QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of Geoffrey John Hornby**
TITLE OF COURT:	Coroners Court
JURISDICTION:	Brisbane
FILE NO(s):	2010/958
DELIVERED ON:	16 April 2013
DELIVERED AT:	Brisbane
HEARING DATE(s):	27 – 28 February 2013
FINDINGS OF:	Mr Michael Barnes, State Coroner
CATCHWORDS:	Coroners: inquest, death in custody, cardiac arrest, CPR, chest compressions

REPRESENTATION:

Counsel Assisting:	Mr Peter De Waard
Princess Alexandra Hospital and employees not separately represented:	Ms Patricia Feeney (i/b Minter Ellison Lawyers)
Department of Community Safety, Queensland Corrections:	Ms Fiona Banwell

Registered Nurses Brigitte Mortimer, Daniela Tarlington and Tarra Szczurko:	Ms Sally Robb (i/b Roberts & Kane Solicitors)
Registered Nurse Damien O'Keefe:	Ms Jennifer Rosengren (i/b Thynne and Macartney)
Dr Sylvia Lee:	Ms Tsharna Stewart (Moray and Agnew Lawyers)

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The *Coroners Act 2003* provides in s. 47 that when an inquest is held into a death in custody, the coroner's written findings must be given to the family of the person who died, each of the persons or organisations granted leave to appear at the inquest and to various officials with responsibility for the justice system. These are my findings in relation to the death of Geoffrey John Hornby. They will be distributed in accordance with the requirements of the Act and posted on the web site of the Office of the State Coroner.

Introduction

Mr Hornby was 58 years of age when he died at the Princess Alexandra Hospital (PAH) on the evening of 21 March 2010. At the time of his death and for the preceding 13 years, Mr Hornby was a prisoner in the custody of Queensland Corrective Services (QCS).

Mr Hornby had an extensive medical history relating to Chronic Obstructive Pulmonary Disease (COPD), the condition that led to his death. On 10 June 2005, Mr Hornby suffered from a heart attack, which required hospitalisation. In the following years, Mr Hornby continued to experience intermittent symptoms. He received regular treatment from a number of health professionals and allied services. Mr Hornby was admitted to the PAH on six occasions, including the last admission prior to his death.

The investigation

Detective Senior Constable (DSC) Steven Peake and DSC Raelene Speers from the Queensland Police Service (QPS) Corrective Services Investigation Unit (CSIU) attended the PAH on the evening of 21 March 2010 and commenced their investigation into the circumstances of the death of Mr Hornby. The deceased was identified by his older brother to the Acting Clinical Nurse at the Intensive Care Unit (ICU), who then identified the body to DSC Peake later that evening.

Senior Constable Kylie Blumson from the QPS photography section attended the post mortem examination on 23 March 2010 and took a series of photographs. Statements were obtained from medical staff at the PAH and Wolston Correctional Centre (WCC) Medical Unit in relation to the medical history and treatment of Mr Hornby. Statements were obtained from QCS Officers who supervised Mr Hornby at the WCC and during his hospitalisation at the PAH from 15 – 21 March 2010. Statements were also obtained from each of the inmates who had recently been in contact with Mr Hornby.

DSC Peake compiled a report of the investigation dated 20 March 2012, which was submitted and tendered at the inquest.

I find that the police investigation was thorough and professionally conducted and the time taken to complete the investigation was reasonable in the circumstances.

As a result of issues raised within the police investigation report, further investigation was undertaken. The matter was referred to the Clinical Forensic Medical Unit (CFMU) for a review of the care provided to Mr Hornby. The CFMU reports of Dr Bob Hoskins were then provided to the PAH for a

response and their response was again reviewed by Dr Hoskins. Due to further issues being raised and a recommendation by Dr Hoskins, expert witness reports were obtained from Dr Stephen Rashford (the Director of Queensland Ambulance Service (QAS)) and Dr Michael Tuch from the Australian Resuscitation Council (ARC). The PAH also commissioned Dr Christopher Zappala, a Thoracic and Sleep Physician, to provide an expert report. The CFMU reports, response by the PAH, and expert reports were all tendered at the inquest.

As a result of those inquiries I am satisfied that I have sufficient information to make the findings required by the Act. I commend the officers of the CSIU and those assisting me for their endeavours.

The inquest

Following a pre-inquest conference on 19 December 2012, the following issues were identified as being relevant to the inquest:

- the identity of the deceased person, when, where and how he died and what caused his death;
- the adequacy of the care provided to the deceased at the WCC;
- the adequacy of the care provided to the deceased at the PAH. In particular:
    - the time taken by medical staff to commence cardiopulmonary resuscitation (CPR) on the deceased on 17 March 2010; and
    - whether the time taken to commence CPR contributed to the deceased's death; and
- whether any changes to procedures or policies could reduce the likelihood of deaths occurring in similar circumstances or otherwise contribute to public health and safety or the administration of justice.

The inquest was held in Brisbane from 27 - 28 February 2013. All of the statements, records of interview, medical records, photographs, CCTV footage and material gathered during the investigation were tendered at the inquest.

Oral testimony was also provided by Detective Senior Constable Peake, Registered Nurse (RN) Brigitte Mortimer, RN Damien O'Keefe, RN Daniela Tarlington, RN Tarra Szczurko (nee Walton), Dr Christopher Lack, Dr Christopher Joyce, Dr Tuch, Dr Rashford and Dr Zappala.

I accepted counsel assisting, Mr Peter De Waard's submission that the evidence tendered, together with the oral evidence received during the inquest was sufficient to enable me to make the requisite findings.

The evidence

Personal circumstances

Mr Hornby was born on 3 January 1953 in Railway Camp, Heathcote, New South Wales.

At the age of 10, Mr Hornby was placed into care by the New South Wales Welfare Department after his mother was killed in a traffic accident. He returned to live with his family in 1968. In 1973, Mr Hornby was involved in a traffic accident, which resulted in the death of his first wife. Mr Hornby is survived by his spouse, Kathryn, who was present during the inquest proceedings.

Mr Hornby had an extensive criminal history. In early 1992, Mr Hornby was taken into pre-sentence custody in the Sir David Longlands Correctional Centre on charges of murder. He was convicted and sentenced to life imprisonment but after a successful appeal, he was released from custody on 21 December 1992.

In early 1995, Mr Hornby was extradited from New South Wales by the QPS in relation to a number of serious criminal offences. Mr Hornby was taken into pre-sentence custody and he was later convicted and sentenced to life imprisonment.

Mr Hornby commenced his life sentence at the Arthur Gorrie Correctional Centre. He was transferred to the Moreton Bay Correctional Centre on 17 September 1996 until being transferred to the Woodford Correctional Centre. Mr Hornby was later transferred to the WCC on 8 January 1999, where he stayed until his hospitalisation on 15 March 2010.

Medical history

Mr Hornby was a 58 year old man who suffered from a range of medical conditions, the most significant being COPD. His COPD required hospital admissions for exacerbations.

Mr Hornby was a long term and heavy smoker with Ischemic heart disease. In 2005, he suffered from a heart attack (myocardial infarct). Mr Hornby also suffered from high blood pressure (hypertension); high cholesterol (hypercholesterolemia); and previous intravenous drug abuse.

Mr Hornby was taking a number of medications for his condition.

Mr Hornby's condition was such that the WCC decided to allocate him with a prisoner carer.

Treatment prior to death

At the WCC

On 13 March 2010, Mr Hornby had an episode of shortness of breath and chest tightness. He responded to nebulised salbutamol.

At approximately 5:15pm on 15 March 2010, a 'Code Blue' was called at Cluster 3 of the WCC in relation to Mr Hornby. Statements obtained from fellow prisoners housed in Cluster 3 indicate that Mr Hornby had attempted to move his own belongings into his new prison cell, rather than waiting for the assistance of his carer. He became breathless to the point where they raised the alarm for medical assistance to be provided by his carer. Mr Hornby's carer, Prisoner Damian Dutton, provided initial care to Mr Hornby until medical staff arrived.

Medical staff attended the unit and treated Mr Hornby for breathing difficulties and associated pain in his ribs. He initially settled and improved after oxygen was administered.

A second Code Blue was called at approximately 6:15pm, when Mr Hornby experienced further breathing difficulties. This time, Mr Hornby's oxygen saturation level fell to a point that he required transfer to hospital.

QAS records indicate a call was received from the WCC at 6:45pm on 15 March 2010. An ambulance was dispatched and arrived at the centre at 6:59pm. Mr Hornby's initial assessment indicated COPD. He was in severe distress, fighting to breathe and could only speak in short sentences.

Mr Hornby was initially treated with oxygen therapy and transferred to the PAH Emergency Department.

Transfer to the PAH Emergency Department

Mr Hornby arrived at the PAH Emergency Department at 7:49pm on 15 March 2010 and remained in respiratory distress throughout this time. Upon arrival, Mr Hornby was treated by Dr Sorcha Evans, who had previously treated him during his admission in October 2009. A diagnosis of ineffective exacerbation of COPD was recorded and treated. Mr Hornby was referred to a medical admitting team.

Mr Hornby was assessed by the admitting registrar on duty, Dr Lisa Cummins, and transferred to the Respiratory High Dependency Unit for specialised treatment.

Transfer to the Respiratory High Dependency Unit

Upon admission to the Respiratory High Dependency Unit, Dr Cummins consulted with Dr Steven Leong and Dr Michelle Murphy to determine a course of treatment and tests to be undertaken. Later testing indicated that Mr Hornby was responding to the initial treatment provided upon admission.

Mr Hornby was reviewed at 9:30am on 16 March 2010 by Dr Bliegh Mupunga and Dr Michael Trotter. He was then transferred from the High Dependency Respiratory Unit to a general ward, awaiting a bed in the Secure Unit. Mr Hornby continued to receive prescribed treatments. Medical notes indicate that Mr Hornby was eating and drinking and made no complaints of shortness of breath or chest pain. Mr Hornby remained under supervision of Corrective Services Officers throughout his admission to public wards in the main hospital.

Transfer to the Secure Unit

Mr Hornby was transferred to the Secure Unit on the afternoon of 16 March 2010.

Due to the issues raised within the police investigation report, the CFMU reviews, and the expert reports in relation to Mr Hornby's care at the Secure Unit, I have set out below a detailed chronology of events relating to Mr Hornby's admission to the Secure Unit. Key aspects are in bold.

Date / Time	Description of action taken
16 March 2010	
4:30pm	Mr Hornby was transferred from the general ward to the Secure Unit. Mr Hornby became anxious and complained of shortness of breath on admission. This was effectively treated with a saline nebuliser.
7:00pm	Mr Hornby pressed the nurse call button alerting the nursing staff that he felt short of breath. Mr Hornby was administered Salbutamol via a nebuliser and settled after approximately 8 minutes.
9:00pm	Mr Hornby pressed the nurse call button, complaining of breathing difficulties and appeared confused. Mr Hornby was administered Salbutamol via a nebuliser and settled after 8 – 10 minutes. Nursing staff contacted the on call doctor, Dr Eliza Doneley, and requested an urgent review of Mr Hornby.
9:45pm	After conducting a hand over with Dr Doneley, Dr Suzanka Handunnetti phoned RN Mortimer at the Secure Unit about Mr Hornby. Dr Handunnetti had previously seen Mr Hornby whilst he was in the Respiratory High Dependency Unit the night before and agreed to come and review him. RN Brigitte Mortimer advised that they did not think they could effectively monitor Mr Hornby in the Secure Unit because he had experienced two episodes of respiratory distress in a three hour period.

10:00pm	Dr Handunnetti examined Mr Hornby and reviewed his medical records. Dr Handunnetti put in place a management plan to add atrovent to Mr Hornby's ventolin nebuliser if he experienced another shortness of breath episode. RN Mortimer again raised her concerns about the appropriateness of Mr Hornby remaining in the Secure Unit.
10:30pm	Mr Hornby pressed the nurse call button, experiencing shortness of breath. Dr Handunnetti was still in the Secure Unit and attended. Mr Hornby was given Ventolin and atrovent as prescribed and his oxygen saturations were within the acceptable range. Dr Handunnetti obtained blood gas testing and reviewed the results. She called RN Mortimer after the results were received and advised that they were 'ok' and Mr Hornby was to remain in the Secure Unit unless his condition worsened.
12:00pm	Dr Handunnetti discussed Mr Hornby's case with the on call registrar, Dr Sylvia Lee, in the common room.
17 March 2010	
2:05.30am	Mr Hornby suddenly sat upright on the side of his bed and appeared to be struggling to breathe.
2:09.14am	RN Mortimer entered the room and went to the far left corner of the room where she remained until 2:09.21.
2:09.41am	RN Mortimer fitted a nubuliser mask to Mr Hornby and stood beside his bed. Mr Hornby was administered ventolin and atrovent via a nebuliser. The nebuliser mask operated on medical air. Oxygen was separately administered via nasal prongs.
2:10.38 - 2.11.27am	RN Mortimer took Mr Hornby's observations.
2:12.11am	RN Mortimer exited the room.

2:12.37am	RN Mortimer re-entered the room and stood at the foot of Mr Hornby's bed. She appeared to have a phone in her hand.
2:13.49am	RN Mortimer exited the room and appeared to be putting the phone to her ear.
2:14.24am	Mr Hornby appeared to remove the nebuliser mask.
2:15.00am	RN Damien O'Keefe entered the room and stood at the right side of Mr Hornby's bed, assisting Mr Hornby to lie back.
2:15.03am	RN Mortimer re-entered the room and both nurses assisted Mr Hornby to replace the nebuliser mask.
2:15.16am	RN Mortimer and RN O'Keefe assisted Mr Hornby to sit up.
2:15.35am	RN Mortimer ran from Mr Hornby's room to **initiate a Code Blue** in anticipation of further deterioration in Mr Hornby's condition. At that time, Mr Hornby was hypoxic but still conscious. RN Mortimer collected a resuscitation trolley, whilst RN O'Keefe remained with My Hornby. RN O'Keefe continued to hold Mr Hornby, whilst Mr Hornby laid back down.
2:15.59am	RN O'Keefe rolled Mr Hornby to his right side to clear his airway.
2:16:20am	RN Mortimer returned to the room with a resuscitation trolley and commenced unpacking the defibrillation pads.
2:16:44am	Mr Hornby appeared to move his right arm.
2:17:00am	**By this time, Mr Hornby was most likely unconscious (unresponsive).**
2:17:27am	RN Mortimer began to clear Mr Hornby's chest.

2:17:30am	The first rapid response ream[1] (RN Daniela Tarlington and RN Tarra Szczurko) arrived with a resuscitation trolley from the Emergency Department. RN Mortimer moved the existing resuscitation trolley out of the way. RN Tarlington and RN Szczurko began preparing equipment.
2:17.35am	RN Mortimer approached the right side of Mr Hornby's bed and unbuttoned his pyjama top.
2:17:40am	Mr Hornby appears to make his last visible movement (of his right arm). Although Mr Hornby moved at this time, he would still have been unconscious. Mr Hornby's movement indicates that he had a degree of circulation at this time and had not yet gone into cardiac arrest.
2:17.44am	RN Tarlington and RN Szczurko both entered the room and positioned the resuscitation trolley. RN O'Keefe continued to stand next to Mr Hornby. RN Szczurko began connecting the bag valve mask to the outlet on the wall behind Mr Hornby's bed. RN Tarlington cleared Mr Hornby's chest, noting a 'distracting amount of blood', before her gloves ripped. RN Tarlington had to replace her gloves before returning to Mr Hornby. RN Tarlington commenced connection of the defibrillation pads blood pressure cuff and pulse oximeter. They were also trying to ascertain how to lower Mr Hornby's bed to the required horizontal position.
2:17:58am	**RN Tarlington checked Mr Hornby's pulse and began clinical assessment of him** and then returned to the resuscitation trolley. **RN Tarlington noted that Mr Hornby was unresponsive and without a palpable pulse.**

[1] It is acknowledged that there was only ever one rapid response team with various members from different areas of the hospital arriving at two separate times. However, for ease of reference, the two separate groups that arrived at different times are referred to as the 'first rapid response team' and the 'second rapid response team' throughout these findings.

2:18:01am	RN Tarlington appeared to have been speaking to RN Mortimer, who was in the doorway. RN Mortimer then exited the room.
2:18:14am	RN Tarlington moved the resuscitation trolley closer to Mr Hornby.
2:18:22am	RN O'Keefe, RN Tarlington and RN Szczurko were all at Mr Hornby's bedside. RN Szcurko had the bag valve mask in her hand, which she put down on the bed.
2:18.40am	RN Tarlington moved to the resuscitation trolley and picked up what appeared to be a stethoscope and returned to Mr Hornby. She appeared to put the stethoscope to his chest while RN Szczurko and RN O'Keefe began to lower Mr Hornby's bed flat.
2:18:55am	RN Tarlington moved back to the resuscitation trolley.
2:19.00am	RN Szczurko moved to the head of the bed, removed Mr Hornby's pillow and commenced ventilating him using a bag valve mask.
2:19.10am	The second rapid response team arrived (including Dr Christopher Lack, Dr Handunnetti and RN Sondheim). Dr Lack moved to the head of the bed.
2:19:12am	Dr Lee, RN Mortimer and RN O'Keefe entered the room.
2:19:15am	Dr Lack took over the bagging of Mr Hornby's airway.
2:19:27 – 2:19:32	Mr Hornby's bed was lowered and repositioned into the centre of the room.
2:19.35am	**RN Szczurko commenced chest compressions.** Dr Lack was at the head of the bed bagging Mr Hornby. Dr Handunnetti was on the left side of the bed obtaining

	intravenous access. RN O'Keefe was in the far right corner of the room taking notes. RN Mortimer was standing back against the left wall. Dr Lee, RN Tarlington and RN Sondheim were attending to other tasks.
2:19:53am	The main lights in Mr Hornby's room were turned on by RN O'Keefe.
2:25.50am	1mg of adrenaline was administered to Mr Hornby. **Mr Hornby had a return of circulation. Cardiac compressions were ceased.** Mr Hornby's airway continued to be maintained by a bag valve mask.
2:45.00am	Intubation was unsuccessfully attempted. Mr Hornby's airway continued to be maintained by a bag valve mask.
2:51.47am	Mr Hornby was transferred out of the Secure Unit to the ICU.

Transfer to the ICU

Upon arrival at the ICU, Mr Hornby was successfully intubated by Dr Kiran Shekar. His neurological status remained poor with no significant improvement. His respiratory function also remained extremely poor, despite aggressive medical treatment.

A number of attempts were made by treating doctors to gradually remove Mr Hornby from life support systems but they proved unsuccessful. A number of examinations and tests were conducted to allow effective treatment to be maintained. However, the treatments were ineffective and it was determined that Mr Hornby had a poor prognosis.

After consultation with Mr Hornby's spouse and his older brother, Mr Hornby was removed from the breathing tube at 4:00pm on 20 March 2010. His neurological and respiratory function remained poor and he died at 7:45pm on 21 March 2010. A life extinct certificate was issued by Dr Melanie Underwood.

Autopsy results

An external and full internal autopsy was carried out on 23 March 2010 by a forensic pathologist, Dr Nathan Milne. Samples were also taken for toxicological testing. Professor Anthony Ansford, a specialist pathologist, issued a detailed Autopsy Report dated 21 July 2011, on behalf of Dr Milne.

Of note, the specialist neuropathological examination revealed that Mr Hornby's brain was normal both to the naked eye and microscopically, which was not inconsistent with Mr Hornby's medical history where on several occasions doubts were expressed as to the degree of severity of the potential cerebral hypoxic insult to the brain.

Professor Ansford had access to all medical records relating to Mr Hornby. After considering these, the toxicology results and Dr Milne's observations, he issued a certificate listing the cause of death as:

> *1(a). Respiratory Failure,* due to*,* or as a consequence of
>
> *1(b). Chronic Obstructive Pulmonary Disease*.
>
> Other significant conditions:
>
> *2. Coronary Atherosclerosis*

Decision not to transfer Mr Hornby out of the Secure Unit

Dr Handunnetti and Dr Lee have conflicting recollections of their discussion at 12:00pm on 17 March 2010 and it is not clear whether Dr Handunnetti's decision that Mr Hornby would remain in the Secure Unit had been endorsed by Dr Lee. Dr Handunnetti and Dr Lee were not called as witnesses at the inquest.

RN Mortimer had raised concerns on the night about Dr Handunnetti's decision. In oral evidence, RN Mortimer acknowledged that Dr Handunnetti had largely dealt with her concerns by reviewing Mr Hornby and checking his blood gas results, which were found to be within an acceptable range. Although RN Mortimer said that she was not completely satisfied with Dr Lee's decision, I find that RN Mortimer had taken appropriate action to mitigate against her perceived issues by more closely monitoring Mr Hornby. This included putting Mr Hornby's ensuite light on, maintaining a near continuous watch of him via a CCTV monitor and physically checking on him hourly.

Regardless of whether Dr Handunnetti's decision was endorsed by Dr Lee, I find that the decision was justified due to the reviews and testing of Mr Hornby carried out by Dr Handunnetti that evening; the competency of staff within the Secure Unit; the resources of the Secure Unit (ie. staff to patient ratio and the CCTV monitoring equipment); and their access to the Medical Emergency rapid response team. I find that in the circumstances, the possibility of Mr Hornby requiring resuscitation was able to be adequately managed in the Secure Unit.

Adequacy of nursing staff numbers in the Secure Unit

I find that the nursing staff to patient ratio in the Secure Unit was adequate in the circumstances given that on 16 and 17 March 2010, there were 11 patients in the Secure Unit and two nursing staff. Ordinarily the Secure Unit can hold up to 12 patients. Even with full patient admission, the staff to patient ratio for the night shift in the Secure Unit is 1:6. This is a better ratio than the majority of other in-patient units at the PAH (as illustrated by the statistics provided to this inquest by the PAH.

I find that there is no evidence to suggest that the presence of an additional nurse would have resulted in an improved outcome for Mr Hornby than was otherwise the case.

Adequacy of response time to Mr Hornby's Code Blue

The PAH has advised that in the six month period from January to June 2010, during which time the incident involving Mr Hornby occurred, the average time of arrival of the first emergency responders for ward based cardiac arrests was 3.3 minutes.

The medical records document that a Code Blue was called for Mr Hornby at approximately 2:15am on 17 March 2010. The available CCTV footage from the Secure Unit entry demonstrates that at 2:17.34am, the first rapid response team arrived in Mr Hornby's room. At 2:19.34am, the second rapid response team arrived in Mr Hornby's room. It follows that the first rapid response team arrived about 1 minute earlier and the second rapid response team arrived about 1 minute later than the average response time for the PAH at the time.

The PAH has investigated whether there was a delay in access to the Secure Unit due to the security protocols mandated by Corrective Services for entry to the unit. They found that the second rapid response team were delayed by approximately 40 seconds due to problems entering the Secure Unit. In oral evidence, Dr Lack thought, after having reviewed the CCTV footage, that the delay he experienced was more like 1 minute and 30 – 40 seconds.

I find that the earlier arrival of the second response team would have been unlikely to impact on Mr Hornby's ultimate chances of survival. This is because, even based on Dr Lack's calculations, Mr Hornby would have already gone into cardiac arrest by the time he could have made it to Mr Hornby's room, had it not have been for the delay he experienced gaining entry to the Secure Unit.

In any event, I find that when the response time of the first and second rapid response teams are taken as a whole, the time taken for them to get to Mr Hornby's room was reasonable in the circumstances.

I also note that since this incident, the PAH and QCS have revised their security protocols to enable direct access to the Secure Unit for all staff members in an emergency situation. This will serve to further minimise delay in the future.

Delay in commencement of CPR

It is first necessary to provide an overview of the relevant policies and guidelines in order to set a bench mark by which to assess the adequacy of the time taken to recognise Mr Hornby's cardiac arrest and commence CPR.

ARC Guidelines

The ARC is a voluntary body that establishes and coordinates best practices in resuscitation. It produces guidelines to act as a source of best practice, which are designed to meet a broad range of circumstances. For this reason, the ARC guidelines are flexible and operate as a means of assistance.

The relevant ARC guidelines in place on 17 March 2010 were:

- Guideline 2.1 - *Priorities in an Emergency* (February 2002); and
- Guideline 7 – *Cardiopulmonary Resuscitation* (February 2006).

Guideline 2.1 – *Priorities in an Emergency* provides:

> In all emergency situations, the rescuer must…commence appropriate treatment following the Basic Life Support Flow Chart (P.S. 7.2).

Guideline 7 – *Cardiopulmonary Resuscitation* provides:

> Rescuers should start CPR if the victim has no signs of life (unconscious, unresponsive, not moving, and not breathing normally). Even if the victim takes occasional gasps, rescuers should suspect that cardiac arrest has occurred and should start CPR.

The Basic Life Support Flow Chart in Guideline 7 lists the steps to be followed as:

D: Check for Danger
R: Check for response (unresponsive/unconscious) call for help/resuscitation team
A: Open the airway
B: Give rescue breathing – 2 initial breaths
C: Start chest compressions (continue cycles of 30 chest compressions followed by 2 breaths)
D: Use of AED (automatic external defibrillator)

Apart from some changes in wording and in Guideline designation numbers, the ARC guidelines have remained effectively the same since 2010. The guidelines are based on basic life support principles and are designed to apply widely (including in a hospital setting).

I note that the ARC guidelines in place on 17 March 2010 did not require a determination that a victim/patient was pulseless before CPR was to be commenced. The criteria for commencing CPR was that the victim/patient had no signs of life (ie. unconscious, unresponsive, not moving, and not breathing normally).

PAH policies

The relevant PAH policies in place on 17 March 2010 were:

- Procedure Manual – *Rapid Response Team Calling Criteria* (procedure no: 01316/v5/10/2009;
- Procedure Manual – *Code Blue – Assessment and Treatment of Code Blue (Medical Emergency)* (procedure no: 01307/v6/10/2009);
- Procedure Manual – *Code Blue – Medical Emergency Response* (procedure no: 80031/v7/10/2009);
- Procedure Manual – *Advanced Life Support* (procedure no: 01613/v4/10/2009); and
- *Basic Life Support & SAED (Semi Automatic External Defibrillator)* – Metro South Health Service District 2010 manual.

The Procedure Manual - *Code Blue – Assessment and Treatment of Code Blue* provides a 'DRABCD' algorithm on p 2 that is to be followed in order to assess and facilitate appropriate interventions within appropriate timeframes. I note that it was part of the PAH's process to check for a carotid pulse in order to determine the absence of circulation.

Page 3 of Procedure Manual - *Code Blue – Assessment and Treatment of Code Blue* outlines the procedures for the treatment of a Code Blue and distinguishes between a 'respiratory arrest' and a 'cardiac arrest'. A 'respiratory arrest' is defined on the p 1 of the manual as a 'sudden cessation or interruption to effective ventilation while an arterial pulse is palpable'. A 'cardiac arrest' is defined as a 'sudden cessation of cardiac output, unresponsive with no effective ventilation or palpable arterial pulse present'.

For a respiratory arrest, a number of options are listed on p 3 of the manual to address the patient's ineffective ventilation, including:

- commencing rescue breathing;
- manual resuscitation bag ventilation;
- mouth to mask;
- mask to stoma (Laryngectomy); and
- Tracheotomy.

There does not appear to have been any requirement in the manual to commence chest compressions for a respiratory arrest.

For a cardiac arrest, the first step appears to be to commence defibrillation procedures in accordance with the *Basic Life Support & SAED (Semi Automatic External Defibrillator)* policy and then to commence CPR. The procedure for providing CPR and chest compressions is outlined on p 4 of the manual. CPR includes rescue breathing and chest compressions.

Procedure Manual – *Code Blue – Medical Emergency Response* outlines the procedure that should be followed by staff members attending a medical emergency situation. A flow chart is provided at p 4 of the manual, which provides that for a cardiac arrest / respiratory arrest or life threatening emergency, the first person on the scene is to:

- call for assistance; then
- begin treatment:
    - Ready patient and bed area for resuscitation management;
    - If limited staff, leave patient and retrieve emergency trolley with defibrillator;
    - Commence rescue breathing while/after defibrillator being applied; and
    - If no assistance has arrived, start compressions immediately (emphasis added).

The second person on the scene is to assess the situation:

- Retrieve emergency trolley with emergency equipment;
- Return to bedside;
- Commence defibrillation procedure ensuring safety of staff; and
- Commence documentation.

The third person on the scene is to:

- call switch and inform them of the Code Blue; and
- perform chest compressions in conjunction with rescue breathing; and
- assist with treatment.

Procedure Manual – *Advanced Life Support* states that its purpose is to facilitate appropriate and expert care for the cardiac arrested person by the rapid response team. Then under the heading ‘Indications and Contraindications’, the manual states that the use of Advanced Life Support procedure will occur when a patient is unconscious, not breathing and/or

pulseless. Advanced Life Support follows the initiation of basic life support measures after suitably qualified staff arrive at the scene. On p 2 of the manual, an algorithm is provided for 'adult cardiorespiratory arrests'. The process is as follows:

- Basic Life Support Algorithm (if appropriate);
- Precordial thump (for witnessed monitored arrest);
- Attach defibrillator – monitor;
- Assess rhythm / pulse;
- If shockable pulse, commence defibrillation and then commence immediate CPR; and
- If non-shockable pulse, commence immediate CPR.

The *Basic Life Support & SAED (Semi Automatic External Defibrillator)* – Metro South Health Service District 2010 manual provides a detailed explanation of the sequence of Basic Life Support. Page 16 of the manual, under the heading 'Compressions' and the sub-heading 'Circulation' provides:

> **The time to compressions is vital**. Taking of a pulse should be undertaken by health professionals by palpating the carotid artery for **no longer than 10 seconds**. If there is any doubt whether you can feel a pulse, begin cardiac compressions.
>
> If there is evidence of a pulse, ventilations should continue with regular pulse checks at two minutes.

Inconsistencies / ambiguity in PAH policy

It would appear that some parts of the PAH policies in place on 17 March 2010 were contradictory, or at least ambiguous. Procedure Manual – *Code Blue – Medical Emergency Response*) requires the first responder to a patient who is in cardiac arrest, respiratory arrest or a life threatening emergency, to commence chest compressions immediately after applying the defibrillator and initiating rescue breaths. There is no requirement that the patient is pulseless. Whereas, the remainder of the PAH policies seem to require a determination that a patient is pulseless before the commencement of chest compressions.

It did not come out in evidence at the inquest that this caused any of the nurses or doctors who attended to Mr Hornby any confusion.

Importantly, there does not appear to be any inconsistencies or ambiguities in the relevant current PAH policies.

Inconsistencies between PAH policy and ARC guidelines

It would appear that the PAH policy in place in March 2010 (with the possible exception of Procedure Manual – *Code Blue – Medical Emergency Response*)

was at odds with the ARC Guidelines in place at the time in relation to whether chest compressions should be commenced on a patient with a pulse.

Dr Tuch acknowledged that although checking for a pulse was not part of the ARC's guidelines, the PAH's policies in 2010 were not incorrect. He said that any clinician would feel for a pulse anyway – it only takes a second or two. Dr Rashford also noted that in those days, it was expected that clinical personnel should be able to still feel for a pulse.

I find that although there were inconsistencies between the PAH policies and the ARC guidelines at the time of Mr Hornby's cardiac arrest, the PAH's policies, including those with a requirement to check for a pulse before commencing chest compressions, were adequate.

Analysis

The management of Mr Hornby's progressive decline into cardiac arrest was very challenging and complex. There were undoubtedly numerous clinical judgments to be made in difficult circumstances.

Dr Rashford and Dr Zappala agreed that by 2:17:00am on 17 March 2010, Mr Hornby most likely had significantly impaired consciousness and that between 2:17:00am and 2:18:00am, he would have been progressively displaying ineffective breathing and sliding towards cardiac arrest (the pre-arrest phase). This is supported by the statements, as supplemented by oral evidence, of the relevant medical staff who were observing and treating Mr Hornby at the time.

I accept Dr Rashford's and Dr Zappala's opinion that the Secure Unit nurses *could* have initiated rescue breathing and early cardiac compressions between 2:17:00am and 2:18:00am, based on their observations of Mr Hornby, and without necessarily having determined that he was pulseless. Although this was a possibility, it is important to note that I do not find that the nurses *should* have reasonably been expected to have commenced chest compressions during this period. This is because the PAH's policy in place at the time required them to first establish that Mr Hornby was pulseless. As I have mentioned above, the PAH's policy was adequate at the time and this is in light of what was expected of medically trained persons in hospital settings.

Given the PAH's policy at the time, it is therefore appropriate to assess the time taken by the nurses to commence chest compressions from the time they were aware, or should have been aware, that Mr Hornby was pulseless.

None of the nurses could recall seeing any movement by Mr Hornby.

In RN O'Keefe's witness statement, he said that he and RN Mortimer had simultaneously noted they could no longer feel Mr Hornby's pulse just before the nurses from the first rapid response team arrived. He remembered thinking 'what perfect timing'. RN Mortimer's witness statement was silent on this issue and in oral evidence she could not recall checking for Mr Hornby's pulse at any time. In oral evidence, RN O'Keefe had at first confirmed the information in his witness statement. He said that he had been checking Mr Hornby's pulse intermittently and found no pulse just before the nurses came

into the room. He later went on to say that after having the afterthought of viewing the CCTV footage, he presumes Mr Hornby still had a pulse because it seemed to take a little too long to actually initiate CPR.

I have taken into account that RN O'Keefe's witness statement was provided five months after Mr Hornby's death and without the benefit of viewing the CCTV footage. I have also considered the fact that his version of events in his witness statement and initially in oral evidence does not correlate with RN Mortimer's recollection that she did not check for Mr Hornby's pulse at any time. It was of course also a traumatic experience for RN O'Keefe and others where sequences of events often become scrambled and recollections blurred. I am therefore unable to ascertain, on the balance of probabilities, when RN O'Keefe determined that Mr Hornby was pulseless.

It is unclear to me when RN Mortimer was aware that Mr Hornby was pulseless.

RN Tarlington cannot recall either of the security unit nurses telling her that Mr Hornby had no pulse but after entering the room, she personally checked Mr Hornby's pulse at approximately 2:17:58 and determined that he was pulseless. RN Szczurko also cannot recall anyone saying to her that Mr Hornby did not have a pulse until RN Tarlington determined that he was pulseless.

Dr Rashford and Dr Zappala agreed that Mr Hornby's cardiac arrest would most likely have occurred sometime between his last movement at 2:17:40 and around 02:17:58am, when RN Tarlington noted he was pulseless. This is supported by the CCTV footage, and witness statements, as supplemented by the oral evidence of the nurses.

The CCTV footage confirms that chest compressions were not commenced by RN Szczurko until 2:19:35am.

I therefore find that chest compressions were not commenced on Mr Hornby until approximately 1 minute and 37 seconds from when RN Szczurko and Tarlington *thought* Mr Hornby had lost his pulse; and between 1 minute and 37 seconds and 1 minute and 55 seconds from when Mr Hornby had *actually* lost his pulse and gone into cardiac arrest.

The question is whether the delay was reasonable in the circumstances. The standard to be applied to cases of this nature is not a perfect standard but rather, a standard of reasonable practice. While Dr Zappala and Dr Rashford agreed that there was a minor delay in the recognition of Mr Hornby's cardiac arrest and commencement of CPR, they also agreed that overall, given the level of difficulty with this resuscitation and the scenario, it was a reasonable resuscitation attempt.

I accept Dr Zappala's and Dr Rashford's overall assessment based on: the difficulties identifying when a patient such as Mr Hornby has gone into cardiac arrest; the PAH policies in place at the time; the challenging Secure Unit environment; and the lack of a traditional chain of command in terms of

clinical leadership that the nurses were operating under until the second rapid response team with doctors arrived.

Did the delay contribute to Mr Hornby's death

Dr Rashford and Dr Zappala agreed that it has been well documented that for every 60 second delay in the establishment of CPR in patients suffering out of hospital cardiac arrest due to presumed cardiac aetiology, there is a reduction in the survival rate of the patient by 8 – 10%. In their view, this statistic is still relevant to the hospital context.

I accept the opinion of Dr Zappala and Dr Rashford that notwithstanding the above statistics, any delay in the recognition of cardiac arrest and the institution of CPR in Mr Hornby's case was highly unlikely to have contributed to his death, given his co-morbidities and declining overall functional state.

Conclusions

In conclusion, I make the following findings:

- The police investigation was thorough and professionally conducted and the time taken to complete the investigation was reasonable in the circumstances;

- The decision by Dr Handunnetti, prior to Mr Hornby's cardiac arrest, not to transfer him out of the Secure Unit was appropriate due to: the results of previous reviews carried out that evening; the competency of staff at the Secure Unit; the resources of the Secure Unit; and their access to the medical emergency rapid response team;

- RN Mortimer took appropriate action to mitigate against her perceived issues with Dr Handunnetti's decision that Mr Hornby would remain in the Secure Unit;

- The nursing staff to patient ratio in the Secure Unit was adequate in the circumstances;

- In the circumstance, there was no significant delay in the time it took the PAH rapid response teams to attend to Mr Hornby's Code Blue;

- The measures put in place by the PAH and QCS to minimise future delays for emergency response teams attending the Secure Unit are appropriate;

- The PAH policies at the time of Mr Hornby's cardiac arrest, including those which included a requirement to check for a pulse before commencing chest compressions, were adequate.

- There was a small delay in the assessment of Mr Hornby, recognition that he had gone into cardiac arrest, and the institution of CPR but the delay was reasonable in the circumstances;

- The delay did not contribute to Mr Hornby's death, given his co-morbidities and declining overall functional state;

- No person directly caused or contributed to Mr Hornby's death; and

- Mr Hornby was afforded adequate and appropriate medical treatment at both the WCC and PAH prior to his death.

Findings required by s 45

In terms of the findings I am required to make under s 45 of the *Coroners Act 2003*, I make the following findings:

Identity of the deceased – The deceased person was Geoffrey John Hornby.

How he died – Mr Hornby died from natural causes while in custody at the PAH.

Place of death – Mr Hornby died in Brisbane, Queensland.

Date of death – Mr Hornby died on 21 March 2010.

Cause of death – Mr Hornby died from respiratory failure, due to or as a consequence of Chronic Obstructive Pulmonary Disease.

Comments and recommendations

Although the delay in assessing Mr Hornby, recognising his cardiac arrest, and instituting CPR is unlikely to have contributed to his death and was reasonable in the circumstances, it is important to identify areas for improvement and to address these for the future. This is because such a delay in the future may impact on the chances of survival of a future patient without Mr Hornby's co-morbidities and declining overall functional state.

Without attributing blame to any individual or to the PAH, I note that the following factors may have contributed to the small delay in recognising Mr Hornby's cardiac arrest and commencing cardiac compressions:

- The nurses in the rapid response team arrived approximately two minutes prior to the doctors. Neither the Secure Unit nurses nor the nurses in the first rapid response team elected, or assumed the role of Team Leader, to take overall control of the management of Mr Hornby's emergency situation;

- There was a lack of direction and instructions given by the first rapid response team nurses to the Secure Unit nurses. The Secure Unit nurses expected to be directed by the first rapid response team nurses. Whereas, the first rapid response team nurses expected that the Secure Unit nurses would know what needed to be done and would do those tasks without direction;

- Communication, generally, was limited between the Secure Unit nurses and the first rapid response team nurses;

- Although leadership scenarios are now incorporated in the current PAH advanced life support training, this may not have been so prior to the incident, and such scenarios do not appear to be included in basic life support training;

- The relevant PAH Practice Manuals did not provide any guidance to nursing staff about the importance of nominating a Team Leader in the absence of a doctor, or the method by which this should be done; and

- Although the ensuite light and the small reading light above Mr Hornby's bed appear to have been on, the lighting in Mr Hornby's room was dim due to the fluorescent light in the centre of the room being switched off. The lighting was sufficient to enable the clinicians to function safely. However, the dim lighting did make it difficult for the first rapid response team nurses to observe Mr Hornby and to find equipment in what was an unfamiliar environment.

In RN Mortimer's and RN O'Keefe's oral evidence, it was also identified that they had discussed their evidence with each other on a number of occasions prior to the inquest. RN Mortimer considered this to be part of the usual debriefing process. However, both witnesses said that this made it difficult for them to know what part of their recollection had been influenced by the other.

In an effort to address these issues I make the following recommendations:

1) *The PAH considers reviewing its relevant procedure manuals and policies to ensure:*

   a) *Current hospital training on leadership and followership in emergency response scenarios is reflected in the relevant written policies of the hospitals;*

   b) *They provide general guidance as to how a Team Leader should be chosen in various emergency response situations, including when a doctor is not immediately present;*

   c) *Emphasise the importance of controlling environmental factors such as lighting, where possible, when responding to an emergency situation; and*

d) *They provide guidance to staff involved in an incident resulting in a patient's death about discussion with other witnesses after the event. A balance must be struck between hospital debriefing processes; counselling and grieving; and the administration of justice;*

2) *The PAH considers introducing scenarios within their training to emphasise the importance of controlling environmental factors such as lighting, where possible, when responding to an emergency situation;*

3) *The PAH considers ensuring that both nurses and doctors identified for membership of rapid response teams receive familiarisation training in all areas of the hospital so they know where to quickly locate and how to operate relevant equipment in those areas; and*

4) *The PAH considers whether there are any practical measures that can be implemented to ensure that the Team Leader is easily identifiable for each Code Blue (for example - the use of a sticker or badge). This is particularly important where rapid response teams are made up of staff from a number of different areas.*

I close the inquest.

Michael Barnes
State Coroner
Brisbane
19 April 2013