QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of Daniel William Paton**
TITLE OF COURT:	Coroner's Court
JURISDICTION:	Brisbane
FILE NO(s):	COR 2008/42
DELIVERED ON:	22 June 2012
DELIVERED AT:	Brisbane
HEARING DATE(s):	8 June; 21 – 25 November; 29 November 2011
FINDINGS OF:	Christine Clements, Deputy State Coroner
CATCHWORDS:	CORONERS: Inquest – post-operative pain management; use of patient controlled analgesia; concurrent administration of Temazepam and Phenergan; respiratory depression, obstructive sleep apnoea; sedation scoring
REPRESENTATION:	
Counsel Assisting:	Mr Justin Harper, instructed by the Office of the State Coroner
The Royal Brisbane & Womens Hospital:	Mr John Allen, instructed by Minter Ellison Lawyers
Dr Melva Macauley & Dr Heather Butler:	Mr Andrew Lucich, instructed by Avant Lawyers
Dr Kathryn Wilks:	Ms Patricia Feeney, instructed by Moray & Agnew Lawyers

Introduction

Daniel William Paton suffered a fractured left radius which required surgical repair. In May 2007 he underwent an open reduction and internal fixation, involving the insertion of a metal plate in his wrist. During the following 12 months recovery period, Mr Paton suffered ongoing pain, which was treated unsuccessfully. A decision was therefore made to proceed with an elective removal of the wrist plate, which occurred on 23 May 2008 at the Royal Brisbane and Women's Hospital. He died five days later in hospital on 28 May 2008. He was forty five years of age.

The surgery was performed by orthopaedic surgeon, Dr Trevor Gervais, with Dr Paul Mead as the consultant anaesthetist.

There was no evidence indicating the surgical removal of the plate was a factor in Mr Paton's death, other than possible consideration of the anaesthetic and pain management drugs required to enable the procedure to be performed and manage his pain postoperatively.

The inquest examined the evidence to clarify what caused Mr Paton's unexpected death and reviewed his medical care. It considered whether there were any health care related matters relevant to his death, and, if so, whether such matters have been addressed.

The following sequence of events is based on the evidence and includes some conclusions reached from the evidence.

Administration and management of anaesthetic during procedure

Dr Paul Mead is an experienced consultant anaesthetist at the Royal Brisbane and Women's Hospital. He was assisted by Dr Heather Butler, who was in training as a resident medical officer anaesthetist. She reviewed Mr Paton's chart and provided a summary of information to the anaesthetist who retained responsibility for the pre-anaesthetic assessment. At an earlier date prior to admission, an integrated assessment form had been completed by a nurse with Mr Paton. This process aimed to identify any preliminary matters which might have required referral for a formal pre-anaesthetic risk assessment to be undertaken by an anaesthetist.[1] This issue will be reviewed later.

On the day of surgery the purpose of the pre-operative assessment was to obtain the necessary information about the patient, assess the risks and manage the form of anaesthetic and pain medication required. The history taken by Dr Butler from the record indicated recently diagnosed diabetes, a body mass index of 40, hypertension, osteoarthritis of the spine, previous general anaesthetic classified as 'easy', allergies to erythromycin and penicillin and past anaesthetic reaction. All of these matters were risk factors in the performance of an anaesthetic and in the overall outcome of the procedure.

[1] B15 PM3

Mr Paton was noted to take the following medications: antacid, Metformin, Zanidip, magnesium and multivitamins.

Mr Paton had reported taking an unknown quantity of narcotic drugs at home. Dr Mead reviewed the previous notes. He concluded during the previous admission in 2007, Mr Paton had been taking similar medication and he had been declared opioid tolerant at that time. Dr Mead was cautious about the reliability of the information from Mr Paton and the record of the information, particularly with respect to the amount of Phenergan taken by Mr Paton.[2]

Dr Mead explained the relevance of whether a person is narcotic naive or opioid tolerant. The depth of anaesthesia required to ensure a patient is 'not aware' during the anaesthetic varies depending on their previous exposure and tolerance to narcotics. The information about previous use of opioids provides some indication of the likely response by a patient to morphine used for analgesia during the anaesthetic and post-operatively. It provides an indication of how much pain relief should be prescribed as a starting basis post-operatively. Dr Mead informed the inquest if a person was accustomed to narcotics they rapidly develop a tolerance to narcotics. Normal type of doses at home can make a noticeable difference during the anaesthetic and post-operatively.

Dr Mead considered the major other risk factor relevant to Mr Paton was his Body Mass Index of 40, which creates a risk of obstruction of the airway. Achieving the balance of narcotics became even more important in this scenario.

The major effect of morphine is pain relief. The major side effect, which limits how much you can give for pain relief, is respiratory depression. Dr Mead explained it was always the aim to achieve a realistic trade off between respiratory depression and the amount of pain relief provided.

Dr Mead said he discussed with Mr Paton the possible difficulty he would have in prescribing the right amount of post surgery medication and how it depended on what he was currently taking. Mr Paton indicated he did not know exactly what he was taking. This made the anaesthetist take a more precautionary approach. Dr Mead gave Mr Paton the option of delaying the procedure to another day so the medication issue could be clarified but Mr Paton declined. Dr Mead did not pursue the issue further. He said he was not all that comfortable about proceeding because Mr Paton was a high risk patient, and it was an elective procedure that could easily be postponed to another date.

Dr Mead said he anticipated:

> *there would be a succession of people throughout the day all attempting to get his analgesia right with a whole lot of different formulas…To try to get this (pain relief) right, with not very good results..*[3]

[2] T2-9, l27-45
[3] T 2-10 L 32-37

Dr Mead also questioned Mr Paton about whether he had a respiratory tract infection which he denied. Dr Mead said respiratory tract infections in anyone are an added risk in anaesthesia, and even more so in a patient with multiple other risk factors.

There were no observations made either by the resident medical officer or Dr Mead that raised a suspicion the patient had a respiratory tract infection prior to the operation. There was no clinical evidence of infection. Dr Mead said his practice is to ask every patient about this, because it is a risk factor. Dr Mead said he would have cancelled the procedure if there was evidence of infection. The only observation slightly out of the normal range was a recorded temperature of 37 degrees but Mr Paton denied having a cold or any illness.

Had the procedure been postponed there would have been the opportunity to contact Mr Paton's treating general practitioner and check information regarding prescribed medications, but this decision was not taken.

Dr Mead did not recall any mention or notation indicating the possibility Mr Paton suffered from sleep apnoea.

During the procedure Dr Mead gave 10mg intravenous morphine as well as 100mcgs of Fentanyl. It is noted his recording of drugs administered was incomplete, which he acknowledged.

The anaesthetic and removal of the plate from Mr Paton's wrist proceeded without incident. The surgery took a little longer than planned, during which Dr Mead gave 10mgs of intravenous morphine, and 110mcgs Fentanyl which he considered a conservative dose for a man of Mr Paton's size.

Subsequently, Dr Mead noted in the course of the operation that a small quantity of brown coloured secretion was observed in the patient's endotracheal tube towards the end of surgery. This was typical of respiratory tract infection or heavy smoking.[4]

Dr Mead accompanied Mr Paton to the recovery ward and handed over to Registered Nurse Ms Kirkwood.

Recovery ward period

After surgery Mr Paton was cared for in the recovery ward. During this period the anaesthetist had authorised up to five doses of intravenous morphine (5mg each) which was administered. Intravenous Ondansetron 4mg was authorised but not required.

At about 16:50, Dr Mead received advice from the recovery ward, relayed to him in theatre, indicating Mr Paton required more pain relief. He instructed his resident to review the patient and then authorised a prescription for a patient controlled analgesia device (PCA) to administer more pain relief overnight. The device was to cease by 06:00 on 24 May 2008 unless otherwise advised.

[4] Exhibit B1 , paragraph 20

The prescription included referral to the acute pain management service for out of hours coverage, ongoing analgesia management of any side effects and any possible narcotic withdrawal. The service had a specially trained nurse and an anaesthetic resident available 24 hours a day, including over the weekend when Mr Paton was a patient.

The prescription was for a background infusion of 2mg of morphine plus a demand dose of 2mg morphine with a 10 minute lockout. This enabled Mr Paton to access up to 12mgs of morphine in an hour, subject to the nurse's authority to withdraw the background infusion.

One hourly observations were required during the first six hours of availability of the PCA. This was up to about 22:50 on 23 May.

Two hourly observations were then required for the following six hours, (until about 04:50 on 24 May). The device was to cease at 06:00 on 24 May.

At about 18:00 on 23 May Mr Paton was transferred to the 23 hour ward.

23 hour ward

Between 18:00 and 20:45 on 23 May, Nurses Moloney, Tsang and Harridge initially cared for patients in the 23 hour ward. Nurses McGrath and Nelson then took over Mr Paton's care.

Acute Observation Form

Observations were made and recorded on the acute observation form in the 23 hour ward. The exhibit reveals entries have been overwritten. Nurse Moloney says she pre-recorded only the times on the document to assist the incoming night shift. She wrote times in as 19:00, 20:00 and 21:00.

After the first entry recorded at 18:05, all time entries have been overwritten. No-one has acknowledged doing this and there is no explanation for how this occurred. .

Nurse Harridge, who took and recorded Mr Paton's observations in the 23 hour ward at 19:20, said her entry had subsequently been overwritten by an unknown person as 19:30.

The entry at 20:30 appears on the evidence to have been written by Nurse Tsang.

Nurse Nelson acknowledges writing the contents of the entries recorded against the time of 21:30, (when oxygen saturation was 84%), and then at 22:30, (when oxygen saturation was 81%). She denied writing in the times, which clearly have been overwritten. According to her statement she also took observations and recorded them at 22:55, noting this included the oxygen saturation record of 96%. The exhibit shows that entry, but the time has been overwritten as 00:30, by which stage Mr Paton had been transferred to ward 8AN.

The evidence from the record and the evidence of all the nurses, Moloney, Tsang, Nelson, McGrath and Harridge have been considered. Unfortunately the overwriting has caused confusion and unreliability of the record. It cannot be determined when this occurred, or whether it had any impact on those using the chart at the time, or whether the overwriting occurred at a later time. The document cannot be relied upon and it confuses the other evidence.

At about 20:55 Nurse McGrath described Mr Paton as very drowsy, twitching, confused and agitated. Nurse Nelson agreed. They formed the view he had too much morphine in his system and he was continuing to access more on demand. They decided to turn off the background infusion on the PCA at about 21:05-21:10.[5] This was within the nurses' authority and in accordance with the prescription written by Dr Mead. They needed the assistance of Nurse Moloney to turn off the background infusion, which raises some doubt about their assertions of familiarity with the PCA device and its operation.

Nurse Moloney (who finished her shift at 21:00) confirmed she helped Nurses McGrath and Nelson to turn off the background infusion. Mr Paton was asleep at 21:05 when Nurse Moloney left his bedside.

Nurse Nelson told Nurse McGrath she took Mr Paton's observations about 10 minutes after the background infusion was turned off. Nurse McGrath said she saw Nurse Nelson write these observations in at the time marked 21:30.

Nurse Moloney's statement indicates her review of the acute observation form showed that Nurse Nelson completed the observations recorded as 21:30. Originally, Nurse Moloney said she recorded the time prospectively as 21:00, but this time was subsequently overwritten. She did not see Nurse Nelson make these observations or record them as she had left the ward by 21:30.

Incident relating to removal of backscratcher

An incident occurred at about 21:15 in the 23 hour ward. Nurse McGrath removed Mr Paton's backscratcher whilst he was asleep. The backscratcher was a metal garden hand tool - a garden fork - used by Mr Paton to alleviate a persistent itch. It is concluded on the evidence that:

- Mr Paton was distressed and angry when he woke up and found the implement had been removed and would not be returned to him;
- He was verbally abusive to staff and shook his bed whilst remaining in it;
- Other patients on the open ward who could see and hear what occurred were upset and frightened by the incident; and
- The two female nurses were upset and fearful for the patients and themselves.

Nurse Perryhaines, who was the 23 hour ward nurses' direct supervisor, attended the unit at the request of the two nurses. Nurses McGrath and Nelson gave him verbal information summarising Mr Paton's medical condition, decrease in oxygen saturations, non compliance with oxygen mask

[5] Exhibit B14, p 15-20

and nasal prongs which led to stopping the background infusion of morphine, and his behaviour. The possibility of sleep apnoea was raised at this time.

Security was called after Nurse Perryhaines spoke with Mr Paton. He considered Mr Paton's behaviour exhibited symptoms similar to a psychiatric patient. He said '*He was red in the face and he appeared flustered and fidgety and could not keep still. His breathing was more of a pant and he looked like he had worked himself into a state, with child like behaviour*.'[6] However, Nurse Perryhaines did not read the chart or examine Mr Paton or take his observations.

Initially six security staff attended but some of them subsequently left.

Nurse Perryhaines advised Nurse McGrath that the Anaesthetic Registrar and Orthopaedic Registrar were in theatre and unavailable to review Mr Paton. The registrars suggested calling the Surgical Ward Call.

The Acute Pain Management Service was not contacted to attend and review Mr Paton.

Additional assistance was offered by the After Hours Nursing Manager, Mr Brennan, who offered an assistant in nursing but this offer was declined by Nurse Perryhaines. Mr Brennan suggested the possibility of physical restraint, and ultimately arranged to transfer Mr Paton to ward AN8.

Nurse Perryhaines says he observed Nurse Nelson take observations in the presence of security and record them at 21:30, but this contradicts his statement that security arrived at 22:00.

At this time I record I have no hesitation in accepting the evidence that Mr Paton was distressed and angry and that in this state, he was abusive and loud. I also accept that the nurses and other patients were frightened of him. He was a large man. Nurse McGrath did not interact with him from this time and it was left to Nurse Nelson to manage the situation. It was appropriate that help was called for. The nurses reviewed his chart at this time and noted previous prescription of a PCA, previous assessment of Opioid tolerance, his regular medications and the use of Phenergan and Oxycontin during the previous admission. They noted a previous episode of low oxygen, and a reference to sleep apnoea in the discussion between Nurse Nelson and Mr Paton prior to the backscratcher incident. Mr Paton had also been non-compliant with his oxygen mask/nasal prongs. I also note the nurses, including Nurse Perryhaines reached a preferred position they wanted Mr Paton moved from the unit in the best interests of all concerned. This was prior to the arrival of Dr MacAulay.

Nurse Nelson explained the decision to call ward call or the orthopaedic registrar seemed the most appropriate one to take and was in fact made by the senior nurse present at the time, Nurse Perryhaines. This decision did not

[6] Paragraph 22

apparently consider reference to the Pain Management Service as the specialist unit to be referred to when a patient is receiving pain relief via a PCA. No attempt to contact the service was made by any of the three nurses, or subsequently by Dr MacAulay.

Medical review in 23 hour ward

Dr Melva MacAulay commenced her shift as surgical ward call doctor at 08:00 on 23 May 2008. She attended the 23 hour ward after being paged between 21:35 and 21:50 (on the varying evidence of times) to review Mr Paton. It was therefore 13½ hours after she commenced her shift when she first became involved with Mr Paton.

Dr MacAulay spoke with the nurses present on the ward who informed her of Mr Paton's history, condition and behaviour. Her description of the situation on her arrival was '*chaos*'. Her impression was the nurses' view was the patient had- '*been aggressive, and they wanted something done*.'[7]

Her recollection was on arrival, staff and patients were distressed and security officers were present. She said a curtain had been drawn around Mr Paton's bed and he was out of the bed in his underpants. Her recollection was she spoke with three (female) nurses, but it appears she was erroneous in this recollection. She confirmed Mr Paton was focused on the return of the confiscated backscratcher. She did not feel intimidated by him with security staff present, but could not initially gain his cooperation. She then reviewed his chart. She tried to contact the evening medical registrar but could not reach that person. She wanted advice because of the complexity and difficulty of the situation she was faced with. She considered there may be psychiatric issues, as well as medical issues, some of which might not have been diagnosed. She was concerned he may have a drug dependency due to a PCA in place for a relatively minor operation. She felt the nurses were giving her conflicting information, with one appearing to want more sedation, and the other wanting the PCA removed. She said one nurse indicated the nurse unit manager also recommended sedation for Mr Paton. It was obvious the unit was a small space and other patients were scared.

All the nurses denied expressing any view regarding the need for sedation or alternatively the need to remove the PCA. It was of course the doctor's responsibility to assess the patient, the information from all sources and reach a clinical decision for appropriate treatment if required. It was not the nurse's responsibility. However, I do not accept it was a passive neutral delivery of information by any of the nurses to the doctor at the time. They were understandably distressed and it is unsurprising after listening to and reviewing the evidence that Dr MacAulay 'heard' conflicting information and indeed, opinions. It was a difficult situation for the inexperienced doctor to reconcile.

After consideration of all the evidence it was clear Dr MacAulay was insufficiently knowledgeable about the patient control analgesia regime, and

[7] T4-11 lines 1-2

the implications of being called to review a patient who had one prescribed. It was unsatisfactory that she did not identify the acute pain management service as the appropriate reference point for advice.

She appropriately reviewed the chart noting previous medications and prior assessment of opioid tolerance. She did not note the instruction associated with the PCA not to prescribe a sedative without reference to the pain management service. She noted previous prescriptions of Phenergan and Oxycontin prescribed during Mr Paton's 2007 admission. She noted the nursing staff raised the possibility of sleep apnoea although there was no record of a formal diagnosis; indeed the previous anaesthetic admission recorded a denial of obstructive sleep apnoea. She noted a previous observation of low oxygen of 88% but could not identify who made this record. The most recent reading was at 20:30 and recorded as 92-95%.

Dr MacAulay spoke with Mr Paton. She did not find Mr Paton threatening whilst she spoke with him, but security was present at this time. She attempted to phone the Medical Ward Call doctor for advice but was unsuccessful. She then prescribed 20mgs of Temazepam to calm him down[8] and 30mgs of Phenergan to alleviate the itch.

The PCA prescription prohibits further prescription of sedatives (Temazepam) without reference and authorisation by the acute pain management service. By contrast, Phenergan is noted as a medication which can be prescribed for itch even though it is known to have sedating properties.

Dr MacAulay did not contact the Acute Pain Management service prior to prescribing the sedative, Temazepam. She referred to information she gained from the nurses that there had been an unsuccessful attempt to contact the anaesthetist on call. Her evidence was concerning with respect to her lack of knowledge of the requirements of safe practice when a patient is receiving medication via a PCA. She said it was the first patient she had dealt with directly who had a PCA device. Although she reviewed Mr Paton's chart and gathered pertinent information and history, she failed to read the documentation concerning the PCA prescription. In particular she was unaware of the embargo against prescribing sedation without reference to the Acute Pain Management Service where a PCA was in place. This was despite her evidence she had done five weeks of anaesthetic training and three weeks of doing rounds with a pain anaesthetist from the acute pain management service.[9] She did not think she had ever read the general instructions for use of a PCA.

Nurse Nelson administered the Phenergan and Temazepam and Mr Paton 'calmed' in about 20 minutes.

Nurse Nelson took observations when Dr McCauley first left the 23 hour ward. Nurse McGrath said she saw Nurse Nelson record these at 22:30. Nurse Perryhaines' recollection is Nurse Nelson took observations at 22:55.

[8] T 4-19, l 49-50
[9] T4-23, Lines 30, through to 4-24, 4-25

Nurse McGrath confirmed the main reason for transferring Mr Paton to another ward *'was to remove him from our ward, so for the safety of- not safety, but they were scared, the other patients were scared*.'[10]

After Dr MacAulay reviewed the patient and left the unit for a meeting, another set of observations were taken. Presumably these are the observations written at 22:30. No call to the pain management service was made after these observations. Nurse McGrath agreed Dr MacAulay had instructed the nurses to maintain Mr Paton's oxygen levels at above 90%. She could not say how this was achieved; she did not think a continuous oxygen monitoring device was employed. Both nurses were theoretically caring for all 11 patients but in fact it was Nurse Nelson who was looking after Mr Paton by this time. Nurse McGrath thought after Dr MacAulay's first visit Mr Paton was keeping his oxygen mask on and so assumed the saturations were alright. Previously when he was agitated he would not keep the mask on.

Nurse McGrath indicated they had been told the patient was being transferred to another ward by this time.

It is difficult to resist the inference that Mr Paton's care was being left to the next ward to resume and was not actively monitored in accordance with Dr MacAulay's direction during this period.

Dr MacAulay returned to the 23 hour ward and it was then she entered notes on the record. Her evidence was Mr Paton appeared to be more drowsy than she would have expected after administration of the Temazepam and Phenergan. She said she was concerned the last two oxygen saturation readings were low. She was confused because she considered his respiration rate and pulse rate were high despite appearing drowsy. She could only obtain monosyllabic answers to questions even though he responded to commands to breathe deeply. She said an arrangement had been made by that time for Mr Paton to be transferred to another ward. [11]

There is an unresolvable dispute on the evidence whether or not certain nursing observations were on the record and available to the doctor on the two occasions when Dr MacAulay attended the 23 hour ward. As earlier referred to, the state of the acute observation form is unsatisfactory and the conflict in evidence makes it impossible to resolve certain issues.

There was evidence concerning communication between Dr MacAulay and the night medical registrar, Dr Wilks. There was expert opinion regarding both doctors' performance of their respective roles. On balance, it appears Dr MacAulay insufficiently raised her concerns with Dr Wilks who therefore did not consider there was a problem, nor did Dr MacAulay request Dr Wilks to attend upon Mr Paton. I note Dr MacAulay's evidence as follows:

[10] T 2-64
[11] T 4-11, L 11-13

Did you ask Dr Wilks to come down and see Mr Paton? Again, I don't think I specifically asked that question, no.[12]

Dr MacAulay listened to Mr Paton's chest. The chart notation was 'chest clear'. After Dr MacAulay received advice from Dr Wilks, she recorded a plan for a septic screen to be arranged overnight, if his temperature was greater than 38 degrees. Oxygen was to be maintained to keep saturations above 90%. A chest x-ray was to be followed up. She then left the ward and completed her long shift, knowing the orthopaedic registrars were going to see Mr Paton and he was being transferred to another ward.

I accept Dr Wilks' evidence she was not informed the patient was on a PCA, a matter which could have prompted involvement of the pain management service.

Nurse Perryhaines recalls Dr MacAulay returned to the ward at 23:00, whereas Dr MacAulay recalls it was about 22:45.

Nurse Nelson told Nurse McGrath she took further observations. Nurse McGrath did not see her record these.

I repeat there is unfortunately no reliability around the record of the acute observation form and the sequence of these various events cannot be reliably established.

I understand Dr MacAulay is being assisted with additional support and training, and in these circumstances it is not necessary for the coroner to comment further.

Orthopaedic registrar attendance

After Dr MacAulay left the 23 hour ward for the second time, the two on call orthopaedic registrars in the trauma unit, Dr Jodi Dennis and Dr Simon Elix,[13] attended and spoke briefly with Mr Paton. Dr Elix had some background relationship with Mr Paton and he discussed with him the problem about the backscratcher and its removal. He suggested to Mr Paton that he find an alternative to assist him. Mr Paton became a little teary eyed and apologised to Dr Elix. There were no other issues or complaints from Mr Paton about his condition and neither doctor noticed anything of concern during this brief interaction. His chart was not reviewed and no notes were made. They then spoke with nurses recommending an alternative back scratcher. The nurses did not raise any clinical issues. No notes were made in the medical chart. They left at about 23:15-23:20 at which time Mr Paton was calm.

Dr Elix recalled the initial request to review Mr Paton was made by Nurse Perryhaines who came into theatre while they were preparing for surgery. As they were unavailable at the time, he was advised to contact the orthopaedic ward call.

[12] T4-34 , l 55-57

[13] Dr Ellis had been involved in his earlier treatment, reviewing his wrist after initial insertion of plate. He recalled Mr Paton's requests for opiates for pain relief, which was declined. Exhibit B6

Transfer to ward 8AN

At about 23:30 Mr Paton was transferred to the overnight ward 8AN. He was accompanied by the two remaining security officers, a wardsman and Nurse Perryhaines who provided a verbal handover to staff on ward 8AN. He had not read Mr Paton's chart at any time.[14]

Nurse Perryhaines returned to the 23 hour ward where the matter was discussed between the nurses and an online PRIME incident report was recorded by Nurse Perryhaines.

Nurse Vicky Clarin commenced work at 20:45 on 23 May 2008 in ward 8AN. She was the shift co-ordinator from 22:45.

She cared for seven patients, three of whom were in the high dependency area. Her patients were in beds 46-52.

Clinical Nurse Kirby told Nurse Clarin a patient named Mr Paton would arrive from the 23 hour ward. She recalled the information indicated Mr Paton had an operation to remove a wrist plate, and mention of an allergic reaction, but no explanation about what this related to. There was mention of him being given Phenergan and that he had caused a disruption in the 23 hour ward and needed to be moved to ward 8AN.

Clinical Nurse Kirby said Mr Paton had required morphine, and his oxygen saturations were low. However, a surgical ward call doctor was attending him prior to transfer. Nurse Clarin did not recall any information concerning a chronic itch or a garden fork.

Nurse Clarin recalled Mr Paton arriving with a male nurse, Nurse Perryhaines, and two security officers. She noted intravenous fluid, a patient controlled analgesia device and he was wearing an oxygen mask.

He was assigned to bed 49 in Nurse Clarin's care. He moved independently from the stretcher to the bed.

She recalled Nurse Perryhaines provided handover information regarding the wrist plate removal operation, subsequent problems with pain relief and subsequent aggressive behaviour after his backscratcher was removed. She was told he had been given Phenergan and Temazepam, but not why. The information provided focused on the garden fork incident and Nurse Perryhaines indicated he had not been caring for Mr Paton. She was advised to use the duress button if necessary.

She reviewed the medication sheet, observation sheet and charts with observations recorded since Mr Paton was in the recovery ward. These were placed in a bedside folder outside the patient bay. The post operative notes were filed in the medical chart at the nurse station.

[14] Exhibit B8 paragraph 17

She read the patient care plan and understood observations were to be every four hours.

Her evidence was she also understood a patient with a PCA required hourly observations for the first four hours, then two hourly observations for the next six hours, followed by four hourly observations. Therefore she calculated the next observation were due at 02:00.

She took some observations shortly after Mr Paton's arrival at about midnight. She noted Mr Paton was drowsy but capable of obeying commands.

She did not record these observations in the folder outside the bay as she was diverted to caring for another patient with a nosebleed. She made a temporary note on a worksheet in the nurse's station, recorded (incorrectly) at the end of the line for the patient in bed 50.

Observations made at about midnight were - blood pressure 140/70; oxygen saturations 93% and pulse 83.

The respiratory rate was not recorded but Nurse Clarin's evidence was she measured this and she remembered it was 24 breaths per minute. Other observations required to be taken and recorded in the acute observation form, including the patient's temperature, level of consciousness and details of use of the PCA were not taken or recorded. The inescapable conclusion is the required level of observation was not performed in ward 8AN.

Nurse Clarin did not record any of the entries for the observations she did take on the appropriate acute observation sheet.

At about 00:15 Nurse Clarin returned to Mr Paton's bed. He was scratching his nose and taking his oxygen mask off. She re-applied the mask and he appeared to fall back to sleep.

At about 00:30 another patient requested earplugs due to the sound of snoring from Mr Paton. Nurse Clarin then went to Mr Paton who was asleep and snoring loudly. She called out his name and he started to scratch himself with a wooden ruler. There was a brief conversation about his itch and he went back to sleep. She did not take further observations at this time.

About 01:00-01:30 another patient in bed 47 was snoring very loudly and was reviewed. While doing this Nurse Clarin noticed Mr Paton was still apparently asleep and snoring but she had no cause for concern.

Arrest and response

At about 01:45 Nurse Clarin attended on the patient in bed 47 and could hear Mr Paton still snoring. She then went to the pan room before returning at 02:00 to Mr Paton. He was taking slow shallow breaths and was unresponsive. There was froth at his mouth. She obtained help from Nurse Tribe. A sternal rub was applied and when there was no response an emergency arrest was called. Nurse Clarin noted Mr Paton's oxygen

saturation was 33%. Nurses Robinson and Manwende came to assist pending the arrival of the arrest team. Mr Paton was resuscitated and transferred to intensive care.

Intensive care specialists, Dr Hedge and Dr O'Donoghue stated Mr Paton sustained a massive aspiration into his lungs due to his unconscious state. He suffered a severe neurological injury due to hypoxic encephalopathy. Despite all treatment he did not make a neurological recovery. He died on 28 May 2008 in the presence of family members who had been informed of his collapse and failure to recover.

Evidence regarding possible causes or contributing factors in Mr Paton's death.

Autopsy

Dr K Urankar, a forensic pathologist, performed an autopsy on 29 May 2008. She concluded Mr Paton died due to hypoxic–ischaemic brain injury sustained following an episode of prolonged hypoxia. The underlying cause of hypoxia was considered. In Dr Urankar's opinion it was possible that morphine administered via the PCA together with Temazepam and Phenergan may have decreased his consciousness. However, loss of consciousness would stop the demand release of morphine from the PCA. The pathologist noted a previous incident of de-saturation following surgery while on a PCA. She also considered the possibility and potential for sleep apnoea in a man of Mr Paton's size. A person suffering sleep apnoea can stop breathing during sleep and experience episodes of hypoxia.

The anaesthetist, Dr Mead gave evidence he observed dark coloured fluid from the endotracheal tube towards the end of Mr Paton's operation. Although Mr Paton denied having a cold or respiratory infection, Dr Mead considered, especially in hindsight, there was a strong possibility Mr Paton had such an infection. He expressed the view he could have had pneumonia. Dr Mead said:

> *'Coupled with evidence of a marginally elevated temperature as with any general anaesthesia, the risks involve predilection to go to phenomena, cardiac arrhythmias, for some reason that we don't really understand, anaesthesia and/or surgery leads to a problem with the - a problem with the auto immune system in the body, and so the risks associated with colds and chest infections escalate if you give them an anaesthetic and surgery while they've got such an infection. Risk is both intra operative and post operative.'*

He noted at the time Mr Paton became distressed, his respiratory rate became elevated, which suggested poor lung function and possibly high carbon dioxide as well as low oxygen levels.

Of course in retrospect one asks the question why further observations were not made given this information and why a medical review by the pain management service was not called for rather than a transfer to another ward.

Dr Mead then considered the information, not known at the time he treated Mr Paton, that he suffered sleep apnoea. Dr Mead concluded it was always possible Mr Paton could suffer a hypoxic event during sleep if he had a respiratory infection or pneumonia, irrespective of the additional risk of anaesthesia.

Dr Mead considered the combination of factors including rising temperature over time, elevated respiratory rate and evidence of coloured liquid in endotracheal tube against a background of (undisclosed) sleep apnoea together led to a conclusion of pneumonia rather than respiratory depression.

He acknowledged this was a conclusion reached in hindsight with the benefit of information unavailable to him at the time.

Professor Olaf Drummer provided expert pharmacological toxicology evidence. In summary he doubted the combined effects of the morphine accessed via the PCA and the additional medication, Phenergan and Temazepam - which can both depress the central nervous system - would have caused respiratory depression leading to hypoxia and death. He considered the overall time span when reaching this conclusion and noted the morphine would have almost entirely cleared from Mr Paton's body. He concluded he '*could not completely exclude some contribution of the administered drugs to his death, (but he) believe(d) it more likely that other factors were operating to contribute or cause his untimely death. The role of chronic sleep apnoea in conjunction with his obesity, and his heart disease are possible factors that need to be considered*.'

Professor Pam Macintyre differed from Professor Drummer regarding Temazepam and especially Phenergan and their possible impact when prescribed following morphine administration. She indicated there was a strong possibility there was a significant interaction involving the drugs given. She noted the PCA guideline itself permitted the use of Phenergan. Again this would be an appropriate matter for further review and consideration of the specialty college of anaesthetists and pain management, particularly where one hospital specifically authorises the use of Phenergan in association with PCA analgesia, and another bans it.[15]

Conclusion re cause of death

Mr Paton died of hypoxic ischaemic brain injury following prolonged hypoxia. His underlying coronary atherosclerosis contributed to his death. What caused the prolonged hypoxia is harder to determine.

This inquest has considered all of the evidence including that from the time of his admission to the 23 hour ward until the time of his arrest, his condition and

[15] T7-6, line 13

level of consciousness varied. At times Mr Paton was clearly awake, including on the first occasion when seen by Dr MacAulay, and when moving himself from the trolley to the bed when subsequently transferred to ward 8AN. But there is also evidence of drowsiness, head lolling,[16] and minimal verbal responses at other times. This included periods in both the 23 hour ward and ward 8AN when an examination of the evidence shows only a brief arousal to a nurse inquiry followed by a lapse back into sleep. There is evidence of periods of low levels of oxygen saturations, of snoring, and periods of sleeping. There was also evidence of high respiratory rates and elevated temperature. There are periods when he accessed on demand pain relief and then it appears he did not access it after 21:30 on 23 May. [17] It is noted Professor Macintyre emphasized the critical capacity to stay awake after arousal and the need for more sophisticated monitoring including blood gases to indicate carbon dioxide levels and not simply a recording of oxygen saturation levels.

The inquest also noted the conflict in evidence between experienced anaesthetists and the varying practices at tertiary hospitals with respect to the safe level of anaesthetic medication and the combination of other sedating agents with that medication. There was evidence that by the time of the arrest the measurable levels of drugs were low or negligible. Countering this was the view of Professor Pam Macintyre, Director of the Acute Pain Service at the Royal Adelaide Hospital, that it was the combination of drugs, the observed condition of drowsiness and the probable build up of carbon dioxide which together could lead to respiratory depression.

There was also the problem created when a patient withholds information relevant to assessing anaesthetic risk; in this case, sleep apnoea. There was evidence this condition alone could account for death. A careful reading of the integrated assessment document does not clearly identify sleep apnoea directly as a condition to be identified and recorded, but only presumably by inference in a question about continuous positive airway pressure treatment.

Incomplete observations and unreliable record keeping adds to potential risk and the importance of this function being reliably and fully performed and recorded for patient safety cannot be underestimated. In retrospect it also adds to the uncertainty in interpreting all the information in assessing the cause of death and contributing factors.

On the evidence the possible factors that precipitated the state of hypoxia include respiratory depression arising in the context of obstructive sleep apnoea, morbid obesity, possible respiratory infection and the administration of morphine as well as Phenergan and Temazepam.

On the evidence, none of these factors can be excluded but nor can it be concluded on the balance of probability which of these, or in what combination they might have contributed to Mr Paton's arrest which led to his death.

[16] T2-88, Lines 50-60
[17] T7-12, Lines 1-17, and 7-13, lines 48-60, and 7-14, Lines 1-14

The many factors considered by this inquest highlight Mr Paton's death was not a simple matter whereupon review of a particular action or inaction at any particular time can be highlighted as critical. The complexity of his presentation makes it even more important to review the systems aimed to safeguard patients' safety, as well as individuals' performances.

Consideration with hindsight of what measures could have been taken in this case and what measures might be considered in the future to improve patient safety - Section 46 Coroners Act

After Mr Paton's death, the anaesthetist Dr Mead reviewed and reflected upon the circumstances.

Dr Mead considered the integrated assessment undertaken prior to the day of the procedure should have triggered the nurse to refer the patient to the formal pre-anaesthetic risk assessment process by an anaesthetist. It did not. Dr Mead conceded Mr Paton was not an appropriate patient to be seen for the first time by the anaesthetist on the day of proposed surgery. However, Dr Mead maintained the administration of the particular drugs for anaesthetic and pain relief were appropriate for Mr Paton in all the circumstances.

He considered in hindsight it was unfortunate Mr Paton was moved from the 23 hour ward where staff are experienced in post surgical patients to another ward. He considered there was the potential to miss observations and to fail to appreciate any changes in the observations due to the break in continuity of care. He considered there was lack of appreciation of Mr Paton's risks in the final ward to which he was transferred. The interval between observations was an example Dr Mead raised.

In a review of Mr Paton's notes subsequent to his death, Dr Mead also noted a trend of rising temperature. Dr Mead expressed his thoughts in this passage of evidence as follows:

> '*There was a - some sort of dislocation between the staff and him over this back scratcher. Okay. In which time it was observed that his resp(piratory) rate was 30. It was observed that he had a temperature of 38.6. That he had low saturations. Now, these might have all been because he was very energetic, shaking the bed and shouting were the words that were used. But they might also have been-----*
>
> *Early signs of respiratory depression?-- Early signs of problems. Now, respiratory depression from morphine tends to be a low respiratory rate, right, not a high respiratory rate. There's something else going on here, because he's got a high respiratory rate.*
>
> *Yes?-- You know-----*
>
> *Is that perhaps the - what you thought might be an upper respiratory tract infection, or something-----?-- Well, I - I think-----*

-----of the like? Could have been?-- No, I think it's pneumonia.

Okay?-- It's an upper and lower respiratory tract infection

Now, during the anaesthetic it was noted that he had secretions, brown sputum in his endotracheal tube when we removed the tube at the end of the operation. All right. I noticed that his temperature was 36.8 in recovery room. Now, although that seems perfectly normal, put it in the light of the fact that he's been in an hour - an hour in that orthopaedic operating theatre, which routinely runs - runs at about 16 degrees and freezes us all. So it's often for the, you know, that the patient's temperature is low when they hit recovery room. But no further temperatures seem to have been done in recovery room. But then when his temperature was 38 plus later in the evening.

So you're –

But essentially your view is that at some point with all of those other factors that you've mentioned, at some point, regardless of what the instructions said at the time, a decision ought to have been made. At least in hindsight-----?-- In hindsight.

-----to say there should have been more frequent observations made?—

There should have been more frequent observations and - and there was always the opportunity to call more experienced staff. And I'm really mystified as to why that didn't happen, and I don't think its normal for that not to happen. I can only imagine that it was - you know, they were concerned about letting sleeping dogs lie since they'd already had a fight.'[18]

Dr Mead considered in hindsight a review at the time by the Acute Pain Service would have been very helpful. It may have identified whether there was a respiratory problem, or whether hypoxia was part of the formula in the aggressive behaviour. The other option was to send such a patient to intensive care. He referred to changes in admission policy to intensive care particularly where there is a suspicion of sleep apnoea, particularly in obese patients susceptible to snoring and intermittent cessation of breathing. The difficulty with this more cautionary approach is the possible lack of an intensive care bed which puts back a procedure in scheduling.

Evidence discussing the level of morphine prescribed

The inquest was provided with an independent expert review of anaesthetic and pain management with respect to Mr Paton's admission. Dr Pam

[18] T2-20 Lines 36, T2-21, Line 27

Macintyre is an Associate Professor and the Director of the Acute Pain Service at the Royal Adelaide Hospital.

In her opinion the bolus rate of 2mg of morphine capable of administration by the patient in the PCA was too high, although she acknowledged it was within the Royal Brisbane and Women's Hospital guidelines. Dr Mead however considered he had the advantage of having administered the anaesthetic and monitored the patient's need for pain relief in the recovery phase after the operation. He said the dose was tailored according to the patient's response to morphine in the recovery stage. He also pointed out guidelines are only those; they can not substitute for an experienced clinician's assessment and informed decision making of the appropriate amount of morphine for a particular patient. Indeed he said had the PCA been decided upon at an earlier stage it might have been ordered for a dose of 1.5mg with no background infusion. But Dr Mead made the decision having considered how Mr Paton reacted to the administration of morphine throughout both the operative and recovery period over some hours. He had also written up the background infusion to permit nursing staff to reduce the background infusion level down from 2mg per hour depending on the patient's needs for pain relief.

As discussed in the course of this inquest, the most appropriate forum for review of these issues is the specialist college of anaesthetists

On reflection and consideration of Dr Mead's evidence, I accept that Dr Mead assessed Mr Paton before and during the operation and adjusted and administered the pain relief in light of that assessment, having formed the view he needed more than an opioid naïve patient. Having considered the evidence of Professor Macintyre, I note she would caution against a background infusion of 2mg of morphine, preferring a lower dose of around 1mg. She also indicated a starting bolus for 'on demand' dose of 1mg of morphine (whereas 2mgs was prescribed). Professor Macintyre's approach was if a patient needed additional pain relief that level could be rapidly adjusted. However she indicated the dose prescribed would still have fallen within her hospital's guidelines.

Professor Macintyre's opinion had regard to Mr Paton suffering sleep apnoea, whereas that confirmed diagnosis was not known to Dr Mead. It can be inferred Mr Paton withheld the information. Nonetheless, Dr Mead did consider it a possibility given Mr Paton's physical size and presentation that he might suffer from sleep apnoea.

Professor Macintyre also based her opinion on an opioid naïve patient. She did indicate an adjustment could be made where a patient was assessed as opioid tolerant. Therefore, on the evidence, by the time Dr Mead prescribed the PCA it was open to him to infer in all the circumstances Mr Paton was not opioid naïve, and had a low threshold for tolerance of pain.

I accept in all these circumstances that Dr Mead reached a decision on a clinically based assessment of Mr Paton's needs and he had considered the possible risks.

Further discussion of risks related to anaesthetic and pain relief medication and whether there should be any further guidelines, particularly around the background infusions, is a matter best considered by the appropriate specialty college to review. Professor Macintyre noted there were studies suggesting caution with the level of background infusion given the risk of over sedation and possible impacts of respiratory depression.[19]

A discussion about the level and type of monitoring required by nursing staff would be pertinent, particularly given Professor Macintyre's advice that reliance on oxygen saturation levels without reference to carbon dioxide levels is hazardous. Sedation scoring and a proper understanding and recording of changes in levels of consciousness are also critical patient safety factors.

I consider the hospital has thoroughly reviewed the circumstances of Mr Paton's death and addressed many associated issues well beyond what directly caused his death.

I have already highlighted the importance of review of the integrated assessment process regarding anaesthetic risk and the critical importance for nursing observations.

I note the ongoing work within Queensland Health and at the Royal Brisbane and Women's Hospital to implement formal systems of patient monitoring all aimed to improve patient safety.

I understand there is a willingness to continue a review of matters arising from Mr Paton's death and discussion about anaesthetic and pain management practice within the auspices of the specialty college, which I commend. A copy of the inquest findings and any other material available through the coronial process will be made available to the college. There is clearly an ongoing debate regarding the safe levels of anaesthetic and other sedating medications.

Assuming a proper anaesthetic risk assessment by the initial assessment process and the anaesthetist is undertaken, it appears the most critical safeguard for patient safety is sensitive and astute monitoring of the patient by nursing staff who then respond to any subtle changes in levels of sedation. This task is far more than taking and recording a standard set of observations. I note this particularly given the evidence patients can have severe respiratory depression with a quite normal respiratory rate.[20]

Findings required by s45

I am required to find, as far as is possible, the medical cause of death, who the deceased person was and when, where and how he came by his death. As a result of considering all of the material contained in the exhibits, I am able to make the following findings in relation to the other aspects.

[19] Transcript 7-3, 10-35
[20] T7-17, lines 40-43

Identity of the deceased – The deceased person was Daniel William Paton born on 11 October 1962

How he died - Mr Paton died after suffering neurological injury due to hypoxia, which could not be reversed or treated. His collapse occurred at about 02:15 on 24 May 2008 which was about 11 hours after the completion of a surgical procedure to remove a plate in his wrist. He had been diagnosed with sleep apnoea, but this had not been revealed to his surgeon or anaesthetist, or at the pre-anaesthetic assessment. He was morbidly obese and probably opioid tolerant. He received morphine and Fentanyl during the procedure. The anaesthetist then prescribed a PCA to deliver analgesic morphine at a maximum rate of 12mg/hour commencing at about 16:00 on 23 May. The background level of 2mg morphine in the PCA was turned off by the nurses in the 23 hour post recovery unit when they considered him to be too drowsy. His oxygen saturation levels dropped. There was an apparent 'behavioural' incident during which Mr Paton was abusive and intimidating to staff. The Acute Pain Management Service was not contacted to review the patient, instead the surgical ward call doctor attended. Phenergan was prescribed to alleviate Mr Paton's itch and Temazepam was ordered to calm him.

During this period, recording of observations appears unreliable. He was transferred to ward 8AN and a partial set of observations was taken at about midnight. He was found unresponsive at about 02:15.

Place of death – He died at the Royal Brisbane and Women's Hospital, Brisbane.

Date of death – He died on 28 May 2008.

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Cause of death – The cause of death was hypoxic–ischaemic encephalopathy. It is not possible on the balance of probability to pinpoint which medical event or condition precipitated the hypoxic event. However, the evidence has identified significant factors relevant to the

circumstances leading to his death. These include respiratory depression in the context of obstructive sleep apnoea, morbid obesity, coronary atherosclerosis, possible respiratory infection, anaesthetic and pain relief medication including morphine, Phenergan and Temazepam.

Mr Paton's death was sudden and unexpected despite the existence of significant co-morbidities. It is hoped this inquest has assisted family and treating staff to review and consider the sequence of events and complex mattes involved in the events leading to his death.

Finally to the family and friends of Mr Paton, I extend condolences on his sudden and untimely death.

I close this inquest.

Christine Clements
Deputy State Coroner
22 June 2012
Brisbane