

From Death We Learn

*'speak for the dead to protect the living'**



Delivering a Healthy WA

The Office of Safety & Quality would welcome suggestions on how this publication series may be improved. Please forward your comments to safetyandquality@health.wa.gov.au

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Introduction to the Second Edition

Our health system should minimise the occurrence of adverse events, and strive to optimise patient safety. We must continue to learn from the adverse events that occur in our health system and this includes learning from death.

Investigations of unexpected or preventable deaths can provide us with valuable insight into the way our health system works. Moreover the sharing of lessons learned from these investigations among health professionals is as important as conducting the investigation itself.

The first edition of From Death We Learn (June 2006) highlighted key lessons learned from deaths that proceeded to coronial inquests. We have received many positive and constructive comments from clinicians about the publication and it has been agreed that From Death We Learn will be published every year.

The second edition of From Death We Learn continues the case study format of providing summaries of nine recent inquest findings. Of particular note this year are three case studies from the mental health setting contributed by the Office of the Chief Psychiatrist. These case studies highlight some of the clinical management issues for clinicians working with patients at risk of deliberate self harm. Other case studies focus on rural emergencies, postoperative care following surgery for infections around the upper airway, 'Not For Resuscitation' (NFR) orders, serious undiagnosed illness, supervision and training, epilepsy and driving, and venous thromboembolism (VTE).

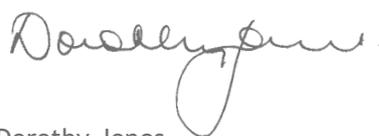
In addition we have introduced articles that focus on clinical issues. These articles, developed by the Coronial Liaison Service (CLS) collate information from a number of sources including public inquests, clinical cases, and accessible information released from clinical governance activities and the Coronial Ethics Committee (WA). Two clinical issues are covered in this edition, prophylaxis for venous thromboembolism, and acute mesenteric ischaemia.

We also thank the State Coroner, Mr Alastair Hope. His article provides a valuable perspective of the coronial investigative process and its relationship with clinical governance structures in our health system.

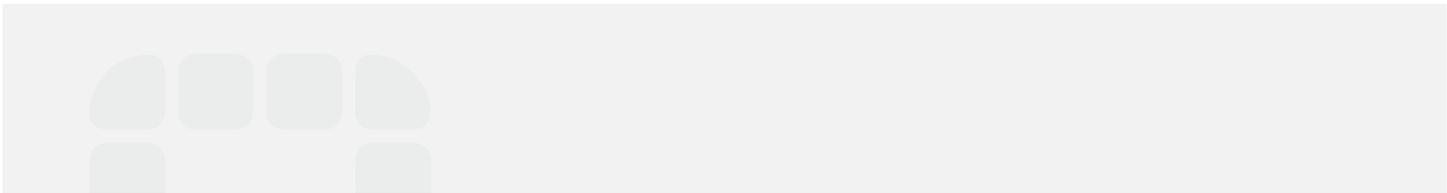
All clinical staff, hospitals and health services are encouraged to use this document to raise awareness and as a means to educate health professionals about the lessons learned from unexpected or preventable deaths. If you have any comments or suggestions on how we could improve our feedback to you on these matters please contact us at the Office of Safety and Quality in Health care on 9222 4080 or email safetyandquality@health.wa.gov.au.



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From Death We Learn and Coronial Inquest Finding documents identified in this document can be downloaded from the Office of Safety and Quality in Healthcare's website:
www.safetyandquality.health.wa.gov.au/programs/liaison.cfm



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The Coronial Perspective: Quality Improvement in Health

In order to appreciate the significance of quality improvement in health from the coronial perspective, it is first important to have some appreciation of the functioning of the Coroner's Court and the context in which medical issues come before the Coroner and the functions performed by the Coroner's Court.

The essential purposes of the Coroner's Court are as set out in Guidelines for Coroners, issued pursuant to s58 of the *Coroners Act 1996*, as follows:

- It is the paramount duty of any State to protect the lives of its citizens. To this end, it is important that the coronial system monitor all reportable deaths and in particular that it provides to the community a review of the circumstances surrounding deaths that appear preventable. Every effort should be made to obtain recommendations, which might prevent similar deaths in the future.
- It is the role of the Coroner's Court to speak for the dead to protect the living.
- The Coroner has a vital role to play as an independent judicial officer serving the Crown and the public. It is in the interests of all, that the circumstances of certain types of death are carefully and independently examined in public.
- A coronial system is essentially a fact-finding system and should reflect commitment to the community and particularly commitment to relatives of deceased persons.

While the role of the Coroner's Court is clear, the workload is large. In Western Australia approximately 2,000 deaths per year are reported to the Coroner and all of these are investigated to varying degrees. Inquests (or public hearings) are conducted in about 5 percent of these cases. A considerable amount

of information is obtained by the Coroner's Court, which is not made public through the process of court hearings.

With respect to deaths that occur in the health-care setting, investigations involve collating post mortem examination results with information about the circumstances of death. Medical advice and expert medical opinion is then obtained as coroners are legally and not medically qualified in Western Australia.

Expert forensic pathologists perform almost all autopsies in WA. The Chief Forensic Pathologist, Dr Clive Cooke, and forensic pathologists, Dr Karin Margolius, Dr Gerard Cadden and Dr Jodi White, provide coroners with important post mortem information about the circumstances of deaths that is critical to the performance of any coronial investigation.

The investigation then moves to the Office of the Coroner where the assistance of the Medical Advisor, Dr Robert Turnbull, is obtained. Dr Turnbull works part time with the Coroner's Court, reviewing medical related deaths and assisting coroners to understand medical issues so that, as far as possible, they are not disadvantaged by lack of medical knowledge. If an expert opinion is required, appropriate experts or medical practitioners with relevant backgrounds and experience are then engaged to address specific issues and provide reports. Only when these reports are available is a coroner in the position to decide whether or not to progress to a public inquest.

Many inquests involve questions as to the appropriateness or otherwise of medical procedures, actions or inactions and the aim of an investigation is to address these issues. In addition, in both preventable and non-preventable deaths, coronial investigations reveal important information about how health systems function and how that function might be improved.



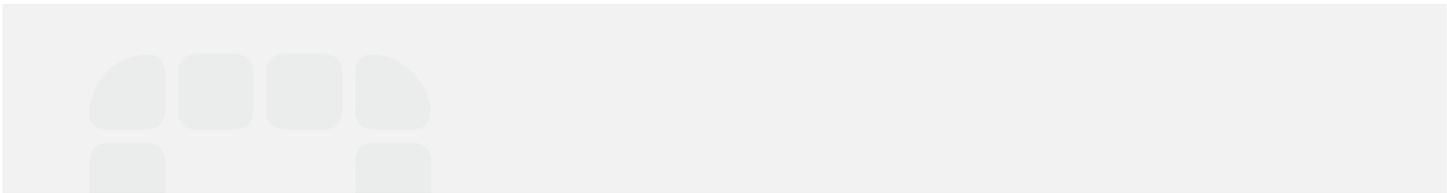
It is important that this information is disseminated to and used by medical and nursing clinicians to improve the safety and quality of the health system. For many families, knowledge that the information has been made available and may help to prevent future deaths provides considerable comfort to them and in many cases is seen as preferable to a public hearing.

The information from health-related coronial investigations is provided to the Coronial Liaison Service within the Office of Safety and Quality in Healthcare. The use of this information is approved by the Coronial Ethics Committee and is limited to quality improvement and educational purposes.

Dr Tom Hitchcock, Senior Clinical Advisor to the Office of Safety and Quality in Healthcare, liaises with Dr Turnbull and the Coroner's Court with a view to identifying information which could potentially be useful for clinicians and hospital quality improvement.

This publication, *From Death We Learn*, is one of the initiatives of the Coronial Liaison Service. If the wealth of information which the Coroner's Court receives each year can be disseminated to those who can take advantage of that information, then this can only have a positive impact on the health system, which would be to the benefit of all concerned.

Alastair Hope
State Coroner



Case 1: Mental health, potential for harm, involuntary patient supervision and confidentiality of patient information

Key Messages:

- The management of involuntary patients requires supervision and monitoring of the risks for self-harm and harm to others.
- When an involuntary patient is on leave or absconds, communication with family, carers and police is a significant part of risk management.

A middle-aged male took his own life while an involuntary patient in a metropolitan mental health facility. He had suffered a serious mental illness for a number of years that had severely affected his and his family's lifestyle, and he had previously threatened to harm his family. He was insightful enough to understand it was unlikely that his ability to live his pre-illness life would ever be completely restored.

Whilst on an hour's leave from the inpatient facility with family members, he absconded and did not return to the hospital. The following morning his body was found in the ocean at the local beach.

The Deputy State Coroner noted in the circumstances of the deceased's death that:

- His supervision was not as comprehensive as it could have been.
- As an inpatient, the deceased's mental health appeared to be improving. The deceased was also aware enough to mask his desire to harm himself from anyone who could potentially thwart his opportunity.

- People with suicidal ideation can appear reasonably well, and this needs to be understood by those assuming responsibility for involuntary patients while on leave (such as the family). His family and friends did not fully understand the implications of the patient's involuntary status - in particular, his potential to cause harm to himself or others.
- It is important to formally record when an involuntary patient's supervision was handed from one responsible entity to another.

The Deputy State Coroner was also concerned about the failure of the inpatient facility to fully inform the police of the deceased's potential for harm on realising he had absconded and, while this information may not have saved the deceased's life, a "lookout" with "alerts" would have been more effective in attempting to locate him.

This case demonstrates the need for careful monitoring of a patient's likelihood for self-harm, and the importance of appropriate communication strategies with family, carers and police when the patient is on leave or absconds. Clear guidelines about the issue of patient confidentiality in mental health facilities are valuable in this setting.

For further information pertaining to this case refer to the Mahoney Finding, which can be found on the website of the Department of Health's Office of Safety and Quality in Healthcare.

Case 2: Delays in recognising a critical illness and appropriate transfer from a rural setting.

Key messages:

- The management of emergencies in the rural setting requires a pre-determined system of clinical assessment, communication, and referral, based on urgency.
- Contemporaneous medical and nursing records are highly regarded by the legal system and should not be altered as a deliberate act to avoid criticism.

A man in his 60s died in a rural hospital awaiting transfer to Perth by the Royal Flying Doctor Service (RFDS). He had collapsed about twelve hours prior to death with dizziness, back pain and low abdominal pain. He presented to a rural health service where persistent low blood pressure was recorded despite intravenous fluids prescribed by a doctor in an adjacent town. A second doctor was asked to see the patient. The doctor attended approximately seven hours after the initial presentation to the ED. There was persistent hypotension and no clear diagnosis was made. A referral to a tertiary centre and the RFDS was made approximately ten hours after presentation. The patient died in the rural hospital about two hours later while awaiting RFDS transfer. The case was referred to the Coroner and copies of the medical and nursing notes were obtained. The original notes were retained by the health service.

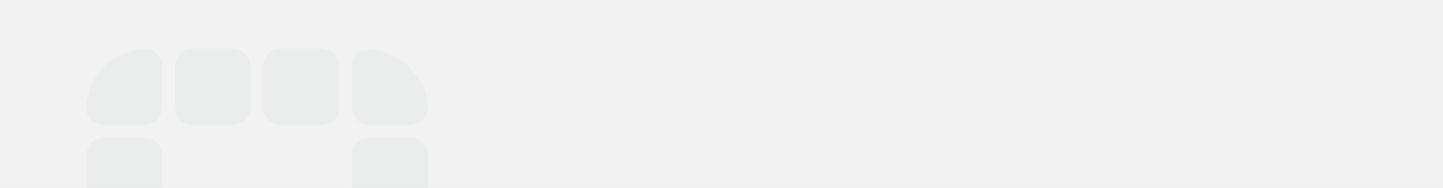
Post mortem examination revealed a ruptured abdominal aortic aneurysm.

The coronial investigation also revealed:

- That the nursing notes held by the health service differed from the copies of the original record made by the coronial officer on the evening of the death. At Inquest, the Coroner formed the view that the nursing record had been altered in order to mislead those conducting the coronial investigation as a careful and deliberate act with the likely purpose of avoiding criticism.
- A failure of those treating the deceased to identify the time-critical nature of the illness from which the deceased suffered. The Coroner expressed the view that in the context of the pain experienced the deceased should have been seen as a matter of urgency shortly after he became hypotensive.

The Finding was that death arose by way of Natural Causes and the matter of alteration of the nursing record was referred to the Nursing Board of WA.

The Inquest also heard expert evidence about the management of acute medical emergencies, and an expert submission from the RFDS. These focussed on the practicalities and difficulties of communication and delayed treatment in the rural health setting and were supportive of developing guidelines for responding to emergency cases in rural health services based on predetermined clinical criteria similar to Medical Emergency Team (MET) criteria developed in metropolitan hospitals.



The Coroner made recommendations for public health (see Inquest Finding for full text), specifically:

- That the Department of Health, Western Australia adopt MET guidelines similar to those prepared by the Critical Care Council, which would, if there were no doctor in the town, require a senior nurse to be called in, and that contact be initiated with either a doctor in a nearby town or the RFDS. Medical emergency criteria should require nursing staff to initiate a response to obtain medical assistance locally and to obtain advice on managing a clinically unstable patient.
- That training be provided to country medical practitioners to have in place a relatively sophisticated process for telephone diagnosis. This would include the reporting and recording of information about vital signs, with emphasis on potential issues, which would require a patient be seen and assessed or urgently transported to a suitable hospital.

For further information pertaining to this case refer to the Steele Finding, which can be found on the website of the Department of Health's Office of Safety and Quality in Healthcare.

Case 3: Post-operative airway obstruction: two cases of surgical intervention for a spreading dental infection.

Key Messages:

- It is unwise to ignore signs of a dental infection over a long period.
- Post-operative patients who have had an infection and surgery in the vicinity of their airway must be monitored for O₂ saturation; be placed in proximity of a CO₂ monitor; and have immediate access to surgical intervention.

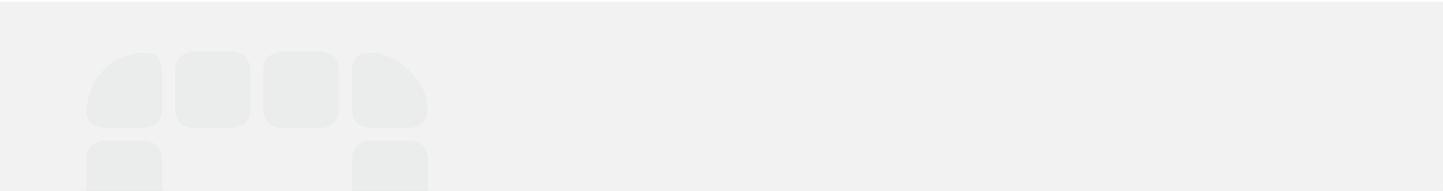
A recent Inquest Finding from the South Australian State Coroner involved a case with similar clinical circumstances to a Western Australian State Coroner's case that was the subject of an inquest in 2003. The postoperative risks for patients with dental infections and who undergo surgery on the floor of the mouth are highlighted in both inquests.

In South Australia, a previously well man in his twenties developed a lower jaw dental abscess that progressed to cellulitis and Ludwig's Angina. The problem was recognised, antibiotics were started, and he was referred to the maxillo-facial surgical service of a tertiary centre where surgical debridement was performed under general anaesthesia. At the end of the surgical procedure his airway was examined. He was extubated without complication and sent to the recovery ward where he was sitting up and talking. He was sent back to a general ward where he had a shower and took a phone call.

Approximately six hours after extubation the patient developed increasing pain and some difficulty breathing. Despite intramuscular analgesia he became increasingly distressed over a period of ten to fifteen minutes and got out of bed to lean on the bedside sink. Minutes later he was discovered in cardio-respiratory arrest with fixed dilated pupils. Cardio-pulmonary resuscitation was commenced. Oral intubation was not possible because of facial and submandibular swelling. A cricothyroidotomy was performed. The patient died despite advanced resuscitation.

The Western Australian case is of a man in his thirties who developed cellulitis of the floor of his mouth associated with a dental abscess. The diagnosis was made, antibiotics started and the patient was referred to a tertiary maxillo-facial surgical service. Naso-tracheal fibre-optic intubation was uncomplicated and surgery involved tooth extraction and drainage of an abscess. Prior to extubation the airway was examined and vocal cords visualised using an oral laryngoscope. Extubation was uncomplicated and the patient was sent to the recovery ward where he was able to sit up. He was communicative, not visibly distressed and able to manage his own suction.

Three hours after extubation he became unexpectedly agitated and distressed over a period of less than five minutes. He developed stridor, which was treated with an adrenaline nebuliser. However, his condition progressed to cardio-respiratory arrest. Full resuscitative measures were unsuccessful.



These two cases highlight the risks of upper airway obstruction in the post-operative period for patients with dental infections who undergo surgery on the floor of the mouth, despite careful observations of the airway made prior to successful extubation. The salient clinical lesson is that both patients suffered delayed rapid onset of airway obstruction after being functionally well enough to talk on the phone and have a shower.

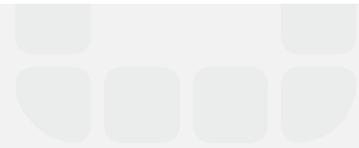
The health systems in Western Australia and South Australia are different. The two inquests involved detailed examination of the path of these two patients through their respective systems, and recommendations were made. Key recommendations that arose from these two inquests are:

- That the opportunity is taken to remind the public that it is most unwise to ignore signs of a dental infection over a long period.

- That patients who have had infection and surgery in the vicinity of their airway be:
 - Monitored as to their O2 saturation levels at all times.
 - Positioned in proximity to an expired CO2 monitor.
 - Placed in a unit with immediate access to surgical intervention if it becomes necessary.

From these cases the duration of post-operative management as recommended is difficult to determine and must reasonably be guided by serial examination.

For further information pertaining to this case refer to the Jankovski Finding, which can be found on the website of Department of Health's Office of Safety and Quality in Healthcare, and the Salmon Finding which can be found on the website of the SA State Coroner.



Case 4: Mental health, risk assessment, and management of people at risk of suicide.

Key Messages:

- Where there is a perceptible risk of self-harm or suicide, a thorough risk assessment should be carried out.
- These patients should be closely observed in an appropriate setting and any items that could be used to cause harm should be removed.

A young woman, accompanied by a family member, presented to a rural mental health facility after an episode of self-harm. She had a history of depression and suicidal ideation and had attempted suicide after the loss of her first baby. She was admitted and closely monitored with 15-minute visual observations. Between observations she took her own life, by hanging, with the aid of a shoelace in her possession.

The District Coroner made a number of comments on issues arising from the care provided to the deceased. She noted that:

- In general, the best method available for assessing short-term suicidal risk is to conduct a risk assessment based on clinical judgement, after a thorough history and examination. Risk assessment tools can be used as a screening guide and adjunct to clinical assessments, but they lack accurate predictive value.
- In this case, although the care plan put in place for the deceased was reasonable and consistent, in hindsight the level of suicide risk was greater than that predicted by the treating team.

Recommendations arising from the Inquest included:

- A room with clear visibility for staff should be designated as an observation room for the admission of patients who are at risk of self-harm.
- Where there is any perceptible risk of self-harm or suicide, that a staff member, with the consent of the patient, search the patient's belongings and remove any items that could potentially be used to cause harm or be used as an aid in suicide.
- That clinicians should thoroughly document risk factors in the patient's medical record when assessment is undertaken, and should include the current mental state of the patient, the patient's stated intent, history of suicide attempts, availability of means of self-harm and any other factors considered relevant.

This case demonstrates the need for the development of a consistent risk assessment tool, which is used with the clinical judgement of the staff across all mental health services. There is also the need to establish or identify safe rooms that allow nursing staff to observe patients who are at risk of self-harm.

For further information pertaining to this case refer to the **Dawson** Finding, which can be found on the website of the Department of Health's Office of Safety and Quality in Healthcare.

Case 5: Palliative care, hospice referral process and Not for Resuscitation orders.

Key Messages:

- A patient's current condition should be noted on hospice referral forms.
- Not for Resuscitation (NFR) policies should be developed by hospitals and NFR orders must be checked for currency.
- Hospital systems should not equate inpatient hospice admission with NFR without formal checks on current diagnosis, prognosis, and consent.

A woman in her sixties, known by her specialist to be in remission from cancer, died of undiagnosed and untreated pneumonia after admission to a palliative care unit and documentation of a 'Not for Resuscitation' order. The Coroner formed the view that the deceased would probably not have died when she did, had those treating her been aware that her cancer was in remission and taken active steps to diagnose and treat her pneumonia. He found that death arose by way of misadventure.

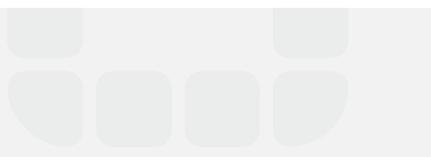
The Inquest revealed the following.

- At one point in her illness, on discharge from specialist inpatient care, the patient was referred for home nursing care. This involved a 'Hospice Referral Form' to a palliative care service that identified the patient as being in the 'terminal phase' with 'cerebral metastases'.
- At a later time the patient was actually in remission with no cerebral metastases and she travelled to another city. She became unwell and the community palliative care service and general practitioner who took over her care did so without formal referral or confirmation of her underlying diagnosis or prognosis.

- Despite information from both the patient and her family, the palliative care service and general practitioner who took over her care appear to have assumed that because the patient had been referred to a palliative care service she had end-stage cancer. It was wrongly assumed that the family and the patient were in denial about her cancer.
- The medical record was endorsed with a 'Not for Resuscitation' order without the patient's prior consent or discussion with the family.
- Post mortem examination revealed that death was caused by pneumonia due to *Streptococcus pneumoniae*, which is treatable with penicillin.

In his comments on public health and safety issues, the Coroner made recommendations:

- That all hospice referral forms should be signed on the front by the referring doctor and should contain specific information as to the patient's current condition including whether any diagnosed conditions are aggressive or in remission.
- That all services that provide inpatient hospice care for symptom control should ensure that appropriate procedures are in place to prevent patients who are not in the end stage of their illness being inappropriately admitted for respite only. In the event that either the patient or family members raise concerns as to the appropriateness of an admission, immediate investigations should be conducted to ensure that a mistaken admission has not occurred, particularly if admission as an inpatient is to be equated to a consent for a 'Not for Resuscitation' order.

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- That clear rules, possibly in the form of legislative change, are needed with respect to palliative care. In particular:
 - Informed consent especially in relation to ‘Not for Resuscitation’ orders.
 - Whether or not the patient is terminally ill at the time when end of life issues are being considered.
 - Clear information for patients, family, and medical staff on the nature of palliative care and the effect of decisions such as ‘Not for Resuscitation’ orders.

For further information pertaining to this case refer to the Nilon Finding, which can be found on the website of the Department of Health’s Office of Safety and Quality in Healthcare.

Case 6: Undiagnosed serious illness in a regional centre

Key Messages:

- **Doctors have a duty to inform and educate patients about their care in all situations but particularly in the setting of training and supervision.**
- **Junior and inexperienced medical professionals need supervision and training by their seniors.**
- **All medical practitioners should have the skills to recognise serious illness and have established systems of communication and referral of these patients regardless of their location.**

A teenage girl died in a regional town after four to six months of a progressive illness characterised by weight loss, lethargy, intermittent vomiting, and skin pigmentation. Post-mortem examination revealed that she had been suffering from undiagnosed Addison's disease. The focus of the Inquest was to examine why this rare but treatable condition had gone undiagnosed in this patient.

The Inquest revealed that the patient had been seen by a series of doctors in general practice during the six months prior to her death, and about ten days prior to her death she was treated in the local regional hospital by nursing staff acting on instruction. The Inquest also demonstrated that in the early period of her illness the patient had been seen directly by vocationally qualified general practitioners. However, on her last three visits she had been managed entirely by an inexperienced doctor who was undertaking pre-vocational training.

A range of diagnoses was considered, including depression, anorexia nervosa and post-viral syndrome. No clear diagnosis was made despite documentation of weight loss and progressive illness. Expert opinion at the Inquest concluded that the deceased's unexplained illness required more intensive and more expert assessment than she received.

The State Coroner found that death arose by way of Natural Causes. The Coroner's opinion at Inquest was that:

- There should have been a system in place that identified the deceased suffered from a serious undiagnosed illness that required the involvement of more experienced practitioners and referral for appropriate specialist advice.
- There should be adequate supervision of junior practitioners by senior practitioners with respect to cases of seriously unwell patients.

The Coroner also noted that there was no medical practitioner available to see the patient during her attendance at the regional hospital. He stated that a permanent medical presence in the regional hospital would appear appropriate and noted that a system review of on-call procedures and salaried staffing models was in progress.

A summary of the Coroner's recommendations arising from this Inquest are as follows.

- The arrangements in place to give pre-vocational doctors experience in general practice should include specified criteria for reference of very unwell patients to those responsible for supervising their work.



Examples given of specific criteria included: illness affecting quality of life, illness that impairs social or work function, illness associated with being underweight or causing weight loss and chronic illness.

- Before patients are seen in a practice by a doctor undertaking pre-vocational training, patients should be informed of the doctor's medical status and informed consent obtained.
- The issues raised by this case should be discussed with relevant general practitioner bodies and the WA Department of Health with particular reference to the management of patients with serious undiagnosed illness. The outcomes of these discussions should be brought to the attention of all general practitioners and relevant specialist groups.
- Steps should be taken to ensure that general practitioners seek and are able to obtain assistance from relevant specialists when managing patients with serious undiagnosed illness. These systems should be understood by all medical and nursing staff in a general practice. Barriers to specialist access for metropolitan and rural practitioners should be identified and addressed.

Examples of systems for specialist referral include telephone consultation directly with specialists or specialist units at teaching hospitals, with transfer of patient if necessary.

- Particular attention, including a range of continuing educational activities, should be given to developing mechanisms that ensure serious illness is recognised by general practitioners and nursing staff.

These recommendations are currently being considered and addressed in the medical community, particularly in the regional and rural setting. The principles on which the recommendations were made are broadly applicable.

- The need for patients to be informed and educated about their care in all situations and particularly in the training and supervision setting.
- The need for supervision and training of junior and inexperienced medical professionals by their seniors.
- All practitioners should have the skills to recognise serious illness and have established systems of communication and referral of these patients, regardless of their location.

For further information pertaining to this case refer to the Robson Finding, which can be found on the website of the Department of Health's Office of Safety and Quality in Healthcare.

Case 7: Mental health, discharge of patients, and support for carers

Key Messages:

- **Clear and timely communication procedures are needed when patients are discharged from metropolitan inpatient facilities to country community services.**
- **Carers need to be provided with support by community services.**

Following a period of psychological stressors a middle-aged female from a country area became unwell. She was referred by her general practitioner for a mental health assessment. As she required admission and could not be admitted locally she was admitted as a voluntary patient to a metropolitan inpatient facility. Subsequently, she was discharged into the care of her family and returned home. As instructed, she contacted the local community mental health service to make an appointment a few days after her discharge. Prior to that appointment she took her own life.

The Deputy State Coroner noted that:

- No written or oral communication or summary was received by the local community service from the metropolitan inpatient facility prior to the patient's death.
- It was left to the deceased to make the follow-up appointment herself with the local community service.

The Deputy State Coroner was also concerned that a more holistic approach to treatment in the community is required including support for family members and carers and the ability to provide ongoing therapeutic interventions for patients.

The support for carers is particularly important as they often have the expectation that a mental health service will be able to “solve” the problems of their loved one. It is worrisome that carers may not have the capacity to ask health services for help while they are experiencing agitation and distress when attempting to care for a person who may be clearly bent on a path of self-destruction.

This case demonstrates the need for clear discharge planning procedures, including immediate contact so that the community mental health service, general practitioner and carers are informed, as soon as possible, of the management plan to be implemented. It also demonstrates the importance of community mental health staff being available to provide support to carers, particularly in times of crisis.

For further information pertaining to this case refer to the Hilton Finding, which can be found on the website of the Department of Health's Office of Safety and Quality in Healthcare.

Case 8: Epilepsy and fitness to drive

Key Messages:

- **Medical practitioners and health professionals should be aware of their patients and their own current duties in relation to a diagnosis of epilepsy and fitness to drive.**
- **Even though patients with epilepsy do not currently have a legal obligation to report their condition to the Western Australian Department for Planning and Infrastructure if they are not fit to drive they should be advised not to drive and to report accordingly.**

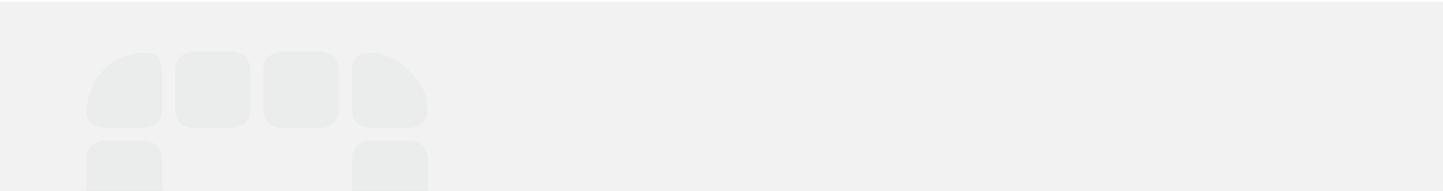
The driver of a vehicle died at the scene of a traffic crash from injuries resulting from the impact of a second vehicle that had travelled against a red traffic light control. The driver of the impacting vehicle was epileptic and was found to have suffered a seizure that resulted in the crash.

The Inquest involved a detailed examination of the diagnosis and treatment of epilepsy and issues of fitness to drive. The *Review of National Guidelines on assessing fitness to drive* demonstrated that there is no legal obligation in Western Australia for persons to report a diagnosis of epilepsy to the relevant authority responsible for issuing drivers' licences. It was also demonstrated that all States and Territories except Western Australia require either the doctor or the patient to report issues that relate to fitness to drive where the driver has been diagnosed with epilepsy.

The Deputy State Coroner found that death arose by way of accident. She noted that the current reporting situation for epileptic patients' fitness to drive in Western Australia is undesirable because there is no legal obligation for anybody to do anything.

Recommendations were made with respect to the administration of public health and the issue of driving licences to those suffering epilepsy.

- Consistent with *National Guidelines - Assessing Fitness to Drive 2003, Commercial and Private Vehicle Drivers*, there be a legal obligation on drivers suffering epilepsy to report that fact to the relevant driving authorities in Western Australia, that is, the Department for Planning and Infrastructure (DPI).
- Treating doctors understand their duty to tell their patients they have a legal obligation to report the fact of their condition to the DPI.
- When the patient informs the DPI of his or her diagnosis, the DPI gives the patient a form to give to the treating doctor to complete with respect to his or her medical condition. An example form developed by the Western Australian Comprehensive Epilepsy Service that addresses fitness to drive is included in the Inquest Finding.
- The forms, once completed by the treating doctors, are returned directly to the DPI and not given to the patient to return.
- In the event that a patient has complied with the obligation to report his or her medical condition and is driving in compliance with any determination then made by the DPI, there be no issue with insurance companies with respect to accidents arising out of the condition of the driver.



The recommendations arising from this Inquest are currently being reviewed with respect to the feasibility of implementation.

Medical practitioners should be aware that even though patients do not currently have a legal obligation to report their condition to the DPI, duty of care obligations mean that patients who are not fit to drive should be advised accordingly. Advice and actions should be consistent with National Guidelines - Assessing Fitness to Drive 2003, Commercial and Private Vehicle Drivers.

For further information pertaining to this case refer to the Hasluck Finding, which can be found on the website of the Department of Health's Office of Safety and Quality in Healthcare.

Case 9: Trauma, delayed surgery, and venous thromboembolism

Key Messages:

- Clinicians should be aware that in a trauma setting delayed surgery and prolonged immobilisation are risks for venous thromboembolism (VTE). Patients should have their risks assessed and have appropriate prophylaxis documented and applied.
- There is a need for medical systems to develop and apply systems for VTE risk assessment, prophylaxis, and documentation.

An elderly female fell and suffered a fracture of her proximal femur. She presented to a major hospital emergency department just after midday. The diagnosis was made and she was admitted under the care of the orthopaedic team and placed on the theatre list for operative repair. On admission, her leg was splinted and the need for mechanical compression stockings for the prevention of VTE was identified.

The surgery was initially planned for the day after presentation. However, theatre over-runs resulted in cancellation of the patient's operation. She subsequently went to theatre on the afternoon list of the following day. During the operation the patient suffered a sudden drop in blood pressure followed by cardiac arrest. She died despite advanced resuscitation.

Post mortem examination established that the patient died from VTE. A blood clot had formed in the deep veins of the legs. During the operation this blood clot had broken free and travelled in the circulation to the lungs where it obstructed the flow of blood by blocking the pulmonary arteries. The blood clot had most likely formed while the patient was immobilised in hospital.

The Inquest focussed on the cause and prevention of VTE and in particular the problem of delayed surgery and the use of mechanical compression stockings. The Inquest heard that the most appropriate management would have been the application of bilateral mechanical compression stockings on admission, followed by urgent operative fixation and early mobilisation. Evidence at Inquest revealed that in this case mechanical compression stockings may not have been applied and that surgery was delayed.

In her comments, the Deputy State Coroner noted that this case appears to be one of an adverse outcome arising from delayed surgery and an absence of documented prophylaxis for VTE. She expressed the view that because of a lack of certainty about the timing of surgery, VTE prophylaxis should be put in place for at-risk immobilised patients.

The Deputy State Coroner's finding was that death arose by way of accident. Her Recommendations relate primarily to the documentation and application of VTE prophylaxis in that there should be a system or protocol in place for the ordering and application of mechanical compression stockings.

The message for clinical staff is that a trauma setting, delayed surgery and prolonged immobilisation are high risks for VTE. At-risk patients should be assessed and have appropriate prophylaxis documented and applied. The key message for medical systems is to develop and apply systems for VTE risk assessment and prophylaxis.

For further information pertaining to this case refer to the Frith Finding, which can be found on the website of the Department of Health's Office of Safety and Quality in Healthcare.

Clinical issues identified by the Coronial Liaison Service:

1. Prophylaxis for venous thromboembolism

Key messages:

- All patients should undergo individualised risk assessment so a risk/benefit decision about prophylaxis for venous thromboembolism (VTE) can be made. When making these decisions, evidence-based methodology can be used and an accurate comprehensive contemporaneous medical record is usually adequate to demonstrate a high standard of medical care.
- The best practice for implementing the routine use of VTE prophylaxis is a hospital-wide approach including clinical guidelines, pathways, staff education and audit.

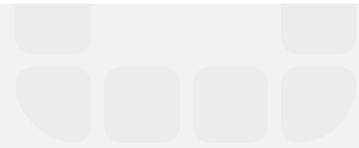
Venous thromboembolism (VTE) is a common cause of death, hence it is commonly reviewed in Coronial and Quality Improvement settings. One of the reasons for this is the difficulty of diagnosis. This was demonstrated in the McKay Inquest, which emphasised the importance of diagnostic pathways linked to risk assessment and screening using D-dimer testing in the clinical setting¹. VTE is also a major cause of in-hospital mortality in surgical patients.

Every year, surgical deaths with VTE are referred to the Coroner. Many of these cases showed increased risk for VTE and included obesity, varicose veins, previous VTE, thrombophilias, thrombotic states such as malignancy, infection and heart failure, hormone therapy, pregnancy, immobility, trauma and advanced age. Recent cases have involved an inquiry into VTE risk assessment and prophylaxis for VTE. An accurate contemporaneous medical record, which includes a risk assessment for VTE and a risk-benefit decision about prophylaxis for VTE, is usually adequate to demonstrate a high standard of medical care.

In the quality improvement environment, the WA Audit of Surgical Mortality (WAASM) has also recommended VTE as an area for review². The 2006 WAASM report found that the proportion of reviewed patients who receive deep vein thrombosis (DVT) prophylaxis increased from 61 percent in 2002 to 69 percent in 2005 and that in 94 percent of cases, DVT prophylaxis was appropriate. Deficiencies of care in surgical patients were identified where no DVT prophylaxis was given and where no guideline of protocol for DVT prophylaxis existed.

An evidence-based review of VTE prophylaxis in 2002³ advises that all patients admitted to hospital with major trauma, acute medical illness, or undergoing surgery should be individually assessed for their risks of VTE. Prophylaxis should then be administered based on a balance of efficacy, risk, and patient preference. Level one evidence supports the use of mechanical methods such as graduated compressive stockings (GCS), and intermittent pneumatic compression (IPC). Low dose heparin is also supported by level one evidence. The importance of monitoring patients on heparin for thrombocytopenia is supported by level two evidence. Early mobilisation and adequate hydration are supported by level three and four evidence.

Guidelines on the prevention of VTE have been developed and updated by the Australian and New Zealand Working Party on the Management and Prevention of Venous Thromboembolism⁴. This publication emphasises the need for a clinical risk assessment, particularly in relation to medical illness. A pharmacological update introduces the pentasaccharide fondaparinux as an agent, which is as effective as the heparins for the prevention of VTE in orthopaedic cases.



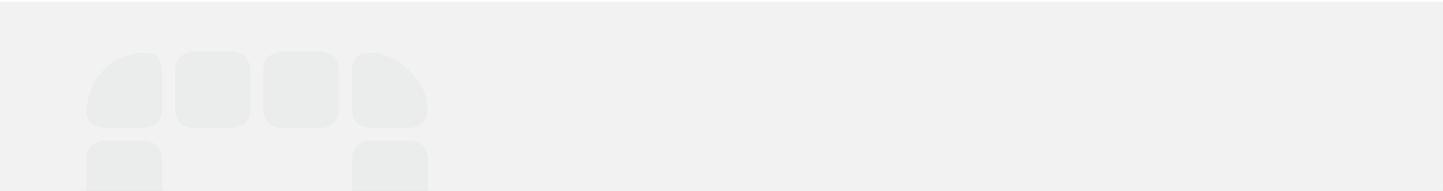
The working party's definition of best practice for VTE prophylaxis includes the routine use of VTE prophylaxis implemented with clinical guidelines, pathways, staff orientation and audit incorporating individual risk

assessment, an accurate complete medical record, and liaison with care in the community. The following risk assessment matrix is reproduced from Australian and New Zealand best practice guidelines⁴:

Risk assessment*

Category	Medical patients	VTE Prophylaxis	Surgical Patients	VTE Prophylaxis
High	Age>60 years Ischaemic stroke Decompensated cardiac failure Active cancer Acute on chronic lung disease Acute on chronic inflammatory disease	Low-dose unfractionated heparin or LWMH OR GCS and/or IPC if heparin contraindicated	Orthopaedic surgery of pelvis, hip or lower limb Major surgery > 60 years Major surgery, age 40 - 60 years with cancer or history of VTE Or other risk factors	LMW heparin or Fondaparinux (orthopaedic cases only) AND GCS and/or IPC
Moderate			Major surgery age 40-60 years without additional risk factors Minor surgery > 60 years Minor surgery age 40-60 years with history of VTE or on oestrogen therapy or with other risk factors	Low-dose unfractionated heparin or LWMH
Low			Major surgery age 16 - 40 years with no other risk factors Minor surgery age 16 - 40 years with no other risk factors	Consider GCS

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In conclusion, all patients admitted to hospital should undergo individualised risk assessment so a risk/benefit decision about prophylaxis for VTE can be made and evidence-based methodology can be used to support these decisions. When making these decisions, an accurate comprehensive contemporaneous medical record is usually adequate to demonstrate a high standard of medical care. The best practice for implementing the routine use of VTE prophylaxis is a hospital-wide approach including clinical guidelines, pathways, staff education and audit.

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1. www.coronerscourt.wa.gov.au/
2. WAASM Annual Report 2006. Royal Australasian College of Surgeons West Australian Audit of Surgical Mortality Management Committee. University of Western Australia.
3. Prophylaxis for Venous Thromboembolism. Scottish Intercollegiate Guidelines Network. Royal College of Physicians. Edinburgh 2002.
4. Prevention of Venous Thromboembolism - Best Practice Guidelines for Australia and New Zealand. 3rd Edition. Health Education and Management Innovations. July 2005 Contact: HemiAustralia@aol.com for copies of this publication.

Clinical issues identified by the Coronial Liaison Service:

2. Acute Mesenteric Ischaemia

Key message:

- **Patients with undiagnosed abdominal pain and risk factors for vascular disease or embolic illness should have surgical assessment and clinically directed imaging within 12 hours of the onset of pain.**

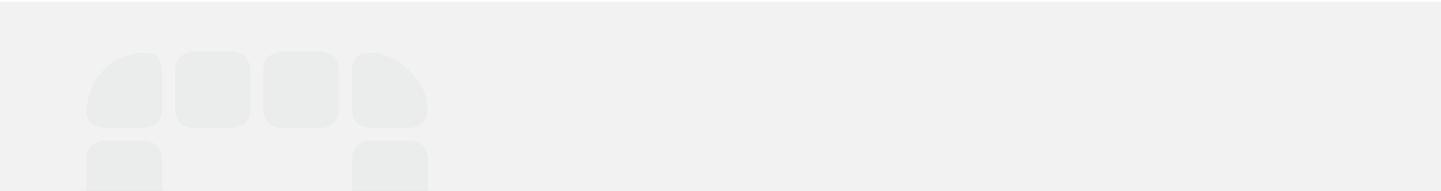
Mortality from acute mesenteric ischaemia and its result, ischaemic bowel, has been the subject of review in both the coronial inquiry and the quality improvement environments. The common theme in these inquiries is that the diagnosis is frequently delayed until the opportunity for a surgical cure has passed. Unfortunately, the diagnosis is difficult and delays occur as the presentation, clinical findings, and most diagnostic tests are non-specific. Avoiding delayed surgical consultation, and the use of biphasic CT with mesenteric CT angiography may be altering the equation in favour of improved outcomes.

This type of presentation was described in a recent inquest into the death of a man in his 70s, two days after being admitted to hospital with undiagnosed abdominal pain.¹ The early signs and symptoms were non-specific and the diagnosis was not made until the onset of irreversible shock. The Coroner's Finding emphasised the importance of surgical review, regular review and observation, and imaging of patients with risk factors for vascular disease and undiagnosed abdominal pain.

Quality improvement processes, such as audit of surgical mortality have also highlighted higher mortality in a series of patients with acute mesenteric ischaemia, noting difficulty in diagnosis, and the importance of early surgical review in cases of undiagnosed abdominal pain and undiagnosed shock.

Overall, the clinical presentation and outcome of this condition is well summarised by published case series.^{2,3}

- Acute mesenteric ischaemia has a peak incidence in the sixth and seventh decades of life. Most studies report an equal sex distribution and increased risk associated with atherosclerotic vascular disease, atrial fibrillation and ischaemic heart disease.
- All patients have abdominal pain, which is typically central and colicky in nature at onset. Vomiting, with or without blood, is common as is diarrhoea, with or without blood. The pain can be severe and out of proportion to the clinical signs, and difficult to control with intravenous opiates, but not in all cases.
- Clinical signs of peritonitis develop with time and the presence of bowel sounds is non-specific.
- Typical laboratory findings are non-specific early, with a raised white cell count and mild renal failure. Lactic acidosis develops as the condition progresses and the patient becomes increasingly shocked.
- Mortality without surgery approaches 100 percent. Mortality with surgery has a range of 65-70 percent in most cases.
- Diagnosis within 12 hours of the onset of pain and early surgery are associated with a lower mortality, reportedly between 30-45 percent.
- Patients who survive to discharge from hospital generally return home to their previous lifestyle and level of function and do not have a recurrence of the condition.



In 1999, observations of the poor outlook for this condition over several decades lead one author to conclude that “Mortality from acute mesenteric ischaemia has not changed during the past two decades and in the absence of an accurate diagnostic test is unlikely to do so”⁴.

Since then, the development and increased availability of biphasic CT with mesenteric CT angiography may be altering the equation. A recent study demonstrated 96 percent sensitivity and 94 percent specificity for the diagnosis⁵ in a clinically-selected patient population with risks for the condition. This technology is now available in most tertiary hospitals and many non-tertiary metropolitan and regional health facilities.

The history of this condition is one of a difficult delayed diagnosis, lucky survival for a few, and a poor outcome for most. The evidence suggests that with an early diagnosis and surgical management, survival can be improved. Today, earlier diagnosis aided by CT angiography is possible within the first 12 hours after the onset of pain. Ideally, patients with undiagnosed abdominal pain and risk factors for vascular disease or embolic illness should have surgical assessment and clinically directed imaging within 12 hours of the onset of pain.

References:

1. Bertoncini Inquest www.safetyadquality.health.wa.gov.au/home/
2. Deehan DJ, Heys SD, Brittenden J, Eremin O. Mesenteric ischaemia: prognostic factors and influence of delay on outcome. *JR Coll Surg Edinb* 1995; 40: 112-115.
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4. Mamode N, Pickford I, Leiberman P. Failure to improve outcome of acute mesenteric ischaemia: a seven-year review. *European J Surg.* 1999; 165(3): 203-208.
5. Kirkpatrick ID, Kroeker MA, Greenberg HM. Biphasic CT with mesenteric CT angiography in the evaluation of acute mesenteric ischaemia: initial experience. *Radiology* 2003; 229: 91-98.