after surgery confirmed that the service had a significant problem – around 40% of patients suffered moderate or severe nausea or vomiting after surgery.

The Team set itself a mission:

To reduce by 50% the incidence of moderate and severe postoperative nausea in the first twenty four hours for patients undergoing a general anaesthetic at Cooma Hospital.

Consumer input

The team was interested in getting consumer input and a patient questionnaire was introduced using visual analogue scales to measure patient perceptions. The completion of the visual analogue scale for PONV was incorporated in to routine post operative observations. Initial results from the patient questionnaire suggested an



incidence of moderate to severe PONV of 40%. This is higher than the generally reported incidence of between 20% and 30%.

Diagnosis and intervention

Flow charts were created for care processes and in a brainstorming session possible causes or risk factors for PONV were identified and organised in a cause and effect (fishbone) diagram and a Pareto chart. This was supplemented by a review of the literature. This work led to and informed the design of a retrospective medical record audit to identify the risk factors for PONV in the patient population at Cooma Hospital. High rates of PONV were associated with three risk factors as indicated in the table hereunder.

Risk factor	Relative risk
Non-smoker	1.5
No anti-emetic prophylaxis	1.52
Post-operative narcotics	4.32

Non-smokers had a higher rate of PONV, as did patients not given anti-emetic prophylaxis. The most important individual risk factor however was exposure to post-operative narcotics. The relative risk at 4.32 is higher than might have been expected. The incidence of PONV increased with the number of risk factors and those patients with three of the identified risk factors (non-smoking, narcotic exposure and no prophylaxis) had a 67% chance of developing moderate or severe post operative nausea.

The incidence of post operative nausea and vomiting began to fall following the presentation of the initial results and consideration of possible clinical practice changes. This "Hawthorne effect" is a not uncommon phenomenon. The changes arise because of the visibility of the measurement tool and the results and because of the special attention being given to the clinical problem. The first intervention therefore was the presentation and discussion of the results of the patient feedback.

The second and more formal intervention was a process of risk stratification and prophylactic anti-emetic treatment. That is, anaesthetists used identified risk factors for their local patient population to determine which patients would receive prophylactic anti-emetic therapy. Anaesthetists were free to chose which anti-emetic agent they would use, but there was some preference expressed for the use of low dose droperidol following a discussion of the relative merits of the various anti-emetic agents available.

Outcomes

The patient questionnaire that had been incorporated in to routine post operative observations allowed the rate of PONV to be measured on an ongoing basis and the impact of the interventions could be monitored. The rate fell from 40% to an average of 17%. The CPI project team has achieved its objective of halving the rate of post operative nausea.

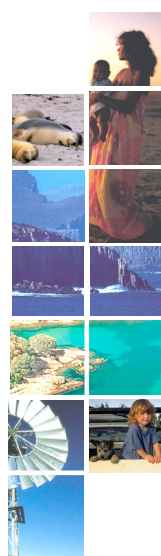
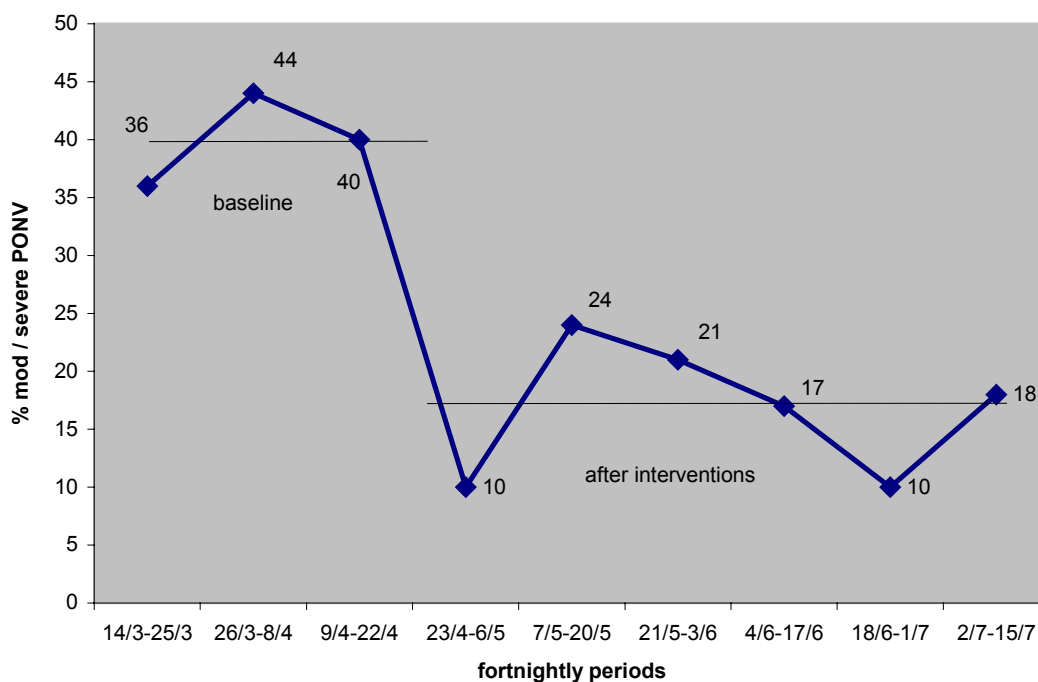


Figure 1 Incidence of PONV

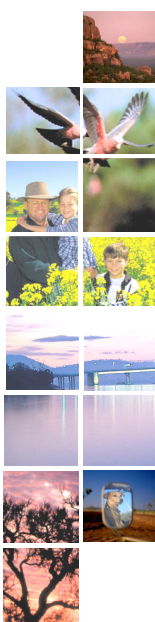


MEDICATION SAFETY PROJECT

The Medication Project Committee was established at Braidwood Multi-Purpose Service after an audit of medication charts demonstrated significant opportunity for improvement. The audit, together with an examination of medication incident reports, identified a pattern of errors with potential for patient harm. Errors included, but were not confined to: repeated administration of nurse initiated medication without review; incomplete patient details; once only medication given without being checked by a second nurse; and non-nurse initiated medication being given by a nurse without prescription.

Braidwood Multi-Purpose Service serves a population of 2400 in the Tallaganda Shire roughly half way between Canberra and Batemans Bay on the east coast of New South Wales. The service has 5 acute care beds, 12 nursing home beds, 15 hostel places and provides community nursing, allied health, community transport, meals on wheels and home maintenance. There is one resident general practitioner in the town. In common with many small rural services there is no on site pharmacist and medical services are provided on an on-call basis.

Medication errors are an important source of adverse events in hospital and can lead to significant morbidity and mortality. The Medication Project Committee used the clinical practice improvement methodology to achieve an 80% reduction in errors. In addition, the team was successful in involving consumers in the quest to reduce error and achieved a measurable improvement in satisfaction with knowledge of medications.



Aim

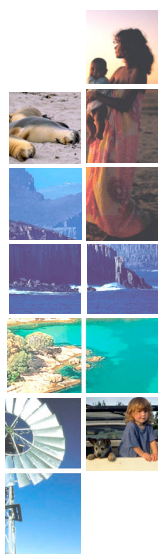
The Pharmacist and Quality Co-ordinator attended process improvement training and went on to establish the Medication Project Committee, involving the Health Service Manager, the Visiting Medical Officer and a registered nurse.

The team set itself a mission:

To reduce the harm or potential harm from mistakes in medication charts by 50% in 12 months.

Consumer input

Inpatients were interviewed early in the life of the project and only 25% expressed satisfaction with knowledge regarding their medication. This prompted an increase in the amount of education offered by the doctor and the pharmacist, supplemented by pamphlets and information sheets. Interviews with inpatients several months later demonstrated dramatically increased satisfaction with knowledge of their medications.



Diagnosis and intervention

Information from interviews with patients was supplemented with information derived from meeting with registered nurses to identify possible causes of error. In this project, as with the previously described project, the quality improvement tools taught in the clinical practice improvement training program were used to effect. Brainstorming, medical record audit, cause and effect analysis and Pareto charting were used to identify many opportunities for intervention.

Multiple strategies were implemented. Outdated manuals and policy was reviewed, the nurse initiated medication list updated, education provided to registered nurses, obsolete medication charts removed, a flag system was introduced to make staff aware of medications ordered outside of routine medication round times, potential error risks were discussed at each shift change, and patient education was enhanced and supplemented with pamphlets and information sheets.

Outcomes

Each strategy in isolation would be unlikely to achieve the desired outcome, but in synergy they were particularly effective. Within twelve months the sum of error fell from 332% (each record on average containing multiple errors) to 67%. At the same time patient satisfaction with knowledge of medications rose from 25% to 98%. The team achieved the aim of cutting in half the error rate.

The team has since gone on to introduce electronic prescribing with the aim of further reducing the error rate and potential for harm. The outcome of this strategy is yet to be formally evaluated, but anecdotal evidence to date suggests that it has been particularly effective.



DISCUSSION

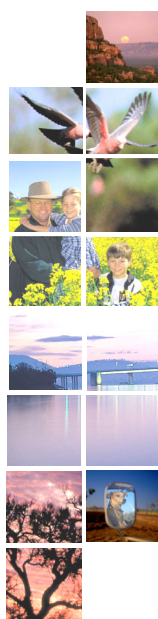
The two examples demonstrate that giving clinicians and managers appropriate skills and support can lead to real improvements in delivery and outcomes of health care. Clinical practice improvement can be a useful tool for dealing with organisation of care issues. The approach is intuitively familiar to clinicians – with a defined aim, a process of diagnosis, the testing of interventions, and measurement to demonstrate improvement. The clinical practice improvement tools are relatively easy to learn. A detailed description of the methodology is provided in the *Easy Guide to Clinical Practice Improvement* (NSW Health Department, 2002)

There are risks however, and across Southern Area Health Service there are more examples of incomplete or unsuccessful projects than there are examples of successful projects. Four important barriers to the implementation of quality improvement have been described as time, territory, tradition and trust (Berwick, 1992).

Medical practitioners generally expect autonomy and accept accountability to themselves as individuals and to some extent to peers. Exposing clinical processes to analysis by nurses, managers, pharmacists, consumers and others can be quite uncomfortable. It is important that at least one member of the project team has training in the clinical practice improvement methodology and good leadership ability, in order to be able to expose clinical processes to the necessary analysis and get the best from all members of the team. Position within the organisation doesn't appear as important as credibility and team management skills. Identifying clinical leaders and giving them the knowledge and skills to make change in their own organisations is the hallmark of success of the clinical practice improvement strategy in New South Wales. The value of the clinical leader is unfortunately demonstrated very well when a change in position or organisational restructuring moves that person away from the project. At this point it is not uncommon for a project to stall. As with any area of business, the challenge is to spread the skills within the organisation over time to get past this dependence.

Territory is important in another sense. The project team needs to have a fundamental knowledge of the process of care and must represent all parts of the process. Teams can find themselves attempting to tackle problems where the cause lies outside their own territory. Emergency department and intensive care clinicians trying to tackle the problem of "exit block" in regional or metropolitan hospitals commonly encounter this difficulty. The problem doesn't primarily lie within the emergency department or intensive care unit and a project team with members drawn only from within the particular department or unit doesn't have a fundamental knowledge of the care process and doesn't represent all parts of the process. Projects designed in this way can easily stall.

Clinicians are busy people and quite rightly insist on effective use of their time. There is a role for senior management to identify clinical practice improvement as important and ensure that the legitimacy of committing time to the process is understood throughout the organisation. Nurses in particular report significant peer pressure to remain in clinical areas rather than attend meetings. In addition, leaders of projects that have stalled sometimes describe shifting management priorities as decisive. Clinical practice improvement may be implemented with much fanfare, only to be



pushed aside several months later by “root cause analysis” or “breakthrough collaboratives” or some other promising quality improvement methodology.

It is also important to ensure that busy clinicians are asked to commit only the time necessary to provide their expertise. In the Cooma project for example, the anaesthetist was given a commitment that every meeting would run for exactly one hour and this would be the extent of his time commitment. Literature review, auditing clinical notes, developing forms, and collecting and collating data were all done invisibly between meetings. This is particularly important in a rural environment with significant medical workforce shortages.

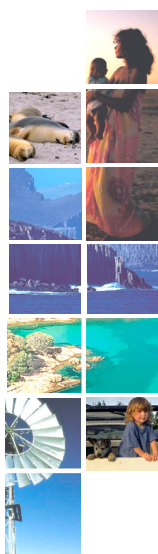
Tradition is a significant barrier. Much of what we do and how we do it is governed by rules that are neither written down nor articulated. Flow charting processes is a deceptively simple tool for exposing tradition and allowing critical examination. Indeed, often no prompting is often needed during this step for participants to start questioning the way things have traditionally been done.

The level of trust is very much dependent on the cultural maturity of an organisation and it is an important role of management to ensure that this develops in a positive way over time. Tackling non threatening issues through quality improvement is an important way to build trust between clinicians and managers and build trust in the team approach and the quality improvement tools. Reducing postoperative nausea and vomiting is arguably not as important as, for example, reducing the risk of harm through medication errors, but it was an issue identified by clinicians and patients as important and one which allowed trust to be built. Notwithstanding the management imperative to tackle important issues of safety and avoidable adverse outcomes, the issues that clinicians and consumers identify as important and are comfortable dealing with represent opportunities to build trust and build individual and organisational capacity for quality improvement.

The two projects demonstrate the value of consumer input. In the first case, information from patients was needed to demonstrate that there really was a problem with postoperative nausea and vomiting. In the second case described, working with patients to meet an expressed need for knowledge about their own medications was important to the success of the project. Strategies that treated patients as passive recipients of care would most likely not have been as successful on their own.

CONCLUSION

The two examples of successful clinical practice improvement projects in this paper demonstrate that the methodology can be an effective tool for improving the quality of care in rural hospitals and health services. With senior management commitment, identification and training of clinical leaders, careful risk management and consumer involvement, real improvements in the safety and quality of care can be achieved.



RECOMMENDATION

The clinical practice improvement methodology is a potentially useful tool for improving the processes and outcomes of care, and success has been demonstrated in rural health services. Subject to a management commitment to identify and commit resources to train and support clinical leaders, it should be considered for use in the quality improvement program of smaller hospitals and health services.

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AUTHOR

Jon Mortimer lives and works on the far south coast of New South Wales, providing medical management support for health services in coastal towns from Batemans Bay to the Victorian border. He spent 15 years in clinical and management positions in the Illawarra, Western and South Western Sydney before moving to the coast. Jon holds the position of Deputy Director of Medical Services with Southern Area Health Service. He chairs the Area's Clinical Quality Review Committee and has been involved in establishing quality improvement systems and teaching the use of the clinical practice improvement methodology.

