

## safety – Minister’s Innovation Award

### Safety and Security Improvements

Wollongong Hospital  
Illawarra Area Health Service

#### Abstract

Risks to staff, patients and visitors were identified in 2001 when an audit of safety and security was performed, resulting in a poor compliance rating of 72 percent. A further review of security-related incidents and a survey of staff knowledge and perceptions of safety confirmed that potential risk. A group of managers and staff led by the security manager and a senior manager brainstormed possible solutions. Key stakeholders such as nursing unit managers were involved in formulating an action plan. With the development and implementation of policies and procedures, education of security officers and staff, installation and upgrading of equipment, introduction of electronic access cards and limiting access to the hospital and ward areas that risk was significantly reduced. A re-audit resulted in a compliance rating of 97 percent and a review of incidents for the 12 months following the changes compared to the 12 months prior clearly demonstrated a reduction in safety and security-related incidents.

#### Aim

A NSW Department of Health Safety and Security audit was conducted during July 2001, with a poor compliance result (72 percent). A concern also existed statewide regarding the level of security in hospital buildings following aggressive incidents and assaults on staff members. The aim of the project was to reduce risk to patients, staff and visitors by improving the level of security in the facility and as a result address the Illawarra Health value: “Safety for our consumers and staff within all of our services” (IH Statement of Values, 2001).



*Wollongong Hospital Security staff*

#### Background

The safety and security audit outcome demonstrated that problems existed with compliance rates concerning audits on security, appropriate levels of access control, equipment quality, surveillance, policies and procedures and education and training. An outcome of this less than optimal security service was a high level of theft, vehicle damage and theft, absconding patients, and frequent aggressive incidents involving staff and patients (see Figure 1).

A decision was made to improve the security service in an effort to reduce the levels of these incidents, thereby lessening the potential risk to patients, staff and visitors to the Wollongong Hospital site.

#### Methodology

A review of reportable incidents for the 12-month period prior to the Department’s audit was carried out (see Figure 1). In addition, a survey was performed to gather the perceptions of staff using the car park and surrounding streets, and staff working in isolated areas to assist in identifying the

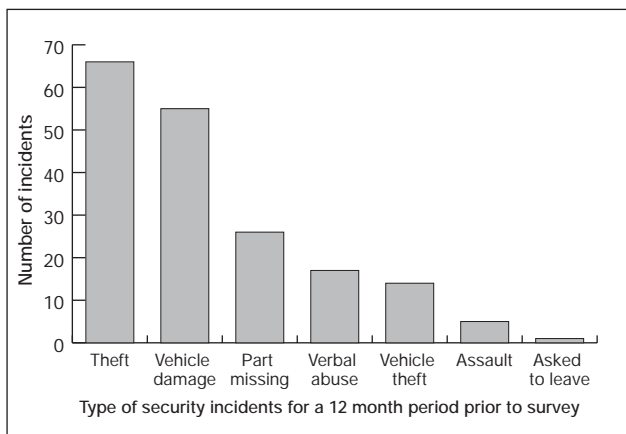


Figure 1. Number and type of security incidents

major security issues and to gauge staff perceptions of their safety to and from work and within the hospital buildings. Claims by security officers that

the surveillance equipment was substandard were verified by way of a review of CCTV footage.

In addition, industrial representatives and security officers led by the newly appointed security manager and a senior manager brainstormed the issue of safety and security problems within the framework of a security working party to assist with the identification of the problems and possible solutions. Nursing staff were also consulted to seek their perceptions and experiences concerning unauthorised access to ward areas. Nursing managers were provided with the opportunity to choose the most appropriate method of access control to their ward areas. The NSW Police Department and the IH Mental Health Service were also consulted (see Table 1).

Table 1. Security problems identified

Problem	Evidence of problem/cause	Possible solution
Staff unaware of recent developments in safety and security practices.	<ul style="list-style-type: none"> <li>Outdated and user unfriendly policies and procedures.</li> </ul>	<ul style="list-style-type: none"> <li>Update policies</li> <li>Provide user friendly procedures for security staff in line with NSW Health guidelines.</li> </ul>
Lack of appropriate access control to buildings after normal business hours.	<ul style="list-style-type: none"> <li>Visitors present in unauthorised areas.</li> <li>Lack of record of contractors, visitors.</li> <li>Unlocked/uncontrolled entrances after normal business hours.</li> </ul>	<ul style="list-style-type: none"> <li>Minimise number of entrances available after hours.</li> <li>Control access.</li> </ul>
Lack of appropriate access control to wards, high risk areas.	<ul style="list-style-type: none"> <li>Presence of unauthorised personnel.</li> <li>Reports of assault.</li> <li>Reports of regular theft of patient and staff property.</li> </ul>	<ul style="list-style-type: none"> <li>Improve surveillance to ward and high risk areas.</li> <li>Control access.</li> </ul>
Old and outdated video recording system.	<ul style="list-style-type: none"> <li>Security video recording system unable to identify security breaches due to poor images and inability to store footage on disc or review footage in efficient manner.</li> <li>Lack of surveillance cameras in some high risk areas.</li> </ul>	<ul style="list-style-type: none"> <li>Improve quality and standard of equipment.</li> </ul>
External environment difficult to monitor for security breaches.	<ul style="list-style-type: none"> <li>Poor lighting.</li> <li>Poor landscape design/maintenance – overgrown trees, bushes.</li> </ul>	<ul style="list-style-type: none"> <li>Improve ability to monitor activity in grounds by modifying environment.</li> </ul>
Poor knowledge of security issues by staff.	<ul style="list-style-type: none"> <li>No formal training or competency based education for general or security staff.</li> </ul>	<ul style="list-style-type: none"> <li>Develop relevant competency based training programs.</li> </ul>
Lack of internal emergency alarms.	<ul style="list-style-type: none"> <li>Duress alarms not present in isolated and some high risk areas.</li> </ul>	<ul style="list-style-type: none"> <li>Survey staff to ascertain areas requiring duress alarms.</li> </ul>

Problem	Change implemented
Staff unaware of recent developments in safety and security practices.	<ul style="list-style-type: none"> <li>• Policies updated in line with NSW Department of Health Draft Guidelines for Safety and Security in Health Facilities (2001).</li> <li>• Security Department Handbook developed.</li> </ul>
Lack of appropriate access control to buildings after normal business hours.	<ul style="list-style-type: none"> <li>• All entrances, lifts, fire stairs placed on electronic time locks and only two identifiable entrances made available for access to building after normal business hours.</li> <li>• All staff required to wear electronic ID with designated electronic access to designated areas.</li> </ul>
Lack of appropriate access control to wards, high risk areas.	<ul style="list-style-type: none"> <li>• All ward areas fitted with relevant access control in line with Nursing managers' suggestions, eg CCTV cameras, intercoms, electronic access .</li> </ul>
Old and outdated video recording system.	<ul style="list-style-type: none"> <li>• Purchase of digital video recording system compatible with new CCTVs.</li> </ul>
External environment difficult to monitor for security breaches.	<ul style="list-style-type: none"> <li>• Large trees have been pruned and some trees and shrubs with excessive foliage have been replaced with smaller plants.</li> <li>• Lighting in all external areas including car park upgraded</li> <li>• Additional CCTV cameras fitted to entrances and car park.</li> </ul>
Poor knowledge of security issues by staff.	<ul style="list-style-type: none"> <li>• Competency based training programs developed and implemented for general staff and security staff.</li> <li>• Monthly security and safety flyers introduced and sent via email and placed on staff noticeboard.</li> </ul>
Lack of internal emergency alarms.	<ul style="list-style-type: none"> <li>• Duress alarms installed in all ward areas and isolated office areas. Monthly testing initiated.</li> </ul>

*Table 2. Changes implemented*

## Planning and implementation

Significant opportunities for improving the standard of security and reducing risk to patients, staff and visitors were identified. An action plan was formulated from the information provided in Table 1. Timeframes, responsibilities and performance measures were assigned to various members of the working party. Problems were prioritised and the high priority actions relating to access, surveillance and education were implemented with funding assistance from the NSW Department of Health. Table 2 outlines the changes made during the implementation phase.

## Outcomes and evaluation

The outcomes of implementing the action plan objectives are listed below:

- Easy reference security related policies and procedures available on the intranet
- Security manual assists security officers after hours in effectively dealing with incidents and allocates clear responsibilities to these officers, enabling them to respond to incidents in a timely manner.
- Reduction in number of unauthorised accesses due to limit of two entrances after hours.
- Video recording system improved monitoring, review and registering of suspicious activity and has resulted in assisting the NSW Police with a number of arrests and increases the number of unauthorised persons being asked to leave.

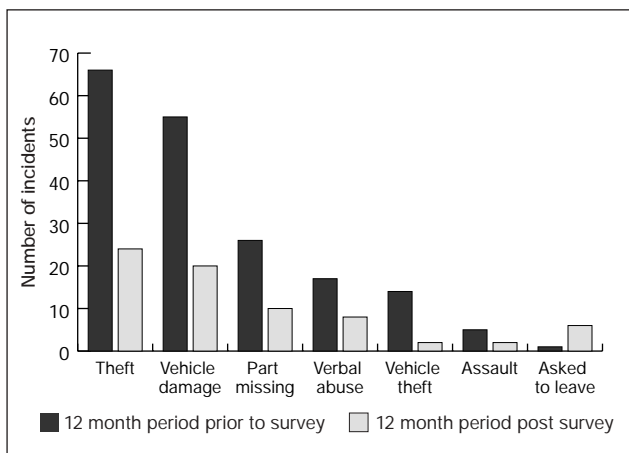


Figure 2. Pre and post audit comparison

- Security officers are able to effectively monitor external areas which results in timely reporting of incidents and regularly prevents criminal activity occurring.
- Training and education is assisting all staff in understanding their responsibilities in regard to security on site and to and from home. Self-defence training is assisting staff in becoming more aware and confident in confronting situations. Ongoing evaluation of training.
- Security staff complete relevant and timely electronic incident reports used to monitor trends. Staff aware of alarms and feel more secure in workplace
- Ongoing annual audits/surveys to ensure improvements continue.

The number of reportable incidents was re-measured and clearly demonstrates a reduction in those security related incidents following implementation of the changes (see Figure 2).

This reduction in security related incidents was due to the changes introduced outlined in Table 2. The result was tested through a repeat audit using the NSW Department of Health’s tool used in July 2001. The repeat audit in 2002 demonstrated a significant improvement in the compliance rating with a result of 97 percent. In the ACHS periodic review conducted in December 2002, the survey team commented to the acting general manager concerning the excellent security systems and processes on site, which they had not observed at other facilities.

### Future scope

The changes implemented at the Wollongong Hospital have significantly reduced security-related incidents for the entire site and thus reduced risk to the hospital’s community. The changes made could be implemented in other Illawarra Health facilities or NSW Health facilities. The Area Health service has recognised the improvements made by awarding the team a quality award and is planning implementation of many aspects of the security systems across the health service. This approach to reducing risk to patients, staff and visitors would assist all health facilities in meeting the requirements of NSW Department of Health Circular 2002/19, that is, promoting safety and security and well-being of staff, patients and public within health facilities.

### References

*Effective Incident Response: A Framework for Prevention and Management in the Work place*, Circular 2002-19. Sydney: NSW Department of Health, 2002

*Illawarra Health Statement of Values*. Wollongong: Illawarra Health, 2001

*NSW Health Safety and Security Manual*. 1998 (updated draft 2001) Sydney: NSW Department of Health, 2001

## safety – finalist

### Refeeding Syndrome: Ensuring Safe Nutritional Support

Prince of Wales Hospital  
South Eastern Sydney Area Health Service

#### Abstract

The Refeeding Syndrome is the term used for the complex and adverse responses of the body that occur in some instances when nutrition is given after a period of starvation. These responses, while incompletely understood, have been recognised as life threatening.

The syndrome was first described in prisoners liberated after the Second World War and until recently was thought to only occur when renourishing the severely malnourished, eg hunger strikers, eating disorder patients. However, as many acutely ill hospital patients are malnourished, there has been an increasing realisation that the Refeeding Syndrome affects them also.

This project identified that Refeeding Syndrome was occurring in small numbers of patients across many clinical areas ie that there was a potential for adverse reactions to nutrition support, and that safely managing the Refeeding Syndrome is simple, inexpensive and effective. The project has therefore implemented a hospital-wide protocol for the management of the syndrome, and the education of medical, nursing and allied health staff. This has resulted in a greater awareness of Refeeding Syndrome and a decreased number of patients experiencing its adverse effects.

#### Aim

This project aimed to decrease the number of incidents of Refeeding Syndrome by 50 percent within two years.

This was to be achieved by assessing the risk of Refeeding Syndrome in 100 percent of patients referred for oral, enteral or parenteral nutrition



*The Refeeding Syndrome project team*

support and implementing strategies to monitor and control Refeeding Syndrome in 100 percent of patients recognised to be at risk.

#### Background

Clinical dietitians recognised that some patients commencing oral, enteral or parenteral nutrition support were occasionally experiencing the adverse consequences of the Refeeding Syndrome (eg a sudden drop in electrolytes to subnormal levels shortly after the commencement of nutrition support). However there was a lack of key information available to manage this risk, including the true incidence of Refeeding Syndrome in the hospital population, exactly which patients were most vulnerable, and best practice in preventing and managing the syndrome. Therefore it was necessary to gather this information to ensure the safe implementation of nutrition support in patients potentially at risk.

## Methodology

The project team conducted several data collection strategies. These included:

1. Prospective data collection on patients referred to the Department of Nutrition and Dietetics for oral, enteral or parenteral nutrition support. The aim of this was to establish the incidence of Refeeding Syndrome in this group and identify predisposing factors.
2. Literature search to define the patients most at risk of developing Refeeding Syndrome and develop recommendations for its prevention and management.
3. Discussions with medical and pharmacy staff within the hospital regarding patients at risk and their management.
4. Survey of hospitals nationally regarding practices for identification and management of the syndrome.

The patient data collection revealed that Refeeding Syndrome was occurring in small numbers of patients across all clinical areas in the hospital (including aged care, surgery, neurosciences and oncology). Valuable insight into the features of Refeeding Syndrome that patients experienced was gained.

Twenty five cases of moderate severity occurred in the data collection period.

The literature search yielded information on guidelines for identifying patients at risk, and prevention and monitoring measures. The literature also supported the project team's conclusion that applying these would reduce the incidence of Refeeding Syndrome.

Other hospitals, while concerned about the issue had not yet developed formal, comprehensive management protocols.

## Planning and implementation

A comprehensive Refeeding Syndrome protocol was produced and all clinical dietitians were trained in the application of this protocol. Medical, nursing and allied health staff were given education on Refeeding Syndrome (at hospital grand rounds, ward continuing education and seminars) highlighting the incidence of Refeeding Syndrome cases in the hospital and management steps for patient safety.

The Refeeding Syndrome Protocol was implemented and data collection continued. Also, a record was kept of all comments and concerns on the protocol (eg points of confusion or issues not covered) so that the protocol itself could be refined.

The hospital wide implementation of the protocol involved the following changes to patient care:

- the assessment of all oral, enteral or parenteral nutrition support patients for risk of Refeeding Syndrome.
- in those patients at risk:
  - supplementation with vitamins and/or electrolytes as indicated.
  - modification of feeding regimens (lower input in initial stages).
  - monitoring of electrolytes.

## Outcomes and evaluation

The steps to prevent and safely manage the Refeeding Syndrome proved to be simple to implement. The incidence of Refeeding Syndrome in the next 12 months was reduced to four cases of moderate severity. (Figure 1)

The management of Refeeding Syndrome has been an issue of concern for clinical dietitians and there has been a longstanding need for practical clinical guidelines. The information from our project has been documented into a Refeeding Syndrome management kit and has been forwarded (on request) to 50 hospitals across NSW and Australia. The kit has been evaluated as good/excellent by 100 percent of all respondents for providing clear, comprehensive and well-referenced guidelines to safely manage the Refeeding Syndrome. To date, our Department has presented its work on Refeeding Syndrome to over 500 clinicians across NSW.

## Future scope

Patient data collection, together with literature searches will continue to sustain the improvement in the incidence and severity of Refeeding Syndrome and the further refinement of the management protocol.

As a result of this project, “doing the right thing, the first time and in the right way and at the right time”, is now standard practice for patients at risk of the Refeeding Syndrome at the Prince Henry and Prince of Wales Hospital.

## safety – finalist

### Improving Perineal Outcomes Following Vaginal Birth

Royal North Shore Hospital  
Northern Sydney Area Health Service

#### Abstract

Secondary data sources indicated that in 2001 Royal North Shore (RNS) Hospital had the highest rate of perineal (genital tract) tears following childbirth among NSW public hospitals. In particular, RNS had the highest rate of 3rd/4th degree tears (1st degree being the least, 4th degree the greatest) in the state. Perineal trauma is associated with significant morbidity, cost implications, and low levels of overall patient satisfaction.



*'The interventions resulted in 100 percent reduction in 4th degree tears ...'*

The project aim was to achieve a 100 percent reduction in 4th degree tears and a 20 percent increase in intact perineums for first time mothers with one baby who labour spontaneously and do not require augmentation. The project target group was limited to non-chargable patients. A multi-disciplinary team with fundamental knowledge used clinical practice improvement methodology. Customers' expectations were identified and the problem diagnosed through process flow charting and brainstorming. Prioritising information through a cause and effect diagram and Pareto chart led to Plan/do/study/act cycles of three evidence-based interventions.

The interventions resulted in a 100 percent reduction in 4th degree tears and a 20.7 percent reduction in total perineal tears.

Strategies for change include continuing education of clinical staff and dissemination of results. Future plans include monitoring and assessment of project aims and re-application of the methodology in the new birthing facility due for completion August 2003.

#### Aim

The project aim was to achieve a 100 percent reduction in 4th degree tears and a 20 percent increase in intact perineums for first-time mothers with one baby who labour spontaneously and do not require augmentation, over the period October 2002 – April 2003.

#### Background

Secondary data sources indicated that in 2001, Royal North Shore (RNS) Hospital had the highest rate of perineal (genital tract) tears following childbirth among NSW public hospitals. In addition, RNS had the highest rate of 3rd/4th degree tears (1st degree being the least, 4th degree the greatest) in the state.

Perineal trauma is associated with significant morbidity, cost implications, and low levels of overall patient satisfaction.

#### Methodology

A multi-disciplinary team with fundamental knowledge was formed to investigate the full extent and nature of the problem. The team included:

Catriona Andronicos	systems analyst
Dr Sarah Buchanan	obstetric registrar
Miriam Cattell	QaRNS
"Charlie"	consumer
Donna Hartz	midwifery consultant
Susan Lawrence	student midwifery educator

Dr Michael Nicholl	obstetric consultant
Deborah Wilden	labour floor nursing unit manager

Customer and staff expectations were identified and the problem diagnosed through process flow charting, brainstorming and multivoting. Possible causes for the problem were identified and recorded on a Cause and Effect diagram. The team voted on the most important factors to establish priority areas for action. Multivoting was used to develop a Pareto chart.

The investigative process indicated that the priority areas requiring improvement included staff education and approach to obstetric intervention. Baseline data was collected for the 12 months prior to the project. This was displayed on a statistical process control chart to allow comparison of performance throughout the duration of the project.

Consumer representation was recruited on a voluntary basis through the outpatient antenatal clinics. With respect to staff, project team members were approached on the basis of expertise, while remaining staff within the unit were enlisted with the aid of education and information packages.

### Planning and implementation

The project team had its initial meeting in October 2002. Subsequent meetings were held on a monthly basis. The team identified three evidence-based interventions to be trialed as short PDSA (plan/do/study/act) cycles. These included:

- to cease active instruction to push in the second stage of labour ie to await the patient's natural urge to push
- for women choosing to deliver on a bed, to encourage the adoption of the left lateral position for delivery
- where instrumental delivery indicated, and where no clear advantage of one instrument over another existed, to encourage the use of vacuum extractor rather than forceps.

Staff education, information packages and the development of data collection forms preceded each intervention. Each intervention was trialed for a specified period of time and subsequently all are ongoing.

All vaginal deliveries	NSW 2001	RNSH 2001
Intact perineal rates, ie no tear	28.1%	15.15
1st degree perineal tears/grazes	27.9%	27.5%
2nd degree perineal tears	22.7%	31.4%
3rd or 4th degree perineal tears	1.4%	3.1%

*Table 1. Comparison of perineal tears in NSW and RNSH*

The monitoring of the interventions and their effectiveness was undertaken using the local OBSTET database. A statistical process control chart was used to display the data and compare pre- and current project performance.

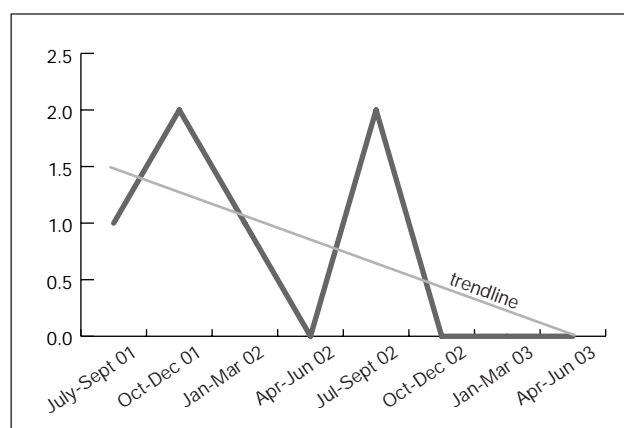
### Outcome

For first time mothers with one baby who laboured spontaneously and did not require augmentation, the project accomplished:

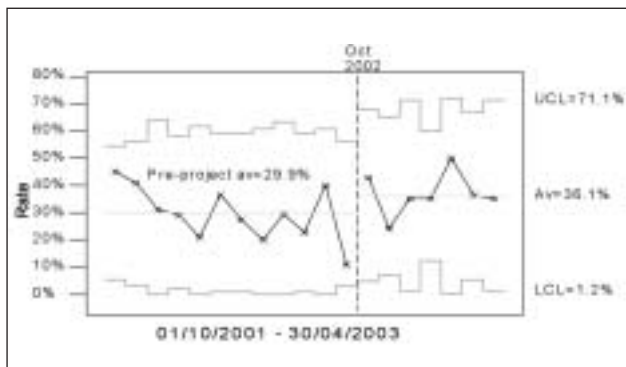
- 100 percent reduction in 4th degree tears
- 20.7 percent increase in intact perineum rates

This is demonstrated graphically by Figure 1.

This equates to a 20.7 percent increase in intact perineum rates over six months. Whilst not a specific aim of the project, the episiotomy rate of 7.4 percent, for the nine months prior to commencement of the project, fell to 6 percent during the six months



*Figure 1. Perineal tears per quarter with trendline*



**Figure 2.** Rate of intact perineum: primiparas, singleton vaginal del, syntocinon

of the project.

Cost savings are difficult to measure but are expected in the cost of both suture material and length of stay. These results are aligned with the customer and staff expectations identified in the diagnostic phase of the project.

## Future scope

Strategies for change include continuing education of clinical staff and dissemination of results. Future plans include monitoring and assessment of project aims and re-application of the methodology in the new birthing facility due for completion in August 2003. The results of this project are immediately applicable and transferable to maternity units across Northern Sydney Health and NSW Health.

effectiveness





## effectiveness – winner

## Management of Haemodynamically Unstable Patients with a Pelvic Fracture

Liverpool Health Service  
South Western Sydney Area Health Service

### Abstract

Haemodynamically unstable patients with a pelvic fracture pose a major clinical challenge. This project successfully developed and implemented clinical practice guidelines for this subgroup of patients at a major trauma service. Optimal management of haemorrhage associated with pelvic fracture is best treated by angiography and embolisation and early non-invasive pelvic stabilisation with the aim to transfer the patient out of resuscitation within 45 minutes of presentation. The implementation of this guideline within our hospital involved education sessions for all to be involved, reminder systems and audit and feedback. A key outcome measure to assess the uptake of the guideline are completion rates for focussed abdominal sonography in trauma (FAST), diagnostic peritoneal lavage (DPL) and pelvic angiogram. Implementation of the guidelines resulted in an increase of overall optimum quality of care from 41.3 percent (1999-2001) to 95.8 percent (2002) and a decrease in mortality from 34 percent to 25 percent. The project has resulted in a palpable and significant improvement for patient outcomes.

### Aim

Reduce the high mortality associated with haemodynamically unstable patients with pelvic fracture by developing evidence-based recommendations (Grimshaw 1993) that remedy common clinical dilemmas and decrease variations in practice. This was to be achieved by providing a summary of a larger body of information into a convenient, readily usable format and assist practitioners in making evidence-based decisions in the treatment.

### Background

Haemodynamically unstable pelvic fracture patients have a high mortality and decision-making is crucial.



*Pelvic sheeting*

Mortality in patients with all types of pelvic fractures is approximately 16 percent (range 5-30 percent) (Poole 1994, Bassam 1998). For patients with closed pelvic fractures and haemodynamic instability, mortality rises to approximately 27 percent (range 10-42 percent) (Hammill 2000, Eastridge 2002) and further increases to approximately 55 percent (range 50-60 percent) for open pelvic fractures (Naam 1978). These mortality rates remain the greatest of any skeletal injury, with haemorrhage being the major reversible contribution to mortality in around 42 percent of pelvic trauma patients.

## Methodology

Formulation of a working party was crucial to identify key clinical questions and ensuring the guideline addressed issues pertinent to clinicians. Formulation of key clinical questions that are outcomes focussed to counter clinical dilemmas identified by the working party. Comprehensive, unbiased literature search utilised common medical database such as Medline, Cochrane Library and World Wide Web as well as unpublished papers by key clinicians. Assessment of quality of the literature utilised explicit and standardised appraisal checklists. This allowed conclusions to be based on the highest quality evidence available. It demonstrated that the studies included have been scrutinized and strength of the evidence appointed accordingly and allowed the process of critical appraisal to be objective and reproducible. Strict adherence to the National Health and Medical Research Council (1999) protocol ensured the analysis and subsequent appointment of levels of evidence (Table 1) was highly accurate. Expert clinical consensus was used in the absence of evidence for guideline recommendation. It was important to write the guideline in easy to read and usable format, using key clinical questions as chapter headings. The Guidelines were stated separately in a text box with its level of evidence so clinicians could refer to them. Finally analysis of trauma registry data for periods before and after guideline development and implementation measured compliance with the developed guidelines and differences in patient outcomes.

## Planning and implementation

Trauma registry data demonstrated the high mortality associated with haemodynamically unstable patients with a pelvic fracture. The injury advisory committee agreed to the need for guidelines for the management for this complex decision making challenge. A broad base of physicians and nurses likely to be affected by the guidelines and from a range of specialties, including trauma, emergency, intensive care, orthopaedics, interventional radiology, general practitioners, public health and pre-hospital care providers were canvassed. Four key clinical questions were formulated: How should we best

assess the source of bleeding; control pelvic bleeding; fix the pelvis and what is the best technique for angiography? A literature search was conducted and a level of evidence table created to enable the project team to prepare the guideline. The project team included people with scientific and clinical expertise in the relevant area and they worked under the supervision of the injury advisory committee of the South Western Sydney Area Health Service. Educational packages, reminder systems and group education seminars, materials were prepared and disseminated to stakeholders. Visual cue cards were placed in procedures bay. Monitoring, audit and feedback, and continuous education sessions were carried out on a regular basis. The treatment compliance and survival outcomes for the subgroup of haemodynamically unstable patients with pelvic fractures before and after guideline implementation were compared.

## Outcomes and evaluation

Comprehensive guidelines were developed which outlined recommendations providing explanation of options and scientific foundation and supported by levels of evidence. The recommendations were:

1. Determine presence of intra-abdominal haemorrhage using diagnostic peritoneal aspiration and/or focused abdominal sonography (FAST) in trauma within 30 minutes of patient arrival.
2. Immediate laparotomy and concomitant pelvic stabilisation to control intra-abdominal haemorrhage and venous pelvic haemorrhage, followed by angiography if pelvic arterial bleeding is also present.
3. If intra-abdominal bleeding is absent, non-invasive pelvic stabilisation and transfer to angiography within 45 minutes of arrival to control venous and arterial pelvic haemorrhage.
4. Optimal embolisation should be performed with steel coils or gelfoam suspension. The optimal pelvic stabilisation technique for rotationally unstable fractures with haemodynamic instability is non-invasive.

**Table 1.** Levels of evidence as defined by the National Health and Medical Research Council (NHMRC). (1999)

I	Evidence obtained from a systematic review of all relevant randomised control trials (RCT)
II	Evidence obtained from at least one properly designed RCT.
III-1	Evidence obtained from well-designed pseudo-randomised controlled trials (alternate allocation or some other method).
III-2	Evidence obtained from comparative studies with concurrent controls and allocation not randomised (cohort studies), case-control studies, or interrupted time series with a control group.
III-3	Evidence obtained from comparative studies with historical control, two or more single-arm studies, or interrupted time series without a parallel control group.
IV	Evidence obtained from case series, either post-test or pre-test and post-test.

#### Evaluation demonstrated:

- Increased compliance by treating clinicians evidenced by FAST being done within 30 minutes of arrival (68 percent to 100 percent) and early angiography embolisation (38 percent to 100 percent).
- Reduction in mortality from 34 percent prior to guidelines, to 12.5% following guideline implementation (Table 2).

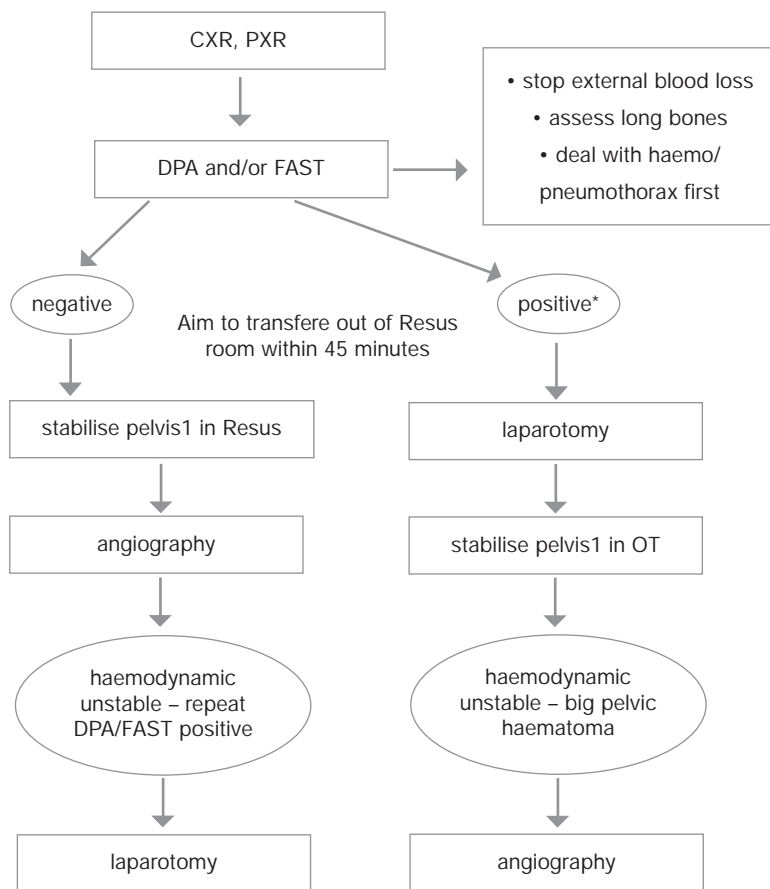
Practice guidelines have instilled a new confidence in attending surgeons and intensive care specialists and have helped cement a multidisciplinary approach to advance care for this small subgroup of seriously injured trauma patients.

#### Future scope

Haemodynamically unstable pelvic fracture patients have a high mortality and decision-making is crucial. The successful development and implementation of key clinical practice guidelines and options in the early management of these challenging patients demonstrates the practical application of a collaborative approach to improvements in clinical care. Wider implementation of these guidelines is a priority as they have national and international implications. A project team has been formed with assistance from the Institute of Injury and Trauma Management to develop and implement a range of better practice guidelines for trauma. Liverpool Health Service is committed to the advancement of improvements in clinical practice in a range of complex injury patterns and it is planned to develop more guidelines to address these injuries.

**Table 2.** FAST, angiography and mortality before and after guidelines implementation

Time period	n	DPA FAST	External stabilisation	Early angiography – after abdomen cleared	Overall optimal care	Mortality
Before	28	68%	18%	38%	41.3%	34%
After	8	100%	87.5%	100%	95.8%	12.5%



Haemodynamically unstable pelvic fracture

- \* Positive diagnstic peritoneal aspiration (DPA): > 10ml of frank blood
- Positive FAST: free fluid
- Methods of stabilising the pelvis include:
  - Non-invasive: clamped bedsheet (in DPL trolley) or propriety evic. Rotational correction
  - Invasive:anterior external fixation with a 5mm pin into each iliac crest, connected by radiolucent rods or single curved rod. Rotational correction
  - Skeletal pin traction for vertical correction (in Vertical Shear type #)

Diagram 1. Management of haemodynamically unstable patients with a pelvic fracture

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## effectiveness – finalist

### Little Feet – Big Steps

Mudgee Community Health  
Macquarie Area Health Service

#### Abstract

Little Feet – Big Steps was a pilot program using dance and performance in conjunction with counselling. It aimed to build resilience in children who have suffered sexual and physical abuse. The program involved weekly group dance classes from June to December 2002. The classes facilitated self-esteem and addressed dissociation, and concluded with a significant performance to an audience including family and peers. Participants (seven girls and one boy) aged six-10years, had all been referred to Mudgee Health Service (MHS) by Department of Community Services (DOCS). Positive changes in behaviour were reported in all participants by schoolteachers, parents/carers and counsellors. Participants self reported an increased ability for social involvement with peers and an increase in self worth and future expectations. These outcomes issue an exciting invitation for research into interventions that tap into existing social organisations in the everyday life of the child.

#### Aim

To develop a program to address the effects and sequelae of abuse, ie:

- Poor concept of self and identity – vulnerability to re-abuse.
- Indiscriminate physical, psychological and emotional boundaries – vulnerability to re-abuse.
- Dissociation between the self and the body or emotions – risk of mental disorders/illness in adulthood (Berliner @ Elliott, 1996)
- Isolation from peers because of distorted self-image (dirty, shameful, bad) – problems with trust and relationships.



*'Parents and friends were able to see their children "shine".'*

#### Background

Gilligan (2001) offers evidence to suggest that although a child may suffer great home stress, positive social experiences may buffer the toxic effects of abuse and confine them to one domain of a child's life.

A 2002 survey of children accessing Mudgee Sexual Assault Service (MSAS) found that only 2 percent participated in structured spare time activities or belonged to any children's organisations. These children rely on the family unit for social engagement outside of school, placing pressure on parents/carers, increasing the possibility of tumultuous family relationships and risk of harm. Alternatively the child, hungry for social engagement, in the context of the parent's need for respite, becomes vulnerable to the sex-offender.

## Method

### Management

The program was designed and managed by MSAS as part of service delivery and funded by MHS and Violence Against Women Specialist Unit (Attorney General's Department).

### Ethics

Written consents obtained from parents/carers for children's participation. As this was part of service delivery, standard policy and procedure applied regarding inclusion, exclusion, information management and confidentiality between partners.

### Partners

Cudgegong Valley School, St Mathews Central School, Reps School of Dance, DOCS, parents/carers, violence prevention specialist, MSAS, Mudgee Child Protection Service (PANOC). Regular meetings were held to implement process evaluations.

### Participants

Inclusion criteria as per standard practice (referred by DOCS having a substantiated history of assault). Exclusion criteria was children younger than six years and older than 10 years because of developmental stages.

### Design

- Referrals were made to MSAS and PANOC.
- Baseline assessments of participants' developmental stage, behaviours, relationships, support networks, school performance, boundaries and other significant information using semi-structured interview obtained from parents, teachers and counsellors.
- Baseline assessments of participants' concept of self, efficacy, emotional spontaneity, using questionnaire (Geldard @ Geldard).
- Process and impact evaluations midway through the program to assess its efficacy, using semi-structured interview with partners.
- Post implementation assessments using the same tools as pre.
- Collection of qualitative assessments using video, audio, and written methods.

## Analysis

This information was analysed and written up to inform partners and funding bodies of outcomes and recommendations.

## Planning and implementation

Planning and implementation of the program involved four elements:

### 1. Protective environment

Enrolling the participants in youth organisations with behaviour at entry would have repeated dynamics of social isolation at school. A protective environment was established wherein participants practised social skills. Expressions of anger were tolerated off to the side of the group. "We respect your right to be angry, but we have the right to keep dancing" was the spoken rule. A counsellor was present for support at all classes.

### 2. Social creativity

A professional instructor gave weekly one-hour classes at a studio during school time. Dance was chosen as the vehicle for creative expression because it has the capacity to connect the self with the body addressing dissociation (Salter 1995). Learning dance movements presented opportunities to experience accomplishment through concentration and perseverance.

### 3. Performance

Performance puts attention-seeking behaviour into a positive context and challenges the experience of negative attention seeking. Participants performed their routine in the annual dance-school recital. Parents and friends were able to see their children 'shine'. Participants performed in the same social context as school peers.

### 4. Community connection

In the final stage of implementation, children were enrolled in dance classes in after school hours with their peers, choosing a style of dance, ie tap, jazz, modern, ballet or drama. This community involvement carried over to relationships at school as children felt less isolated. Another aspect is that the community dance school is involved in the process of building resilience in abused children.

## Outcomes and evaluations

### Impact evaluation results

- Social Involvement
  - Five of the children currently attend dance classes in open company.
  - One child attends drama classes and has performed in two community musicals.
  - One child has joined Little Athletics.
- Positive changes, as observed by teachers, parents/carers and counsellors in all eight children included:
  - ability to maintain eye contact
  - confidence to address the class and talk about themselves
  - social activity in the playground
  - willingness to try new activities
  - ability to focus on a given task
  - increased concentration span
  - increased emotional range
  - creative ability

In addition three of the four children who had previously used force to resolve conflict with others no longer did so. Four children displayed increased ability to accept corrective criticism.

Self reports of participants reflected positive changes in:

- self-concept
- competence
- optimism
- creative ability
- social ability
- ability to have fun.

### Qualitative evaluations as observed by schoolteachers

Five themes emerged from transcripts obtained in informal interview:

- ability to express emotions
- increased self esteem
- more comfortable with peers
- sharing stories about self
- improved concentration

## Process evaluations and outcomes

Reps School of Dance has developed a philosophy of offering classes to children who are financially disadvantaged, donating free classes.

### Future scope

Little Feet–Big Steps was designed as service provision and implemented in a rural setting with a population of 18,000. However it is a program that has the potential to adapt to an urban environment, different target populations, and through the process build relationships within the community for care of abused children.

A research proposal is being devised using an experimental design, comparative study in a rural town of similar demographic proportions to Mudgee. The research will take the results of the small pilot program and test them with a larger sample, both experimental and control. The results will then provide evidence as to the usefulness of dance as an effective tool for working with abused children. This research aims to inform work practice and provide an innovative model of service delivery which can potentially be implemented by sexual assault and PANOC Services throughout NSW.

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## effectiveness – Minister’s Encouragement Award

### Improving the Care of Children with Asthma in Emergency

Sydney Children’s Hospital  
South Eastern Sydney Area Health Service

#### Abstract

Asthmatics who present to emergency with an acute exacerbation often have deficiencies in acute and long-term asthma management, resulting in repeated acute presentations. Presentation to the Emergency Department provides an opportunity to improve care



*‘Overall the representation rate dropped by 17%.’*

through education and promoting continuity of care. We aimed to reduce the three-month representation rate by 30 percent within 6 months and sustain the improvement. The diagnostic phase revealed that lack of written asthma action plans, inadequate use of preventer medication and poor continuity of care were the high priority areas. The standard of documentation was often poor. We implemented three changes – provision of an asthma action plan on discharge, promotion of the need for medical follow up and standardising assessment using a proforma. Representation rate dropped by 17 percent overall. When the standardised assessment form was used, representation rate was 40 percent lower and readmission rate 25 percent less. Improvements have been sustained for two years.

#### Aim

To reduce the number of children with asthma representing to the Emergency Department within a three month period by 30 percent within 6 months and sustain the improvement.

#### Background

Asthma is one of the most frequent reasons for children to present to Emergency and be admitted to hospital. An acute exacerbation of asthma requires acute treatment but also provides an opportunity to review the overall management<sup>1-4</sup>. Asthmatics presenting acutely to hospital have been shown to have deficiencies in knowledge, acute treatment and long-term care<sup>3,4</sup>. A written asthma action plan and regular review have been shown to reduce Emergency representations<sup>3,4</sup>, however many asthmatics do not have an action plan nor regular medical assessment. Addressing these deficiencies has the potential to improve care of children with asthma and reduce the need for acute presentation to Emergency and admission to hospital.

#### Method

A team of clinicians involved in acute and long-term management of asthma in Emergency, inpatient wards and the community was brought together. The computer information system in Emergency revealed that 21 percent of children with asthma presented to emergency a second time within three months of the initial presentation. A review of presentations to emergency identified deficiencies in the clinical notes regarding the documentation of the severity of acute asthma, background pattern and discharge planning. The team then surveyed parents whose children had recently presented to Emergency with asthma and identified and prioritised common

problems in children presenting with acute asthma – lack of written asthma action plans, inadequate use of preventer medication, poor continuity of care. These same areas were identified through the team brainstorming and construction of a cause and effect diagram.

### Planning and implementation

We provided asthma action plans, advised medical follow up care for all children who presented with asthma and created an asthma assessment proforma to prompt key management issues.

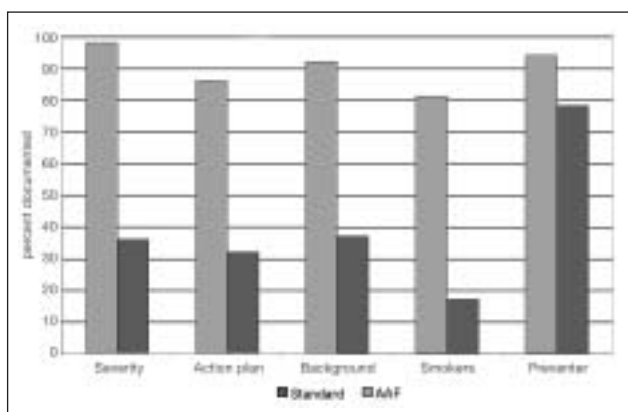
We engaged Emergency Department staff and taught them how to complete asthma action plans. We ensured that the plans were available and requested triage nurses to insert them in the patient notes on presentation. We alerted parents that they should have an action plan and should prompt their doctor to write one.

We advised that all children who presented to Emergency with acute asthma should be referred to the doctor who usually cares for their asthma within several days.

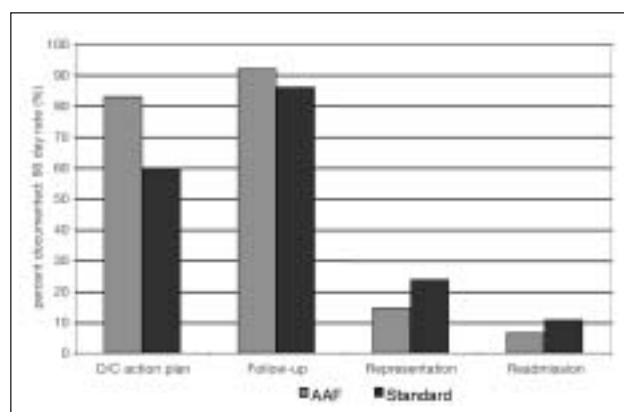
We devised an asthma assessment form that became part of the medical record. The form prompted key points in history and examination to assist assessment and treatment of the acute episode, background pattern and discharge planning.

### Outcomes and evaluation.

Weekly review showed that completion of asthma action plans increased from 0 percent to 80 percent and referral for medical review from 30 percent to



**Figure 1.** Asthma assessment form – impact on documentation (n=274)



**Figure 2.** Asthma assessment form – impact on discharge planning and outcome

80 percent. The representation rate for acute asthma fell by 23 percent in the first three months and was reduced by 12 percent for a year.

In the second PDSA cycle the asthma assessment form resulted in substantial improvements in the quality of the documentation. The form was used in 50 percent of 274 cases in a three month period, allowing comparison of performance with and without the form. There were significant improvements in the documentation of the severity of the presenting episode (98% v 36%), presence of an asthma action plan (86% v 32%), background pattern (92% v 37%), presence of smokers in the family (81% v 17%) and use of preventer medication (94% v 78%). An action plan was given on discharge more often (83% v 60%).

The key outcome measure of representation rate dropped by 40 percent and readmission rate by 25 percent in 136 cases where the form was used. (see overleaf)

Overall the representation rate dropped by 17%. (run chart overleaf)

### Future scope

The standardised proforma for assessing children with acute asthma has helped sustain the improvements. Intermittent auditing of performance and feedback continues. Minor modifications have been made to the layout of the form in response to comments from staff. Initiatives to increase use of the form include addition of a section for nursing observations to facilitate the form being in the patient record at the start of the medical consultation. The form is the

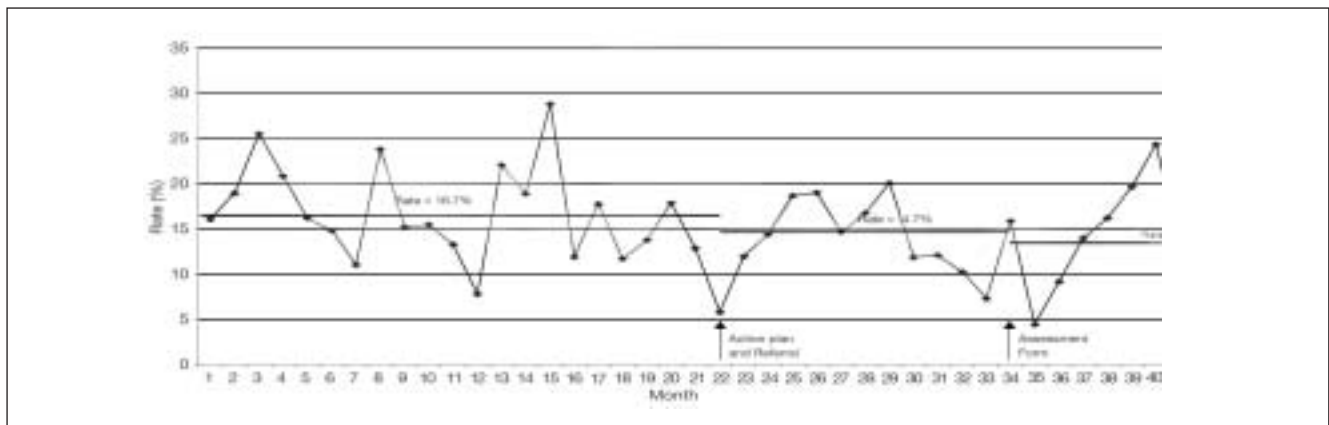


Figure 3. Asthma 90-day representation rate

basis for the new NSW Paediatric Clinical Practice Guideline on asthma, for statewide distribution later this year with implementation support by the Institute for Clinical Excellence.

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appropriateness





## appropriateness – winner

## Patients Requiring Intravenous Medication in Aged Care Facilities

St George Hospital  
South Eastern Area Health Service

Patients Requiring Intravenous Medication in Aged Care Facilities (PIVMAC) program:  
A collaborative model of care between the acute and the community aged care sectors

### Abstract

The “Patients Requiring Intravenous (IV) Medications in Aged Care Facilities (PIVMAC) program is a St George Hospital nursing initiative. The program enables aged care facility (ACF) residents to remain in their own environment and receive treatment from familiar nursing staff. It was developed in collaboration with several local ACFs in the St George district over six months and commenced in June 2002 as part of the National Demonstration Hospitals Project phase 4. An intensive education program was provided by St George Hospital to enhance the clinical expertise of ACF Registered Nurses (RNs). Ongoing clinical support was also provided. To date, 27 residents have been managed in their own facility with satisfactory outcomes and no adverse events. The program has resulted in enhanced communication and understanding between the acute and community aged care sectors, effective use of resources resulting in decreased hospital presentations and an increase in the skills, knowledge, morale and confidence of the ACFs’ RNs.

### Aim

The aim of the PIVMAC program was to facilitate the administration of an IV antibiotic regime within an ACF by enhancing the clinical expertise of registered nurses (RNs) employed in ACFs and providing clinical support and resources to ACFs who are managing these patients. The anticipated results were reduced bed days, decreased Emergency Department presentations/admissions and improved patient outcomes.



*‘There have been 145 bed days saved...’*

### Background

With the current trend for earlier discharge, the negative effects of hospitalisation on the elderly (Gillick, Serrell & Gillick 1982; Thomas & Brennan, 2000), the introduction of post-acute models of care, (Caplan et al 1999, Montalto 2001, Mylotte et al. 1998) and the notion that home IV antibiotic therapy is a safe and effective treatment option for the older population (Leff et al. 1999), the discharge systems coordinator and the clinical nurse consultants (CNCs) for aged care and nutritional support at St George Hospital, often received requests to discharge elderly patients back to ACFs with continuing IV antibiotic therapy. These requests posed a dilemma for the nursing staff involved. Potential problems were identified such as medical and nursing responsibilities, availability of appropriate nursing expertise in ACFs, patient safety, cost, indemnity issues, and the feasibility of such an initiative from the ACF perspective.

**Table 1.** Results of the initial survey

Results	n	(%)
Number of ACF surveyed	25	(100%)
Response rate	15	(60%)
ACF agreeing to accept a patient back with a vascular access device	9	(60%)
ACF disagreeing to accept a patient back with a vascular access device	6	(40%)
ACF prepared to meet full cost of consumables	2	(13%)
ACF prepared to have staff trained in management of vascular access devices	13	(86%)
ACF who would agree to participate if there was a service agreement	9	(60%)
ACF unsure/needing more information	2	(13%)
Number who listed their ACF as being interested in the concept	10	(66.6%)

### Methodology

To establish the feasibility of administering IV antibiotics and managing vascular access devices in ACFs, from the perspective of RNs employed in ACFs, a survey was conducted in the 25 high level ACFs in the St George Area by the CNC for aged care. The results are described in Table 1.

From the qualitative aspect of the survey, three main themes emerged as limitations to implementing this change in practice. They were:

- Staffing issues – low RN numbers, high patient: staff ratios and decreased skill levels
- Budget constraints for consumables and staff training
- Lack of personnel to troubleshoot during and after hours.

A steering committee consisting of all relevant stakeholders was established to develop a model that addressed the issues identified above. Committee members included the directors of Aged Care and the Division of General Practice, an ACF director of nursing, senior nursing management, Calvary Hospital Nursing Homes Project (NHP) medical officer, CNCs – aged care, nutritional support and community health nursing, a nurse educator, and the discharge systems co-ordinator. The patient advocate and chief pharmacist provided legal and pharmaceutical input.

An evaluation framework to assess the effectiveness and benefits of the program included the following measures:

1. Number of ACFs who signed a service agreement.
2. Number of patients recruited to the program.
3. Patient outcomes and bed days saved.
4. ACF RN evaluation of an education program.
5. GP satisfaction.

### Planning and implementation

Stakeholder issues that were identified as being pivotal to the success of the program included:

- a service agreement
- PIVMAC guidelines, policies and procedures
- medical support and GP agreement for patient participation
- education and support of ACF RNs
- provision of consumables and after hours support.

A service agreement between the ACF and St George Hospital and a policy and procedures document addressing the responsibilities of all staff involved in the project including patient criteria for participation in the program were developed. Following consultation with the Director of Nursing of the 25 ACFs, the document was ratified and became the introduction to the PIVMAC resource manual which incorporated all relevant information for ACF RNs. Each ACF received a copy when they

signed the service agreement. A PIVMAC individual plan of care incorporating a consent form and a medication chart with anaphylaxis orders and intravenous device details was also developed.

The CNC community health nursing coordinated the program and ensured GP involvement in collaboration with the Calvary NHP medical officer, who provided medical support.

An eight-hour comprehensive education program relating to the management of vascular access devices and IV medication administration was developed and offered to ACF RNs. The education topics covered were included in the PIVMAC resource manual.

All consumables and IV medication were costed to St George Hospital. After hours support was negotiated on an individual patient basis with the PIVMAC team.

## Outcomes and evaluation

### Service agreement

Sixteen ACF have signed the service agreement with St George Hospital to confirm their participation in the program.

### Number of patients/residents recruited and patient/resident outcomes

Twenty-seven patients have been managed on the program with conditions such as cellulitis, pneumonia, and urinary tract infections. All patients have had satisfactory outcomes with no adverse events. The length of stay on the program was two to twelve days. There have been 145 bed days saved, which was directly correlated to the number of days antibiotics were administered in the ACF.

### Education of ACF RNs

Ninety-nine registered nurses from 14 ACFs have attended an education program provided by St George Hospital. The program was designed to include some practical experience with venous access devices.

Evaluation of the education sessions revealed that on a self-rating Likert scale where 1 = poor and 5 = excellent, the majority of participants felt that their knowledge, skills and confidence levels had improved from limited or average to good or excellent.

### Comments included:

“I feel less apprehensive at the prospect of IV therapy. Lectures were clear and easy to understand. It is reassuring to know that support and backup will be readily available and easily accessed.”

### General Practitioner feedback

Twenty-three surveys were sent to participating GPs with a response rate of 86 percent.

- 19 (95%) felt that the clinical management of their patient in an ACF was appropriate
- 20 (100%) felt that the ACF staff had the necessary skills to care for the patient
- 20 (100%) were satisfied with the patient outcome
- 20 (100%) found that the medical officer from the Calvary Hospital NHP provided adequate support
- 19 (95%) would be happy to refer a patient to the PIVMAC program again.

### Comments included:

*“excellent outcome for difficult problem”*

*“whoever though about cutting funding to this program needs assessment by the dementia unit”*

## Future scope

The successful implementation of the PIVMAC program demonstrates that a collaborative approach between hospitals, ACFs, GPs, patients and their families in the management of residents with acute conditions requiring IV medication can be successfully and safely achieved. In addition, a culture change in ACFs has been instigated, that is transferable and sustainable and has the potential to expand to include the management of other chronic complex conditions. Further, there have been increasing occasions of early identification by ACF RNs of a deteriorating health condition in their residents with resultant early intervention to prevent the condition worsening. This model demonstrates the key principles espoused in the NSW Government Action Plan for Health Bulletin No. 7 – Strengthening Health Care in the Community (NSW Department of Health, 2002).

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## appropriateness – finalist

### Management of Adult Asthma in the Emergency Department

Tamworth Health Service  
New England Area Health Service

#### Abstract

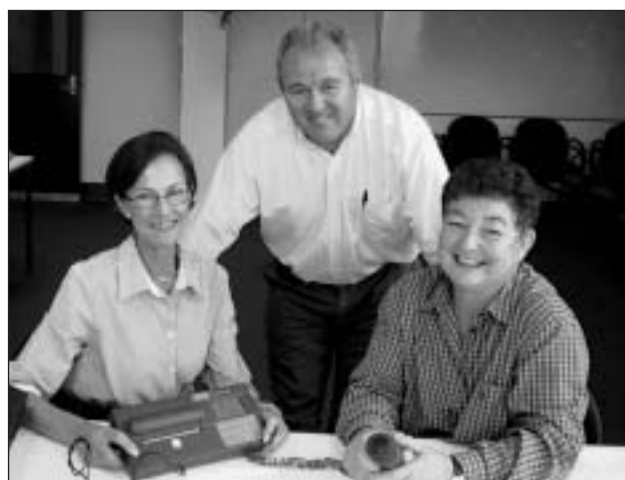
Successful asthma management and best patient outcomes are achieved by undertaking an appropriate and coordinated approach to the assessment and care planning of patients presenting to Emergency Departments.

From the Asthma Management Handbook (Revised 2002) and Phase One Indicators of Appropriateness for NSW Area Health Services Report (May 2001) an Expert Working Group was formed to investigate compliance with the accepted standards for adult asthma management at Tamworth Health Service.

A baseline audit of Emergency Department records demonstrated poor compliance with the NAC Guidelines specifically in the areas of clinical assessment involving spirometry and peak expiratory flow rates.

The working group developed a uniform assessment tool based on the NAC Guidelines and provided education to clinicians in the areas of: correct use of spirometry, interpretation of results, use of the assessment tool and awareness of and application of the NAC Guidelines.

Major outcomes include a 100 percent compliance rate with the utilisation of the uniform assessment tool, the use of appropriate medications and pulse oximetry, 83 percent compliance with the use of spirometry, peak flow measurements, and 66 percent compliance with asthma management plans.



*'Results of the follow-up audit indicated a marked improvement in the uniformity of assessment, spirometry usage, pulse oximetry and the appropriate use of medications.'*

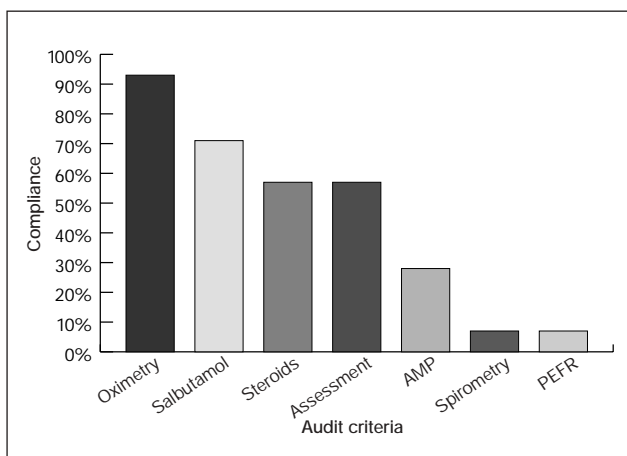
#### Aim

To achieve an 80 percent compliance with the National Asthma Council Guidelines for the management of adult patients presenting with asthma to the Emergency Department of Tamworth Health Service, focusing on the appropriate assessment, investigations, medications and asthma management plans over a seven month period from July 2002 to February 2003.

#### Background

The opportunity to improve the management of adult patients presenting to the Emergency Department with asthma was identified in the Phase One Indicators of Appropriateness for NSW Area Health Services Report, (May 2001) along with a baseline audit to measure compliance against the National Asthma Council Guidelines for the management of adult asthma within the Emergency Department.

**Table 1.** Baseline documentation audit August 2002  
Emergency Department records



For the 2000/2001 financial year, there were 699 presentations to the Emergency Department with a diagnosis of asthma in all age groups. Thirty percent of these patients required admission to hospital (Source: EDIS).

The audit also highlighted to the expert working group the poor compliance with the usage of appropriate equipment during the assessment stage ie use of spirometry and peak flow measurements.

### Methodology

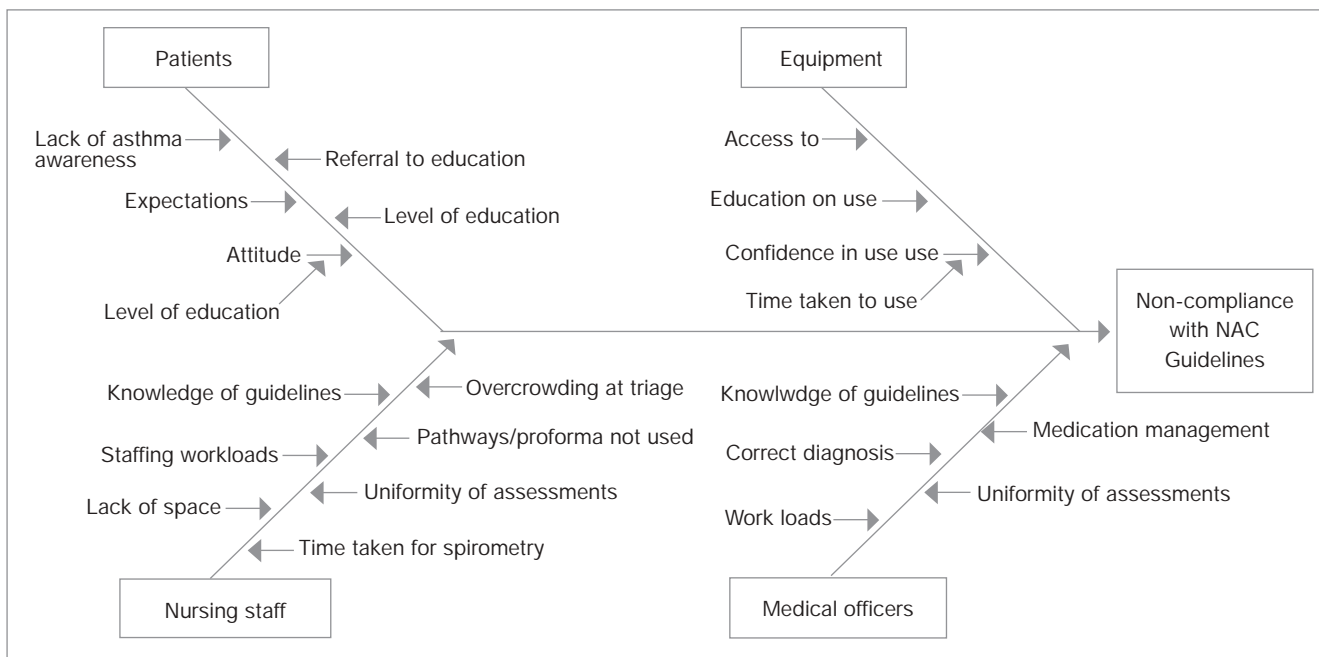
Using the Easy Guide to Clinical Practice Improvement the expert group was able to investigate the full extent of the problem and plan interventions to achieve the desired outcomes. During this diagnostic phase, the following tools were used to gain a more thorough understanding of the process and areas for improvement:

#### Brainstorming

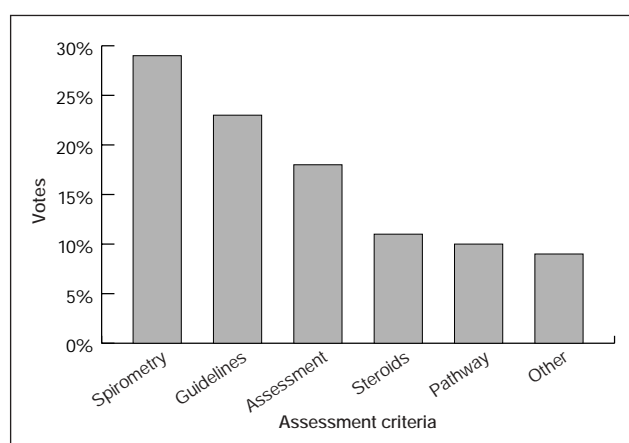
Two brainstorming sessions were undertaken, the first to identify the customers and their various expectations which included patients and the multidisciplinary group of health care providers and the second to identify the current processes in place within the Emergency Department for the management of adult patients presenting with asthma.

#### Cause and effect

A cause and effect diagram was constructed from the processes identified from the brainstorming exercise that were believed to attribute to the non-compliance with the NAC guidelines. This proved to be an effective tool for organising and categorising ideas from the brainstorming session and to prepare for prioritising the identified problems by multivoting of the team members.



**Table 2.** Cause and effect: non compliance with NAC Guidelines  
Multivoting: Results from the multivoting session indicated that lack of uniformity during the assessment process was the main contributor towards the non compliance with the NAC Guidelines.



**Table 3.** Results from multivoting

Having diagnosed and prioritised the causes of non-compliance with the National Asthma Council Guidelines in the assessment and management of adult asthma in the Emergency Department the project team commenced planning the interventions and the strategies for their implementation.

### Planning and implementation

Utilising the results from the multivoting (Table 3), the group was able to identify the interventions and changes most likely to bring about improvement, with these focusing around the areas of spirometry, knowledge of the NAC Guidelines together with uniformity of assessment.

#### Spirometry

- Conduct education to nursing and medical staff on the correct use of the spirometer and interpretation of results. The Clinical Nurse Consultant for respiratory services and respiratory physician were responsible for ensuring this occurred
- Include the usage and the interpretation of spirometry in the junior medical officers' (JMO's) education program. The Director of Clinical Training for the JMOs undertook this responsibility

#### Uniform assessment

- The Emergency Department physician and quality manager in conjunction with the Emergency Department staff developed a uniform assessment tool based on the National Asthma Council Guidelines.
- Education of nursing and medical staff re the correct use of the assessment tool was performed by the Emergency Department physician and nursing unit manager .
- Laminated copies of the tool for displaying in appropriate areas within the department.

#### Knowledge and awareness of the NAC Guidelines

- Asthma education and awareness of the NAC Guidelines included in the junior medical officers' education program each term. This was addressed by the Director of Clinical Training.
- Ongoing education for nursing staff by the Respiratory Services Department.

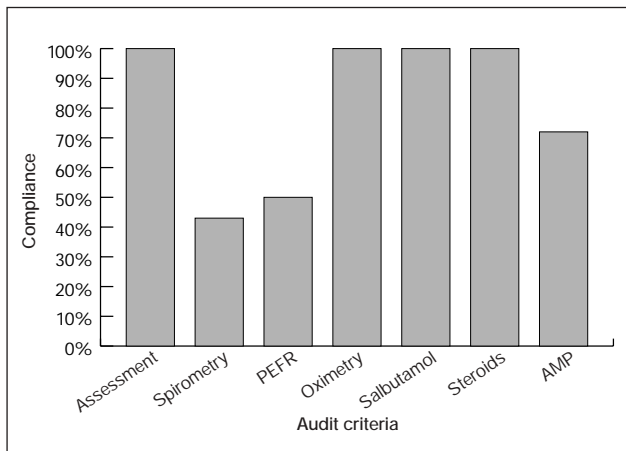
#### Outcomes and evaluation

The impact of the changes implemented were measured by undertaking a follow up Emergency Department medical record audit using the same assessment criteria used in performing the baseline audit in August 2002. Results of the audit indicated a marked improvement in the uniformity of assessment, spirometry usage, pulse oximetry and the use of appropriate medications. By combining the rate of spirometry and peak flow measurements a compliance rate of over 80 percent was achieved which was the initial aim of the project.

Some barriers were encountered during the implementation of the recommendations of the group which included:

- a redevelopment of the Emergency Department
- resignation of the Clinical Nurse Educator within the Emergency Department
- increasing Emergency Department attendances equipment failure, breakage of the spirometer.

**Table 4.** Follow up audit results



In summary, it can be demonstrated that this project increased compliance with the National Asthma Council Guidelines in the management of adult asthma within the Emergency Department in all six criteria monitored:

1. Assessment from 57 % to 100 %
2. Spirometry from 8 % to 83 %
3. Pulse oximetry from 92 % to 100 %
4. Salbutamol from 70% to 100 %
5. Steroids from 57 % to 100 %
6. Management plan from 28 % to 66 %

The improvements were achieved over a five-month period.

To sustain the improvements, mechanisms were established which included:

- six-monthly audits of Emergency Department records to monitor compliance with the NAC Guidelines with result reported to the appropriate committees for analyzing variances and recommending appropriate interventions
- appointment of a clinical nurse educator to the Emergency Department who is responsible for ongoing education to the medical and nursing staff
- annual review of the junior medical officers' education program to ensure asthma education is included.

### Future scope

A further outcome of the project has been the development of a clinical pathway for the management of adult and paediatric asthma in the Emergency Department, which includes an asthma management plan. These pathways are currently being trialled in two facilities within the Area Health Service.

With the development of the universal asthma assessment tool, in line with the National Asthma Council Guidelines, it is envisaged that this management strategy could be introduced to all facilities within the Area Health Service.

Research indicates lack of a universal assessment tool for the management of patients presenting with asthma to Emergency Departments. The assessment tool developed and implemented by the working group from Tamworth Health Service is based upon best practice evidence as articulated in the NAC Guidelines, as such it would be envisaged that the assessment tool and criteria could successfully be rolled out and implemented across other Area Health Services in NSW.

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*Phase One Indicators of appropriateness for NSW Area Health Services Report: NSW Department of Health* (May 2001).

*Easy Guide to Clinical Practice Improvement, a Guide for Healthcare Professionals: NSW Health* (October 2002).

## appropriateness – finalist

## Postpartum Haemorrhage Prevention Project

North Shore Hospital  
Northern Sydney Area Health Service

## Abstract

This project tested the application of an evidence-based guideline to standardise management of the third stage of labour. The focus was singleton normal vaginal deliveries (NVDs) at Royal North Shore Hospital (RNSH). It aimed to reduce the rate of postpartum haemorrhage (PPH)  $\geq$  500 mls, average blood loss and PPH-related morbidity. The guideline aimed to identify risk factors for PPH, and standardise the management of PPH where it did occur.

The project has enabled an improvement in clinical practice, measured via an existing clinical database. All changes in outcomes were tracked on control and trend charts. Real-time feedback promoted clinician understanding and take-up of the interventions.

## Outcomes

There has been a 12 percent reduction in PPH rates for the target group from 11.2 percent in 2001 to 9.9 percent over the past 18 months. There was also a reduction in the average blood loss from 325mls between October 1998 and November 2001, to 307mls between December 2001 and February 2003.

## Aim

To establish whether the introduction of an evidence-based guideline to standardise the management of the third stage of labour, reduces Postpartum Haemorrhage the (PPH) rates and average blood loss after a singleton NVD.

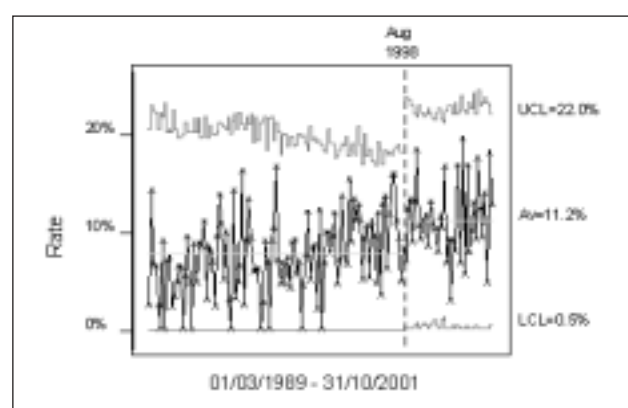


*'There has been a 12 percent reduction in post partum haemorrhage rates for the target group ... over the last 18 months.'*

## Background

The project team noted that the average rate of PPH  $\geq$  500 mls blood loss at RNSH rose from 4.2 percent in 1989 to 11.2 percent in 2001 (Figure 1).

Average blood loss had increased from 220mls in 1989 to 320mls in 2001. RNSH, through Women's Hospitals Australasia (WHA), conducted an Australasian snapshot benchmarking exercise in 2000, confirming a widespread increase across Australasia in PPH rate for women who had a singleton NVD over the past 10 years (Figure 2).



**Figure 1.** Rate of PPH.  $\geq$ 500mls, singleton public NVD

## Methodology

A multi-disciplinary project team was assembled sought from expert clinicians and support

management, quality and data staff from from within the RNSH Division of Women's and Children's Health.

### Multi-disciplinary project team

Current team members	Early project involvement
Divisional quality manager Penny O'Meara (project coordinator)	Divisional head, Dr John Pennington
OBSTET clinical database area data manager Catriona Andronicos	Divisional nurse manager, Yvonne McCann
Senior medical staff specialist, O&G, Michael Nicholl	Clinical midwifery consultant, Suellen Allen
Clinical midwifery consultant, Donna Hartz	O&G registrar, Michelle Batey
Nursing unit manager delivery suite, Deborah Wilden	Professor of midwifery, Marie Chamberlain

### Phase 1 – Diagnostic Phase

a. Preliminary critical review of the literature:

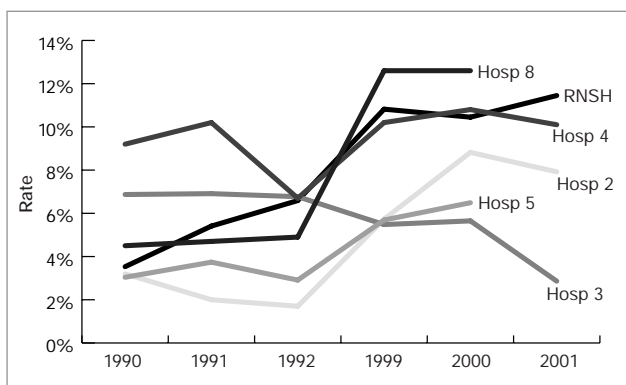
A Cochrane review (2002), the Cochrane Review meta-analysis titled *Active vs expectant management in the third stage of labour* (2002), reported that active management was associated with reduced rate of blood loss  $\geq 500$ mls, and a reduced length of the third stage of labour.

A further Cochrane Review, *Prophylactic syntometrine vs oxytocin for the delivery of the placenta*, Cochrane review, (2002), suggested a small reduction of risk of PPH  $\geq 500$ mls with the use of syntometrine.

Local data supported the use of prophylactic syntometrine.

- b. A medical record audit of 22 women with a PPH  $\geq 1000$  mls in the year 2000 confirmed identifiable risk factors for PPH.
- c. A self-assessment survey on the management of the third stage of labour with 25 currently practising midwives and junior medical staff identified a disparity between the definition and practice of active management of the third stage of labour. Local data verified that for NVDs, third stage of labour lasting more than 15 minutes had increased from 8 percent of NVDs in 1990-92 to 15 percent in 1999-2001.

Figure 2. Rate of PPH.=500-999 mls, singleton NVD



## Planning and implementation

### Phase 2 – Development of guideline

A simple guideline was developed to manage the third stage of labour.

All singleton public NVDs at RNSH, were divided into two groups:

Group 1: Women with identified risk factors for PPH: these were given syntometrine IMI unless contra-indicated.

Group 2: Women with no identified risk factors or who had a contraindication for the use of syntometrine: these received syntometrine/ytocinon.

The standardisation for the active management of the third stage of labour included suggested timings for the use of controlled cord traction (CCT), medical officer notification and observations for the fourth stage of labour.

These strategies were implemented via the introduction of an algorithm for the management of the third stage of labour.

### Phase 3 – Education and implementation

Midwifery and medical staff were presented with the project outline of the problem and evidence for the guideline which had been developed to alleviate it.

The guideline was promoted by a laminated algorithm prominent in the delivery suite as well as by senior in-charge midwives. Recently, senior medical staff rostering has led to an increased presence of senior medical staff in the delivery suite. Database questions that are completed after each NVD, were designed to further promote awareness of the guideline.

## Outcomes and evaluation

### Phase 4 – Monitoring and evaluation

- a. Monitoring of the implementation process was done via data collected in a local clinical obstetric database. The degree to which the guideline was followed in each case was assessed by a series of questions to each accoucheur.
- b. The data was analysed to evaluate staff adoption of and effectiveness of the active management of third stage guidelines.

Monitoring of the aims of the project with control charts of PPH rates and trend lines of the average blood loss.

### Outcomes

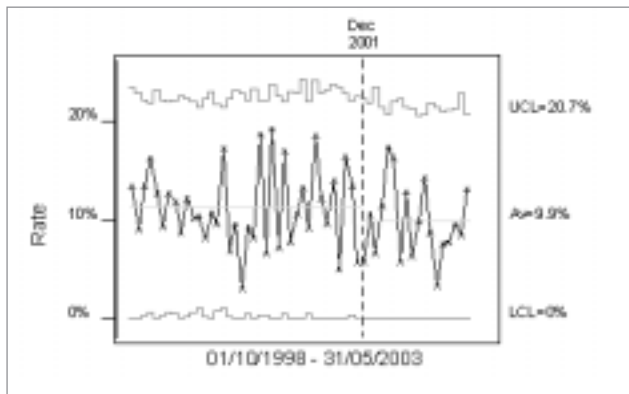
There was a 12 percent reduction in PPH rates from 11.2 percent between October 1998 and November 2001 (n=2660) to 9.9 percent between December 2001 and May 2003 (n=1089) in the past 18 months, since the implementation of the algorithm in November, 2001 (Figure 3).

Actual average blood loss from December 1998 to February 2003 (Figure 4) has trended below a forecast trend line based on data between October 1998 and the start of the project in November 2001 (Figure 5).

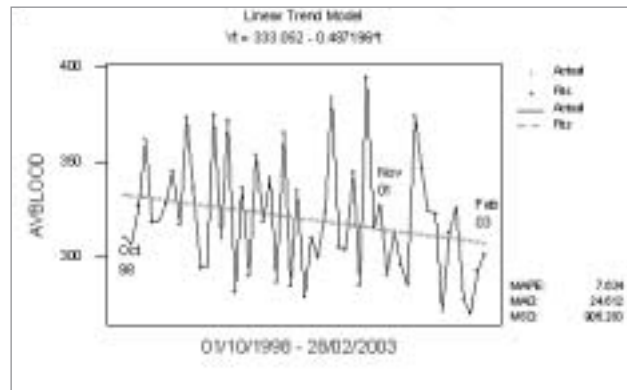
### Phase 5 – Clinical improvement

Clinical improvement outcome monitoring plus feedback sessions to clinical staff have been vital to engage and maintain the behavioural and professional challenges this project initiated.

**Figure 3.** Rate of PPH  $\geq$  500mls, singleton public NVD

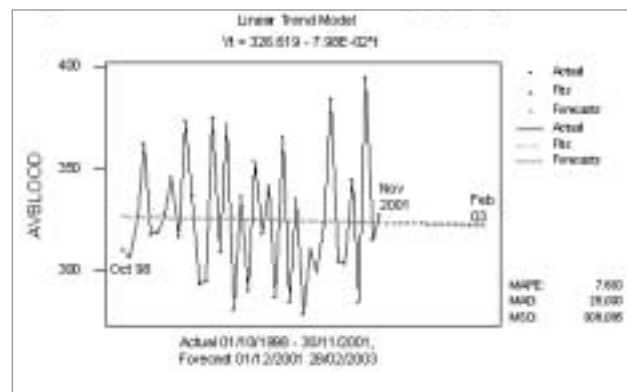


**Figure 4.** Actual average blood loss, singleton public NVD



### Future Scope

The PPH rate for singleton NVDs has increased across Australasia over the past 10 years. The RNSH evidence-based guideline and algorithm are universally applicable to women having a singleton NVD in Northern Sydney and throughout the western world. Success of the intervention at RNSH demonstrates a relatively simple and low-cost method for improving patient outcomes.



### Third stage management for normal vaginal delivery

