



CORONERS COURT OF QUEENSLAND

Non Inquest Findings

CITATION: Investigation into the death of Mr B, a 41 year old indigenous man

TITLE OF COURT: Coroners Court

JURISDICTION: BRISBANE

FILE NO(s): 2015/1217

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FINDINGS OF: Ainslie Kirkegaard, Registrar

CATCHWORDS: Coroners: investigation, multiple presentations to rural hospital emergency department with ongoing headache, clinical assumption of acute alcohol withdrawal syndrome, failure to recognise and respond to clinical deterioration, use of early warning and response observation tools (Q-ADDS), undiagnosed subdural haemorrhage

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Introduction

Mr B was a 41 year old Aboriginal man who died at a Regional Base Hospital on 31 March 2015. He ordinarily resided in a rural town. Mr B's death was reported to the coroner because of concerns that there may have been an earlier opportunity for hospital staff to have diagnosed the subdural haemorrhage that caused his death.

Mr B's medical history

Review of Mr B's medical records (Rural Hospital, Regional Base Hospital) shows he had a history including meningitis as a child and a self-disclosed history of excessive alcohol intake, consuming up to 6-8 litres of cask wine a day. Prior to his transfer to the Regional Hospital on 30 March 2015, Mr B had presented to the Rural Hospital four times in the preceding month complaining of headache.

First presentation to Rural Hospital – 24 February 2015

Mr B presented to the Rural Hospital emergency centre with his family at 10:55am on 24 February 2015 complaining of onset pain around his right mandible spreading to the right eye over about 5-10 minutes, with headache which he rated as 9 on a scale of 0-10. The triage nurse noted there was some enlargement of the right pupil (4mm vs 2mm on the left) with some blurred vision, and his blood pressure was recorded as slightly high up to 165/95. Mr B reported never having had similar headaches previously.

The attending doctor performed a neurologic examination which showed some mild increase in light touch sensation on the right. Reflexes were documented as normal. Mr B was diagnosed with "cluster migraine" and treated with high flow oxygen, paracetamol and ibuprofen, as well as intravenous thiamine (Vitamin B1). His pain score had dropped to 5/10 by 11:45am but no pain score was documented on his discharge from hospital at 3:05pm.

Second presentation to Rural Hospital – 3 March 2015

Mr B represented to the Rural Hospital at 8:00pm on 3 March 2015 complaining of 2-3 days of generalised headache associated with neck pain and tension. His pain score was recorded as "4/10, increased with movement" and his blood pressure was noted as about 125/82.

Mr B was reviewed by a different doctor who documented that the headache was associated with lower back (sacral) pain which was not associated with trauma, and that power and sensation were normal in the lower limbs. Mr B was treated with paracetamol and an indomethacin suppository (a non-steroidal anti-inflammatory drug) which resulted in almost total resolution of his pain (though the medical records do not indicate whether this was a reference to

back pain, headache or both). Mr B reported having social and financial stressors and depression. He was advised to see his general practitioner and he was also offered an outpatient appointment before being discharged home at 10:25pm that evening.

Third presentation to Rural Hospital – 28 March 2015

Mr B presented to the Rural Hospital by ambulance at 1:00pm on 28 March 2015 complaining of severe headache (9/10 intensity). He reported having taken paracetamol before calling the ambulance. On triage, he was noted to have pain behind his right eye, his pupils were equal in size and reacting to light, and he had no photophobia. His blood pressure was recorded at about 138/90. His headache was described as sharp and radiating from the back of the head to the forehead. He had vomited twice the previous day in association with the headache. He reported having only had “a couple of beers” that day. The triage nurse also noted that he had an underlying tremor.

On this occasion Mr B was not seen by a doctor. The triage nurses contacted the doctor who advised giving one litre of intravenous saline with 10mg intravenous maxolon for vomiting, intramuscular ketorolac (non-steroidal anti-inflammatory drug) and codeine phosphate 60mg (strong opioid analgesic) and high flow oxygen. Mr B refused the oxygen. At 4:15pm, the intravenous therapy was completed and “point of care” blood testing done on an “i-stat” machine was normal. Mr B was discharged home at 4:20pm that afternoon.

Fourth presentation to Rural Hospital – 29 March 2015

Mr B represented to the Rural Hospital at 7:28pm the following evening complaining of ongoing headaches and vomiting. He was admitted to the ward where he was seen by another different doctor at 12:45am. His pain score was recorded as 6/10 intensity at 7:40pm and his blood pressure was 126/76. The doctor noted that Mr B had unsteadiness, a significant tremor, headache and nausea which he attributed to alcohol withdrawal symptoms, noting that Mr B had not consumed alcohol for four days. Mr B's observations were within normal range. Blood tests were ordered and he was commenced on intravenous fluids, nexium (proton pump inhibitor anti-ulcerant) and diazepam administered as per the Department of Health Alcohol Withdrawal Scale guidelines. He was given a nicotine patch and recommended for referral to the Alcohol, Tobacco and Other Drugs Service in the morning.

At around 4:00am on 30 March 2015, the night duty nurse noted that Mr B was restless. His headache scale was reported as 6/10. He was given panadeine for the headache and diazepam as per the Alcohol Withdrawal Scale guidelines with “*limited effect*”.

At 10:10am that morning, another doctor reviewed Mr B on ward rounds noting that he had been admitted with “*alcohol withdrawal and headache*” against a history of drinking half a carton of beer (but noted this was “*inconsistent with history*”). His headache was described as a “*sharp band*” and he was noted as having “*no neurology*” and “*CNS grossly intact*” but there was no indication in the medical notes as to what form of neurological testing was performed. He was to continue on analgesia and the Alcohol Withdrawal Scale, with his diagnosis being documented as alcohol withdrawal and headache/migraine.

The Alcohol Withdrawal Scale record documented Mr B as being confused, restless and somewhat disoriented at midday and 1:00pm and then sleeping at 2:00pm and 4:30pm that day.

At 2:30pm, Mr B was noted to be “*drowsy ++*” and incontinent of urine. Despite this, the nurse gave him diazepam as per the Alcohol Withdrawal Scale guidelines. The nurse had contacted the doctor who had reviewed Mr B on ward rounds and was advised to disregard the tremor when calculating the Alcohol Withdrawal Scale score.

There is a retrospective note in the medical records that Mr B was incontinent again at 4:40pm and asleep/snoring at that time.

The Alcohol Withdrawal Scale record noted Mr B’s pupils as being 5mm in size and equal but not reacting to light at 4:30pm (they had been 5mm throughout his admission).

It appears that he received a total of 40mg of diazepam (5mg at 1:00am + 5mg at 7:00am + 15mg at 8:10am + 5mg at 10:30am + 10mg at 5:00pm).

A radiology request for a CT head scan had been faxed to the Regional Base Hospital that afternoon.

The next entry in the medical record is a retrospective entry by the doctor documenting that Mr B had been found unresponsive at around 5:35pm. He was breathing and had vomited before deteriorating rapidly. He went into pulseless electrical activity cardiac arrest. Emergency resuscitation efforts achieved a return of spontaneous circulation after approximately 4-5 minutes. Mr B was noted to have hypokalaemia (critically low potassium) which was corrected with intravenous potassium replacement.

Transfer to Regional Base Hospital

Mr B was transferred to the Regional Base Hospital via air-ambulance on the evening of 30 March 2015. He was intubated and mechanically ventilated. There was vomit at the level of his vocal cords indicating probable aspiration pneumonia and his oxygen saturations were low. He was treated with broad spectrum antibiotics. A CT scan of the head showed a large right-sided acute on chronic subdural haematoma with evidence of midline shift and compression of the right lateral ventricle of the brain, compression of the left side of the brain and evidence of herniation (pressure effect of blood pushing the lower part of

the brain down through the outlet in the skull where the spinal cord exits thereby “strangling” this part of the brain).

Mr B was admitted to the intensive care unit for further management. His condition was discussed with the neurosurgical team at the Tertiary Hospital. He was considered to have an unsurvivable brain injury and that neurosurgical intervention would not change the outcome. There was also evidence of extensive right lower lobe pneumonia due to aspiration. After discussion with the family, active treatment was withdrawn and Mr B was commenced on comfort measures. He was extubated at 2:10am on 31 March 2015 and died half an hour later.

Autopsy findings

An external examination and full internal autopsy were performed on 2 April 2015. The autopsy confirmed the clinical findings of hypoxic brain injury and acute on chronic subdural haematoma and bilateral severe aspiration pneumonia. There was no evidence of external injury. Toxicological analysis of hospital admission bloods taken at 10:50am on 30 March 2015 detected a low level of diazepam, metoclopramide and paracetamol, all within low therapeutic non-toxic range. Taking these findings into account, the pathologist attributed the death to subdural haematoma.

Of note, the findings in the brain included yellow-brown staining of the supportive connective tissue around the brain adjacent to the location of the subdural haematoma over the right mid frontal lobe. This indicated evidence of past blood staining. There was also evidence of older bleeding in the area of cerebellar herniation.

Clinical management concerns

Initial discussions with the Regional Base Hospital doctor who reported Mr B’s death to the coroner flagged concerns about:

- Mr B having been treated with aspirin for his headache at the Rural Hospital without any CT imaging to establish the cause of the headache;
- Mr B having been given a large dose of diazepam when he was already quite drowsy – there was concern this may have impacted on the development of his aspiration pneumonia; and
- The underlying cause of the subdural haematoma.

Hospital & Health Service (HHS) clinical review outcomes

The relevant HHS commissioned a root cause analysis (RCA) of the care provided to Mr B by the Rural Hospital. This is a systemic analysis of what happened and why and is designed to make recommendations to prevent adverse health outcomes from happening again, rather than to apportion blame or determine liability or investigate an individual clinician's professional competence. It is conducted by a review team who had no involvement in Mr B's care.

The RCA review team reported as follows:

- The assessment and management of Mr B's presentation on 24 February 2015 was probably reasonable as it would not be usual to get a CT head scan for this presentation in the absence of trauma or neurological symptoms. However, in a patient with documented history of alcohol abuse, a lower threshold for ordering a CT head could be considered due to increased risk of coagulopathies and cerebral atrophy;
- At the time of Mr B's second presentation on 3 March 2015, the notes for his previous presentation were not available to the clinicians at this presentation because they were in a drawer;
- Mr B's pain score was 9/10 when he presented on 28 March 2015 but this was not reflected in the triage score (4) or on medical review – the RCA team questioned that if the clinical picture did not reflect the pain score, why this was not documented? It was felt that that triage score may not have reflected the potential seriousness of the headache symptoms and medical review may have been indicated at this time. The re-presentation with headache and diagnosis of cluster headache may have given clinicians a cognitive bias and clouded their clinical judgement. In acute stroke, anticoagulation is not given until haemorrhagic cause has been ruled out by CT head scan;
- The medical officer's assessment on Mr B's admission on 29 March 2015 attributing his presentation to alcohol withdrawal was probably reasonable given the documented intake on this and previous episodes of care. It would have been reasonable to expect Central Nervous System (CNS) symptoms such as cramps, tremor, sweating and headache with alcohol withdrawal as Mr B reported he had not had alcohol for four days. It was noted that Mr B was very drowsy from around midday when he was changed twice for urinary incontinence. While he was able to assist the nursing staff by rolling, his level of consciousness had altered. The RCA team felt the history of tremors prior to admission may have confounded the clinical picture and meant a higher dose of diazepam was administered. The Alcohol Withdrawal Scale was modified at 2:30pm to disregard tremor for the calculations.

The second confounder was the diazepam and the change in Mr B's level of consciousness. In hindsight, the change in his level of consciousness most likely indicated pathophysiological changes associated with subdural haemorrhage but the medical and nursing staff attributed it to the high dose of diazepam. It was noted this occurred against the background of a very busy shift which may have impacted on staff having time to reflect on the clinical picture. There was no ongoing monitoring of the pain score which made it unclear whether the headache was improved, unchanged or worse. The use of aspirin could possibly have contributed to an acute bleed;

- At 4:40pm when Mr B was assessed to be comatose and to have fixed and dilated pupils, the clinical nurse in charge of the shift was doing an x-ray and was phoned by the nurses on the floor. There was discussion about whether this change was due to the diazepam. There was also confusion between the nurses as to who phoned the clinical nurse and as to whether medical staff had been notified. The clinical nurse thought the doctor had been notified but the medical student and the nurses on the floor thought the clinical nurse would notify the doctor. The doctor was not notified until an hour later of the fixed and dilated pupils and Mr B's comatose state. The RCA team was concerned that while this delay probably did not change the outcome for Mr B, there was still a failure to recognise his clinical deterioration despite the confounder of the diazepam; and
- There were no specific neurologic observations apart from those in the Alcohol Withdrawal Scale record. The RCA team noted that the new version of the early warning observation tool (Q-ADDS) which was not in use at the Rural Hospital at the time of Mr B's death, has a section for level of consciousness that makes this clearer and would have been of assistance to staff in clinical decision making in this case.

The RCA team did not identify a root cause but identified areas for improvement including the recording of pain scores, management of pain and documentation to reflect what the medical officers had ruled out as differential diagnoses and why. The RCA made the following recommendations:

- Failure to recognise the significance of Mr B's ongoing headache – clinical education around headache as a potentially significant symptom and the use of aspirin in headache treatment (not to be used until haemorrhagic cause is excluded) and triage training for nurses;
- Failure to recognise clinical deterioration – nursing staff to undertake an awareness program for recognising clinical deterioration;
- Documentation – measures to improve documentation to record

negatives in history taking and the formulation of differential diagnoses;

- Poor clinical record management – review of record management processes to avoid clinical records not being available at point of care; and
- Cultural practice – completion of the Cultural Practice Program (mandatory training) for all staff.

Family concerns

HHS representatives including the Director of Clinical Governance met with the family on 27 April, 11 May and 22 July 2015 to discuss their concerns about the care provided to Mr B by the Rural Hospital, and to present the RCA findings and recommendations. I have had the benefit of reports from both the HHS and the family about the matters discussed in these open disclosure meetings.

The family was dissatisfied with the RCA findings and subsequently made a health service complaint to the Office of the Health Ombudsman and later provided me with a copy of this complaint.

On 1 October 2015, the Office of the Health Ombudsman referred the family's complaint to the Office of the State Coroner.

Independent clinical review

I arranged for an independent doctor from the Department of Health Clinical Forensic Medicine Unit to review the medical records and provide an opinion as to whether the subdural haemorrhage could have been diagnosed sooner, and as to the appropriateness of the management of Mr B's repeated presentations to the Rural Hospital.

Subdural haemorrhage

I note the reviewing doctor's advice that head trauma is the most common cause of subdural haemorrhage, with the majority of cases related to motor vehicle accidents, falls and assaults. Patients with significant cerebral atrophy (brain shrinkage) are at higher risk including the elderly, those with a history of alcohol abuse and those with a previous traumatic brain injury. In these patients, trivial head trauma or even pure whiplash injury in the absence of physical impact may produce a subdural haemorrhage. The use of anticoagulants increases the risk of subdural haemorrhage.

The initial presentation of subdural haemorrhage is variable – severe head trauma may result in subdural haemorrhage with coma, while a lesser injury may manifest as a momentary loss of consciousness. Acute subdural haemorrhage presents one to two days after onset; subacute subdural haemorrhage presents 3-14 days after onset; and chronic subdural haemorrhage presents 15 or more days after onset.

Alcohol withdrawal

I note the reviewing doctor's advice that alcohol withdrawal is a potentially life threatening condition with onset occurring some 6-24 hours after the last drink and can even occur when the blood alcohol level is dropping. Although most alcohol dependent people may withdraw with only minor symptoms, major life threatening issues such as seizures and delirium tremens can occur.

The treatment for alcohol withdrawal is diazepam which is best commenced early in the course of withdrawal. As an inpatient this can be done with a loading dose (large dose given on the first day followed by none but monitored) or as an outpatient by tapering the dose over a number of days. Thiamine is often given to prevent other complications such as Wernicke's encephalopathy. Monitoring is done according to prescribed Alcohol Withdrawal Scales which guide the management of withdrawal according to severity. Signs and symptoms of withdrawal may present as autonomic system overactivity (sweating, fast heart rate, high blood pressure, insomnia, tremor, fevers), gastrointestinal effects (nausea, anorexia, vomiting) and cognitive/perceptive changes (anxiety, vivid dreams, hallucinations, delirium). Seizures can also occur in a small percentage of cases.

Delirium tremens is the worst consequence of acute alcohol withdrawal and is characterised by confusion, disorientation, extreme restlessness and agitation, gross tremor, hyperthermia and autonomic instability (high swings in heart rate and blood pressure), paranoia, delusions and disturbing visual hallucinations. The Queensland Alcohol Withdrawal Clinical Practice Guidelines recommend that other causes of delirium be screened including head injury, subdural haematoma, Wernicke's encephalopathy, hypoxia, sepsis, metabolic disturbances and intoxication by or withdrawal from other drugs.

Comments on Mr B's clinical management

The reviewing doctor considered it was apparent that Mr B's symptoms on presentation were viewed more in the context of his history of excessive alcohol intake rather than investigating other possible explanations for his headache. He was readily diagnosed as having "cluster headache" when he presented on 24 February 2015 despite having no such history and thereafter was considered as having either cluster headache or migraine. There was no documented questioning regarding recent head trauma (noting the doctor's reference to absence of trauma on 3 March appeared to be in the context of Mr B's back pain and not headache).

The reviewing doctor commented that Mr B's history of alcohol excess should also have raised questions about trauma whether due to falls or interpersonal violence, both of which occur frequently in the context of excessive alcohol intake. This did not occur but given the history as documented in the records there was little that Mr B divulged to suggest that trauma was involved. Nonetheless given his age and alcohol intake, the reviewing doctor considered it fair to suggest this needed to have been explored. However, the reviewing doctor conceded that in the absence of Mr B volunteering this information, it can be accepted that no trauma was involved.

The reviewing doctor identified the lack of readily available CT scanning equipment in the rural town as the complicating factor as any suspicions of head trauma and consequently subdural haemorrhage should have necessitated a CT head scan. The Rural Hospital treating team had faxed a request for this late on 30 March 2015 but Mr B's clinical condition deteriorated at around the same time.

The reviewing doctor acknowledged that even had CT scanning been available locally, there was no major neurologic abnormality detected on either 24 February or 3 March apart from a transient difference in pupil size and minor sensory loss to the face. There was no compelling reason on either presentation to suggest that a CT head scan would be considered in the absence of a history of trauma.

The reviewing doctor noted that Mr B was not reviewed by a doctor when he presented on 28 March 2015. While not critical of the triage nurse (who was considered to have done a reasonable job of history taking and examination within her scope of practice and had notified the doctor), the reviewing doctor considered that the history of worsening headache and vomiting despite the tremor (probably the greatest factor in attributing Mr B's presentation to alcohol withdrawal) should have led to a CT head scan if CT scanning equipment was available.

The reviewing doctor considered the management of this presentation was "a little questionable" as the doctor who was consulted by phone had ordered medication and intravenous fluids to be administered by the nurse which should have been overseen by the doctor on site. That stated, there was no direct negative result from this treatment which appeared to provide Mr B with some relief. When considering whether in the absence of a local CT scanner the outcome would have changed for Mr B had he been admitted at the presentation, the reviewing doctor felt the presence of the tremor and previous reference to Mr B's alcohol intake would have led the doctor to consider acute alcohol withdrawal rather than intracranial pathology.

The reviewing doctor concluded that Mr B died from complications of a right sided subdural haematoma (acute on chronic) in circumstances indicating the process had developed over a number of weeks. Over the course of Mr B's four presentations to the Rural Hospital with headaches over the preceding month, the possibility of subdural haematoma did not appear to have been explored and his history of excessive alcohol intake quickly led to a clinical assumption that he was in acute alcohol withdrawal syndrome. Given his

history and presenting signs and symptoms, particularly in the later presentations when a tremor was present, this was not unreasonable particularly with the knowledge that such a syndrome might be life threatening. There appeared to be a cognitive bias whereby further medical review appeared to follow the path of the original diagnosis rather than revisiting it on each medical review to exclude an alternative cause.

I note the reviewing doctor's advice that the management of acute alcohol withdrawal requires the use of long-acting benzodiazepines such as diazepam which cause CNS depression and cannot only mask signs of deterioration in a head injury, but also simulate them. Mr B was given diazepam when he was showing signs of CNS depression but he was not medically reviewed at that time.

The reviewing doctor acknowledged that in the absence of local CT scanning equipment, it is unlikely that Mr B might have been diagnosed prior to 28 March 2015 as having subdural haemorrhage. The medical record casts doubt on whether Mr B was questioned thoroughly about his headache or underwent a comprehensive neurologic examination at any stage during his presentations, either of which might have uncovered a compelling reason to request a CT head scan. However, the reviewing doctor commented it cannot be stated with certainty that there were clinical signs present on these occasions. The reviewing doctor suggested that had a CT scanner been available locally on 28 March 2015, it would have been utilised based on his presentation. Although this could have resulted in a diagnosis being made then, there was no guarantee the subdural haemorrhage would have been amenable to curative treatment bearing in mind that Mr B would have required transport to a larger hospital to manage his condition neurosurgically.

The reviewing doctor also reviewed the RCA findings and recommendations but remained concerned about the significant nursing management issue relating to failure to respond to Mr B's clinical deterioration, particularly when a further dose of diazepam was given in the context of what appeared to be significant CNS depression (at 2:30pm on 30 March 2015 Mr B was noted to be drowsy “++” and incontinent of urine, yet was still given diazepam). The appropriate response was medical review yet when the doctor was consulted by phone at that time, she should have been aware of the deterioration in conscious level and should have intervened. That said, the reviewing doctor considered it was unlikely that medical intervention at that point in time would have changed the outcome for Mr B.

HHS response

I provided the HHS with an opportunity to respond to the reviewing doctor's comments. The Director of Clinical Governance acknowledged the need for medical staff to reflect on the need for neurological examination in rural sites and advised this issue would be included in the next Rural Medical Superintendents meeting for discussion and dissemination.

The Director of Clinical Governance clarified that in fact a CT scan had been considered and arranged on 30 March 2015 at ward round but the CT scanner in another rural town was unavailable until the next day because the radiographer had gone home sick.

In response to the reviewing doctor's suggestion that the care provided to Mr B on 28 March 2015 (when he received IV fluid, metoclopramide, ketorolac and codeine phosphate administered by a nurse without the doctor present) was "a little questionable", the Director of Clinical Governance clarified that the management of patients in rural hospital emergency departments is often commenced by a skilled registered nurse and continued after discussion with the doctor. A doctor is not often present when medications and fluids are administered. Ketorolac is a well-used and appropriate non-opioid non-steroidal anti-inflammatory drug in emergency medicine especially when a doctor is not on site. The 60mg dose of codeine phosphate is a normal adult dose and not uncommon to give and had been chosen as Mr B had recently had panadol, this precluding panadeine forte.

The Director of Clinical Governance acknowledged that in hindsight, an earlier CT would have been ideal but this was difficult given the time and distance involved. This reiterated his submission to the Health Ombudsman in which he stated *"in hindsight, [he] believes that a CT scan should have been performed on 28 March 2015 however it is unclear whether this would have changed the outcome."*

Recent coronial inquest into patient deaths following failure to recognise and response to clinical deterioration in rural hospitals within the relevant HHS

In August 2015, the Deputy State Coroner delivered findings into the deaths of two patients who presented to rural hospital emergency departments within the Hospital and Health Service in late 2013 and mid 2014 – Inquest into the deaths of Verris Dawn Wright and Jasmyn Louise Carter (Carter-Maher). Both deaths raised the issue of failure to recognise and respond to clinical deterioration and the adequacy of the HHS implementation of the early warning and response observation tool known as the Queensland Adult Deterioration Detection System (Q-ADDS).

In general terms, an observation and response chart is a document that allows the recording of patient observations, and specifies the actions to be taken in response to deterioration from the norm. The purpose of these charts is to support accurate and timely recognition of clinical deterioration, and prompt action when deterioration is observed.

The Deputy State Coroner heard evidence from the Queensland Patient Safety Unit about the purpose and function of the Q-ADDS, and noted that since devolution of public health services to independent hospital and health services,

there are no statewide policies to mandate the use of early warning and response tools.

In one case the Q-ADDS tool had not been implemented, but if it had, the patient would have been identified for escalation. In the other case, the Q-ADDS had been used but was not utilised for the purpose of escalation. This was identified by the subsequent RCA which found the tool was not well understood by clinical staff and treated with indifference and *“yet another document to complete”*.

The HHS General Manager Rural gave evidence about the outcome of the RCA recommendations arising from both patient deaths, notably the recommendation that Q-ADDS be implemented as a matter of urgency to ensure a consistent approach across the HHS.

The Deputy State Coroner observed that hospital districts need to be vigilant regarding the education into and use of early warning and response tools and continue to audit their use. The Deputy State Coroner noted similar findings and comments were made by the Northern Coroner Bentley in the inquest into the deaths of GB Gulliver, JL Harrison & AB Morten delivered on 8 December 2014 where it was noted that staff failed to utilise the Q-ADDS tools which resulted in failures to recognise the severity of the patient's condition.

The Deputy State Coroner recommended that the Department of Health provide sufficient funding to conduct research into the validation of the Q-ADDS tool and conduct research to identify and address the sociocultural factors that influence compliance with existing hospital care escalation systems.

The Deputy State Coroner's findings are accessible on the Office of the State Coroner website at <http://www.courts.qld.gov.au/courts/coroners-court/findings>.

Use and compliance with early warning and response tools at the Rural Hospital at the time of Mr B's admission over 29-30 March 2015

Mr B's death occurred several months prior to the Deputy State Coroner's inquest.

Noting the reviewing doctor's concern about the failure of nursing staff to respond to Mr B's clinical deterioration during his final admission to the Rural Hospital over 29-30 March 2015, I sought further information about the use of the Q-ADDS chart in that facility at that time.

The Director of Clinical Governance advised as follows:

- The Q-ADDS tool was implemented at the Rural Hospital in 2011 and there was there was a version change to the tool in mid-2013;

- Compliance auditing has been undertaken since 2011 – audit results are tabled and discussed with staff at the Rural Hospital and Rural Division & Safety Quality Committee meetings and action plans are developed in response to audit results and overseen by the Director of Nursing/Facility Manager at the Rural Hospital;
- The 2014-15 compliance audit for the Rural Hospital produced a nett compliance result of 85.67% (noting the target benchmark is 80%) – this result reflects a range of scores for full completion of chart (90%); whether observations recorded as per required frequency/care plan (100%); all scores totalled accurately (80%); all observations plotted and trended (100%); whether modifications were endorsed by a medical officer (100%); whether a pain score had been recorded for each observation (50%) and whether an emergency call was made if the patient scored 8 or above (N/A);
- An internal quality audit conducted in May 2014 confirmed that education had been provided and clinical staff had the required understanding to perform and document patient observations to support the early identification and management of patients who are at risk of deterioration;
- Use of the Q-ADDS tool is also routinely checked at biannual Patient Safety Rounds;
- The Q-ADDS Rural and Remote chart (version 5) was in use at the Rural Hospital during Mr B's admission over 29-30 March 2015 and had been completed "correctly" though the Pain Score and sedation scores on page 4 were not completed but included in the separate Alcohol Withdrawal Scale (AWS) chart;
- The AWS chart reflected regular Alcohol Withdrawal Observations and subsequent scoring – it was considered that Mr B's scores on this chart were very reflective of Mr B having alcohol withdrawal and while he scored high in the tremor category (directly related to alcohol withdrawal) this had no correlation with subdural haemorrhage;
- The HHS was confident that the Q-ADDS and AWS charts together do not reflect obvious deterioration and were used well during Mr B's admission;
- There is now additional monitoring of the use of the Q-ADDS tool with scores included as part of Clinical Handover;
- The "new" Q-ADDS chart referred to by the RCA review team may have assisted;
- As at 30 May 2016, the "new" Q-ADDS chart was being trialled across the HHS at several rural hospital sites. It is anticipated to be

implemented at the Rural Hospital by the end of 2016; and

- The HHS has developed an online training tool for Q-ADDS and recognising patient deterioration. It is mandated in the HHS as an annual clinician education requirement, role specific for nursing staff. Training records maintained by the HHS indicate 100% of the Rural Hospital nursing staff have successfully completed this training, which also includes the use of the HHS Clinical Concern Escalation algorithm.

Could the “new” Q-ADDS chart have prompted a different approach to Mr B’s clinical management during his admission at the Rural Hospital over 29-30 March?

The Department of Health Patient Safety and Quality Improvement Service explained that in November 2015, the statewide Q-ADDS review committee agreed to trial a revised version of the Q-ADDS chart in 2016. The revised trial chart includes a new item in the Consciousness section which enables a patient to score 4 for a patient if they present with “new confusion/agitation”. The significance of a score of 4 is that this mandates a medical review of the patient within 60 minutes even if the patient is scoring a zero on all their other observations. The rationale for this revision is to increase recognition and review of a potentially septic patient (altered mental state is a key criterion in identifying sepsis) or an unwell patient from other causes that are not currently reflected in their other observations. The Pain and Sedation sections on the chart remain unchanged and provide for independent escalation irrespective of the total Q-ADDS score.

I arranged for the Patient Safety and Quality Improvement Service to undertake a retrospective plotting of Mr B’s observations on both:

- (a) the Q-ADDS chart (Version 5) in use at the time of his death (noting the HHS advice that the Pain and Sedation scores had not been completed on this document but were included on the separate AWS chart); and
- (b) the revised version of the Q-ADDS chart currently being trialled across Queensland.

The retrospective plotting exercise produced the following outcomes:

- (a) if the pain score of 6/10 that was recorded on the Rounding Chart at 9:00pm on 29 March and at 4:00am on 30 March was recorded on the Pain Score at Rest Table on page 4 of the Q-ADDS Version 5, the Legend beneath the graphing advises the following actions:
 - Administer Analgesia;
 - Consider team leader / medical officer review within 60 minutes of analgesia. In this regard it was noted that Mr B had been reporting a pain score of 6/10 from 7:40pm on 29 March.

(b) considering that Mr B was receiving diazepam on a regular basis for positive Alcohol Withdrawal Scores, if a Sedation score was recorded on page 4 of the Q-ADDS Version 5 (for patients receiving potentially sedating medication) at 2:30pm on 30 March in accordance with the notation in the medical file that the patient was presenting as Drowsy ++, it is possible that this would have met the criteria for a Sedation Score of 2, which the associated actions table advises the following actions:

- Ensure patient receives oxygen and monitor oxygen saturation;
- Withhold additional sedating medication (until medical review);
- Notify Team Leader;
- Notify Medical Officer to review within 15 minutes (remain with patient until review);
- Monitor Q-ADDS, Sedation and Pain score (minimum 15 minutely);
- If concerned, initiate Emergency Response.

(c) the new version of Q-ADDS (Version 6) would have triggered a medical review at 8:00pm on 29 March as per the documentation on the Alcohol Withdrawal Score chart that records Mr B as being agitated – he would have scored a 4 in the “New confusion / agitation row” in the Consciousness section on page 2.

Conclusion

Mr B died from complications of undiagnosed subdural haematoma. The underlying cause of the subdural haematoma is not known but the autopsy results support a finding that bleed had developed over a number of weeks. Mr B's repeat presentations to the Rural Hospital over the period 24 February – 29 March represented a missed opportunity to have explored the possibility of intracranial haemorrhage as the cause of his ongoing headache. Instead, his management in the latter presentations was focussed on a clinical assumption of acute alcohol withdrawal syndrome. However, I accept the independent clinical advice that this was not unreasonable given Mr B's history and presenting signs and symptoms, particularly in the later presentations when a tremor was present. The lack of local CT scanning equipment was also a confounding factor though I accept that even had it been available locally on 28 March 2015 it cannot be stated with any certainty that Mr B would have survived with neurosurgical intervention at that stage. There were opportunities during Mr B's admission to the Rural Hospital over 29-30 March for hospital staff to have recognised and responded to his clinical deterioration sooner. However, even had this occurred, I accept that it is unlikely medical intervention at that point in time would have changed the outcome for Mr B.

I am satisfied that the Hospital and Health Service has undertaken a comprehensive review of the care provided to Mr B by the Rural Hospital and

appropriately identified the factors that led to the missed opportunity to diagnose Mr B's brain injury.

The use and compliance with the Q-ADDS early warning observation and response by the Hospital and Health Service facilities has been the subject of recent coronial inquest. I note the actions taken by the HHS in response to both that inquest and the circumstances of Mr B's death and am satisfied that the HHS is taking appropriate steps to address the issues arising from Mr B's clinical management.

The events of Mr B's final admission at the Rural Hospital demonstrate yet again the importance of correct use of early warning observation and response tools to maximise patient safety.

Findings required by s. 45

Identity of the deceased – Mr B

How he died –

Mr B died from complications of undiagnosed subdural haematoma. The underlying cause of the subdural haematoma is not known but the autopsy results support a finding that bleed had developed over a number of weeks. Mr B's repeat presentations to the Rural Hospital over the period 24 February – 29 March represented a missed opportunity to have explored the possibility of intracranial haemorrhage as the cause of his ongoing headache. Instead, his management in the latter presentations was focussed on a clinical assumption of acute alcohol withdrawal syndrome. However, I accept the independent clinical advice that this was not unreasonable given Mr B's history and presenting signs and symptoms, particularly in the later presentations when a tremor was present. The lack of local CT scanning equipment was also a confounding factor though I accept that even had it been available locally on 28 March 2015 it cannot be stated with any certainty that Mr B would have survived with neurosurgical intervention at that stage. There were opportunities during Mr B's admission to the Rural Hospital over 29-30 March for hospital staff to have recognised and responded to his clinical deterioration sooner. However, even had this occurred, I accept that it is unlikely medical intervention at that point in time would have changed the outcome for Mr B.

Place of death – A Regional Base Hospital
Date of death– 31 March 2015
Cause of death – 1(a) Subdural haematoma

**Ainslie Kirkegaard
Registrar
15 September 2016**