QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of Edith Whiting**
TITLE OF COURT:	Coroner's Court
JURISDICTION:	Bundaberg
FILE NO(s):	COR 1994/05(1)
DELI.V.ERED ON:	11 June 2010
DELI.V.ERED AT:	Bundaberg
HEARING DATE(s):	7 September 2009, 07 - 11 June 2010
FINDINGS OF:	Mr Michael Barnes, State Coroner
CATCHWORDS:	CORONERS: unexpected outcome of health procedure, Bundaberg hospital

REPRESENTATION:

Counsel Assisting:	Ms Jennifer Rosengren
Next-of-Kin:	Mr Guy Sara (instructed by Maurice Blackburn)
Queensland Health:	Ms Stephanie Gallagher (instructed by Corrs Chambers WestGarth)
Dr Ashish Gupta:	Mr David Schneidewin (instructed by Minter Ellison)
RN Monica Hanson:	Mr Gavin Rebetzke (instructed by Roberts & Kane)
Dr Tun Tun:	Mr Sean Farrell (instructed by Cooper Grace Ward)

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The *Coroners Act 2003* provides in s45 that a copy of a 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 officials with responsibility for the subject of any remedial comments or preventative recommendations. These are my findings in relation to the death of Edith Whiting 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

Edith Whiting, a 68 year old woman from southern New South Wales was holidaying in Bundaberg in August 2005 when she developed severe epigastric pain and experienced some vomiting. Late in the evening, she went to the Bundaberg Base Hospital (BBH) where she was examined, administered some analgesic medication and discharged after the pain settled. However, a few hours later it returned and worsened and so she represented to the hospital. She was examined and when no immediate cause for her condition could be ascertained, she was admitted for further investigation by a surgical team. A computed tomograph (CT) scan with oral and intravenous contrast was ordered. A few minutes after this procedure commenced Mrs Whiting experienced nausea and lost consciousness. She underwent a cardio respiratory arrest and despite extended cardio pulmonary resuscitation (CPR), she did not recover and was pronounced dead.

These findings

- confirm the identity of the deceased, and determine how she died and the time, place and medical cause of her death;
- consider whether the procedure which led to Mrs Whiting's death should have been undertaken having regard to her medical history and symptoms;
- consider whether the procedure was undertaken appropriately;
- review the adequacy of the CPR undertaken after she collapsed; and
- critique the changes to hospital procedures that have been made since the death.

The investigation

Mrs Whiting's death was reported to local police and the Bundaberg Coroner. An autopsy was undertaken and a report from the pathologist was received on 20 August 2005.

In September 2005, the Bundaberg Coroner wrote to Mrs Whiting's next-of-kin providing them with a copy of the pathologist's report and inviting them to raise any issues they considered might warrant being investigated by way of an inquest. On 7 December 2005 the Bundaberg Coroner received a letter from lawyers representing one of Mrs Whiting's daughters, asking that the

decision in relation to the holding of an inquest be postponed while they made some investigations. This was granted.

In February 2007 the Bundaberg Coroner received further correspondence from those lawyers advising they intended making an application for an inquest. This application was received in August 2007. As a result the Bundaberg Coroner requested local police to undertake further investigations.

The results of those inquiries were received in April 2009. I was then asked by the Bundaberg Coroner to assume responsibility for the matter given that the inquest was likely to be protracted and could more easily be managed in the Office of the State Coroner rather than a single Magistrate centre.

Staff of the Office of the State Coroner arranged for statements addressing specific issues to be obtained from Queensland Health and briefed an expert for a report.

Although the process has been unfortunately protracted, I am satisfied the matter has been effectively investigated due to the efforts of the Queensland Police Service (QPS) investigator, the solicitors for the family, the staff of the Office of the State Coroner and counsel assisting.

The hospital conducted a route cause analysis (RCA) which has informed changes to some policies and procedures.

The inquest

The inquest was opened with a pre-inquest conference on 7 September 2009. Ms Rosengren was appointed counsel assisting and leave to appear was granted to Mrs Whiting's next-of-kin, Queensland Health and two of the clinicians involved in the matter who were separately represented. Leave to appear was later granted to the Queensland Nurses Union who appeared on behalf of one of the nurses involved in Mrs Whiting's care.

Because some of the potential witnesses were also involved in another matter involving the BBH, the original hearing dates were vacated and the matter was adjourned to allow the other matter to proceed and to not unduly drain the resources of the hospital.

The inquest finally convened in Bundaberg on 7 June 2010 and evidence was heard over the following four days. In all, 17 witnesses, included four experts, were called. All coronial documents, statements, expert reports and medical records were tendered. I was also greatly assisted by the hearing of oral submissions at the conclusion of the evidence.

The evidence

I turn now to the evidence. Of course, I cannot even summarise all of the information contained in the exhibits and oral evidence but I consider it appropriate to record in these reasons the evidence I believe is necessary to understand the findings I have made.

Social history

Edith Whiting was born on 15 April 1937 and grew up in a small country town in New South Wales. Edith suffered a number of hardships in her formative years including having to be the primary carer for her brothers and sisters.

Mrs Whiting was married twice and had two daughters. Her second husband died a few years before her passing.

She worked as a kitchen hand at various places including a local hospital and service station.

One of her daughters, Julie Richardson, was adopted by another family when she was a baby.

When Julie was an adult she met with Edith and they became "very good mates". Edith was planning to move to be closer to Julie and had shortly before her death purchased a house in the area.

Julie's active participation in this inquest evidences her deep commitment to her mother. I offer Julie, her sister and Edith's friends my sincere condolences for their loss.

Initial presentation

Mrs Whiting initially presented at the department of emergency medicine (DEM) at the BBH at approximately 11.00pm on Friday 12 August 2005. She told the nurse who first examined her that she had vomited 45 minutes earlier and had pain radiating into her right upper quadrant. The triage notes indicate Registered Nurse Sparozvich was informed Mrs Whiting had required nebulised Ventolin three times throughout the day. Her respiration rate was high at 24 breathes per minute and Mrs Whiting's blood oxygen saturations were slightly low at 93%. Accordingly, she was given oxygen through a face mask which caused that reading to increase to 99%.

At approximately 11.30pm she was examined by Dr Imran Faridi, a Senior Medical Officer. She was noted to have a past history of hypertension and bronchial asthma. Examination of her chest revealed harsh vesicular breathing with mild spasm and coarse crackles. Despite this no asthma relieving medication was given.

When he gave evidence, Dr Faridi said that despite the respiratory symptoms, Mrs Whiting's asthma must not have been active when he examined her and that those symptoms were "*baseline for a chronic asthmatic*". His presumption that she was not suffering from asthma at that time was reinforced by the fact she was lying comfortably and he did not see the need to prescribe her asthma relieving medication.

Various investigations were undertaken and she was administered a number of medications for her pain. She was re-examined by Dr Faridi at 1.00am the following morning when it was found the pain had settled. Despite her oxygen

saturations dropping to 91% when her mask was removed and her pulse remaining high, she was discharged at about 2.00am on 13 August 2005. She was provided with a letter for her GP which explained the treatment given and suggested Mrs Whiting undergo further investigation to establish whether she had biliary colic or gastritis.

Second admission

Mrs Whiting's respite was short-lived. At 5.00am the pain in her abdomen had returned and was more severe. She returned to the BBH. She gave the doctor who examined her, Dr Juliette Tan, a similar medical history to that given the night before. She told the doctor she took Atrovent twice daily when needed, Ventolin twice daily when needed, and Seritide ii twice daily. On examination she was found to be afebrile, with a blood pressure of 133/79, a pulse rate of 112 beats per minute, a respiration rate of 26 breathes per minute and a blood oxygen saturation of 93%. She estimated her pain to be 9 out of a possible 10. Examination of her chest revealed no intercostal retractions, rales or wheezes. She had no nasal flaring. Mrs Whiting's abdomen was soft but exhibited direct tenderness and there was pain in the right upper quadrant.

Dr Tan made a differential diagnosis of cholelithiasis (gall stones) or cholecystitis (inflammation of the gall balder).

Her plan was for:

- Admission to the surgical ward for pain management;
- An abdominal ultrasound and an abdominal CT scan; and
- Review by the surgical team later in the morning.

Dr Tan wrote up orders for Mrs Whiting to be given morphine for her pain, Maxolon for her nausea, Mylanta and Xylocaine in case her pain was peptic in origin and Ventolin and Atrovent for her asthma, all "PRM" – that is, as needed. She said in evidence she prescribed the asthma medication even though Mrs Whiting was at that time showing no signs of asthma, because she realised her history indicated that could change at any time.

Mrs Whiting was given the narcotics ordered and her pain soon settled.

Admitted to the surgical ward

Dr Ashish Gupta commenced work at the BBH in January 2004 as a Junior House Officer. By August 2005 he had progressed to be a Principal House Officer in Orthopaedics. On weekends he was also required to provide cover for the general surgery ward.

It was in that capacity he examined Mrs Whiting in DEM on the morning of 13 August 2005. He first reviewed her chart and noted the history summarised above and the details of her earlier admission. He reviewed the blood tests taken the night before and noted no abnormalities.

On examination Dr Gupta found Mrs Whiting to have normal vesicular breath sounds and to be free of wheezes. He said he palpated a "*vague mass*" in her upper right quadrant. He said he discussed her case with the consultant, Dr Anderson, during the morning ward round, although the consultant has no memory of this and said he would only go into the hospital on weekends if there was an acute case requiring his attendance.

Dr Gupta said noticing Dr Faridi had not prescribed any asthma medication the previous evening led him to conclude Mrs Whiting's asthma was not symptomatic at that stage, which was consistent with her presentation when he examined her.

Dr Gupta said his initial, differential diagnosis was an obstruction in the ampulla of vater (the terminal end of the common bile duct) or a pancreatic tumour.

He ordered an abdominal x-ray and ultrasound scan be performed.

Shortly after Dr Gupta examined her, Mrs Whiting was moved to the surgical ward.

The medication chart records that at 10.00am Mrs Whiting was administered 5mg of nebulised Ventolin and 250mcg of nebulised Atrovent. These medications had been prescribed by Dr Tan on an as needed basis and were given by Registered Nurse Monica Hanson, who candidly admitted in her statement and in her evidence that she could not remember doing so. However, she was adamant she would not have given those drugs unless the patient's symptoms called for them. She said in this case that could have involved the patient requesting the medication; having an audible wheeze; or complaining of having difficulty breathing.

CT scan is ordered

Dr Gupta reviewed the X-ray and ultrasound reports later in the day. He was unable to say exactly when this occurred but the note of the conclusions he drew from them appears in the chart immediately after a nursing note made at 2.00pm. His entry noted the scan showed the common bile duct was dilated and records Dr Gupta's provisional diagnosis of cholelithiasis (gall stones) which were seen by the ultrasound. The scan had not enabled the pancreas to be adequately visualised and it did not allow Dr Gupta to discount his concern that there may have been a gall stone blocking the common bile duct, nor to be sure there was no lesion or tumour in the pancreas. Dr Gupta said his inclination to order a CT scan was confirmed by his belief Mrs Whiting would need to be transferred for surgical intervention if either of these possible diagnoses were valid. He also considered a tertiary hospital would require the level of certainty of her condition that only a CT scan could provide before agreeing to receive her.

He said he looked at the chart and recalls checking Mrs Whiting's observations but can't recall noticing that she had been given asthma medication earlier in the day.

Dr Gupta also claims to have examined Mrs Whiting at around this time and to have ausculated her chest. He said he did this because he was planning to order intra venous contrast medium to better delineate the organs of the abdomen when the CT scan was undertaken. He knew the risk of an adverse reaction to the contrast was higher in people suffering active asthma. He said in evidence he would not have used the contrast if Mrs Whiting's asthma had been symptomatic. He said he discussed with her the risk of adverse reactions to the contrast and inquired as to whether she was allergic to iodine.

The extent of Dr Gupta's knowledge of Mrs Whiting's asthma symptoms became contentious because one of the nurses asserted in evidence she told him Mrs Whiting had exhibited an audible wheeze that afternoon and had been given Ventolin and Atrovent. These drugs are charted as having been given at 2.30 and 2.35pm respectively and are written up in the progress notes at 3.00pm – *"Vent + atrovent neb give prior to CT preparation commencing due to wheeze. Given with effect."*

The nurse, Michelle Mullins, became aware that it was planned to give Mrs Whiting contrast when she was called by the radiographer, Steve Risson, and told to give the patient oral contrast. This caused her to complete a CT scan preparation checklist which alerted her to asthma being a contra indication to iodine based contrast. She said she called Mr Risson back and told him Mrs Whiting had asthma for which she had recently been treated. Mr Risson said he recalls being told something about Mrs Whiting's asthma and "*seems to recall"* being told she'd been given Ventolin. He believes he would have told Dr Gupta this when he called him in response to Nurse Mullins' request for the radiographer to check that the doctor still wanted to proceed with the contrast.

Mr Risson did speak to Dr Gupta about the issue and it was apparent the doctor already knew Mrs Whiting was asthmatic but the radiographer was unable to recall whether he told the doctor of her recent episode and her treatment. Dr Gupta indicated he wanted to proceed with the use of contrast and so Mr Risson called Nurse Mullins back and instructed her to go ahead with the preparation.

There were in evidence three written accounts by Nurse Mullins of the relevant events and the nurse gave evidence. In her first report, made three weeks after the events, and the second statement made in June 2008, she makes no mention of a conversation with Dr Gupta about Mrs Whiting's asthma. In a statement made in November 2009 she said that after Mr Risson had confirmed that Dr Gupta knew Mrs Whiting had asthma, she spoke to the doctor herself.

> *"Dr Gupta also advised me to go ahead and give the Mede-Scan prep. I cannot recall whether those instructions were given face to face or by telephone, but I do recall they came from Dr Gupta personally."*

When she gave evidence, Nurse Mullins said in that conversation she told Dr Gupta she had that afternoon given Mrs Whiting Ventolin and Atrovent on account of her having an audible wheeze. She could not explain why this information had not been included in any of her statements, other than to say she had not been involved in a coronial inquiry previously and did not know the level of detail required. She was however, adamant the disputed details had been conveyed to the doctor.

Dr Gupta agrees he spoke to a nurse in the ward after the oral contrast had been ordered and assumed she called him after noticing the reference in the contrast checklist to asthma. He denies the nurse told him she had been symptomatic and required asthma medication that afternoon. He said had he been given that information he would have gone and examined Mrs Whiting again. Had he found her symptoms to be severe, he would have postponed the scan. As it was, he had seen her twice that day and on neither occasion, according to his interpretation of her observations, was she suffering any active asthma symptoms.

Accordingly, Nurse Mullins commenced administering the oral contrast at 2.45pm in accordance with Dr Gupta's instruction.

CT scan is performed

Shortly before 4.00pm Mrs Whiting was taken to the department of medical imaging (DMI). She informed Mr Risson she was asthmatic. He recalls discussing the possible complications with her, including anaphylaxis but reassured her medical staff members were on hand to manage such a situation. It was apparent to him Dr Gupta had already explained these things to Mrs Whiting. For this reason, he said he did not complete the usual consent form.

Mr Risson set about preparing the contrast medium for injection. He had been told by Dr Gupta earlier that he would not be available to administer the contrast, so in accordance with usual practice on the weekend when no imaging nurse was rostered on, he telephoned the DEM, which was just across the corridor, and asked for a doctor from that department to come and undertake the procedure. While he waited he undertook preliminary scanning that did not require intra venous contrast.

In May 2004 Dr Tun Tun .was employed as a Junior House Officer in the DEM of the BBH. In April 2005 he was promoted to Senior House Officer.

On 13 August 2005 he was working in the DEM when he received a telephone call from Mr Risson asking him to inject contrast medium. He went across the corridor to the CT scan room where he met Mrs Whiting for the first time. He had no prior knowledge of her. He was told by Mr Risson that Mrs Whiting was to undergo an intravenous CT scan for abdominal pain. He was also told she was ready for the injection; she had been checked for allergies; her vital signs were *"ok*" and she had already taken oral contrast. In his statement Dr Tun said he thinks Mr Risson informed him of her history of

asthma but in evidence he said the radiographer did not mention she had been wheezing and had required medication earlier in the afternoon. He also candidly admitted that even had he been told this it is likely he would have proceeded because the contrast had been ordered by a more senior doctor who had knowledge of the need for it and had presumably taken into account any risks of the procedure.

Dr Tun says he explained the procedure to Mrs Whiting and confirmed she had no relevant allergies. He examined Mrs Whiting by checking her vital signs and ausculating her chest. He concluded nothing apparent in her presentation indicated the contrast should not be administered and he authorised it to proceed.

The contrast consisted of 75ml of a solution which was introduced into the patient's vascular system via a syringe pump. It took about 30 seconds to be injected. Dr Tun remained present while this occurred and left soon after in accordance with usual practice at the BBH. Mr Risson estimated he left about a minute after the injection commenced but it may have been slightly longer. The procedure seemed to be proceeding without complication at that stage.

The MET call

Dr Tun could not have stayed much longer than a minute or so because Mr Risson estimates the scan had only been going for about 30 seconds when Mrs Whiting began moaning. He stopped the scan, moved the bed out of the CT scanner and asked her if she was alright. She told him she thought she was going to be sick and he obtained a bag or tray for her to vomit in. She became short of breath and so he activated an emergency button on the wall and commenced applying an oxygen mask from the wall of the CT room.

Mr Risson thought the patient then collapsed, but Dr Tun, who seems to have arrived in less than a minute of the MET call being made, says she was still sitting up when he came in, but very soon collapsed back onto the bed as he attempted to examine her.

In the next few minutes numerous other staff members responded to the MET call and as can be readily appreciated the activity in the room became frenetic. Most of those who attended have provided two or more statements and many gave evidence at the inquest. Understandably, their evidence is not entirely consistent or reconcilable but I do not conclude this is the result of any of the witnesses being deliberately dishonest.

Resuscitation attempts

Two nurses from the ED followed Dr Tun into the room. One of them, Christine Cameron, commenced scribing on paper she found in her pocket. In her statement she said she did this because she could not immediately find the approved resuscitation record forms: in her oral evidence she said she found one but it was confusing. In any event, she later transcribed her notes onto such a form. She said in evidence she was careful to list events as they occurred with reference to the clock in the room and she was not otherwise involved in what was happening. She acknowledged, however, that when

transposing the information, on occasions she listed events that took a number of minutes as occurring at one time and recorded the nearest minute in relation to other matters. Notwithstanding some inconsistencies between the two written records, I am of the view the form is largely reliable as to when medical procedures occurred and observations were made but less so as to when the various staff members arrived.

As soon as Mrs Whiting collapsed, Dr Tun commenced intubating her with the assistance of Nurse Justine de Meillon (nee Burt). He believes he did this successfully on account of his visualising the epiglottis as he inserted the tube. He was reinforced in this view by the resistance he encountered when attempting to squeeze air from the air viva bag into the patient. Dr Tun reasoned if the tube had been inserted into the patient's oesophagus by mistake, little resistance would be met when inflating the stomach as compared to her bronchospasm affected airway. Ms Cameron records on her rough notes that intubation was achieved at 4.10pm but on the form at 4.08pm, six and four minutes respectively after the MET call was made. CPR was also commenced or was continuing at this time. Dr Tun explained managing Mrs Whiting was made more difficult by her being on the CT table. He stressed his focus throughout was on managing her airway.

Dr Thet Aung (known as Dr Thet), who was also in the DEM when he heard the MET call, made a note that he arrived at the CT room at 4.10pm. However he conceded in evidence that looking at the clock was a low priority in the circumstances. Nurse Cameron believes Dr Thet arrived about the same time as she and Dr Tun entered the CT room. His evidence changed and Dr Thet was uncertain as to whether Mrs Whiting had already been intubated when he came in, or whether that happened soon after he arrived. In any event, he is sure CPR was in progress and he joined in doing the chest compressions. He said when he arrived Mrs Whiting had no pulse, no spontaneous breathing and she was asystole. Dr Thet said soon after he arrived he ordered adrenaline be given and this occurred. This is supported by Dr Tun.

Registered Nurse Gerard Smith made his way quickly from the ICU to the CT room when he heard the MET. He said when he entered the room he immediately asked whether adrenaline had been administered. He said one of the doctors answered in the negative and so he opened a mini–jet of the drug and administered it to the patient intravenously.

Registered Nurse Leah McIntosh supports Nurse Smith's version. She says she made her way to the CT room about 5 minutes after the MET call. She said when she got there all of the nurses already mentioned were present as were three doctors. She said she saw Nurse Smith had a mini-jet in his hand and was just about to, or had just, administered adrenaline with it.

Whoever ordered it, the resuscitation record notes adrenaline, one mg, and atropine, 600mcg, were given at 4.10pm. This largely accords with the evidence of those present and is supported by an ECG trace showing tachycardia in sinus rhythm at 4.12pm.

This must have only been short-lived as it seems a staff anaesthetist, Dr Yatham (referred to by all as Dr Reddy) arrived in the DMI soon after Nurse Smith. He said the ECG monitor showed the patient's heart rhythm to be "*almost asystole*" and she was cyanosed and blue. As a result of auscultating her chest and negligible oxygen saturations he suspected the tube may have been misplaced. He therefore replaced it. The resuscitation record shows this happening at 4.16pm.

The other member of staff who attended was Dr Tin Aung (known as Dr Tin). It is unclear what role he played, if any. He said he saw Dr Reddy re-intubate Mrs Whiting on two occasions. If this is accepted he must have arrived before or at about the same time as Dr Reddy. Dr Tun suggested that Dr Tin assumed some leadership of events but this seems clearly wrong.

Dr Reddy said he did not know who was in charge of the event and did not inquire as to whether adrenaline, other drugs, or adequate fluids had been given. He says he concentrated on ensuring the airway was secure and that the ventilation was proceeding appropriately.

It seems his re-intubation of Mrs Whiting may have helped as at 4.17pm she had a pulse of 102 beats per minute and her blood pressure was recorded as 109/64.

For the next 10 minutes Mrs Whiting's pulse fluctuated wildly from 188 to 27. At 4.23pm she had a blood pressure reading recorded at 106/82 but her blood oxygen saturation remained parlous. Apart from one recording of *"<50"* at 4.18pm and confirmed by an arterial blood gas reading of 42% at 4.19pm, it is shown as *"nil*" throughout.

She was commenced on a litre of normal saline at 4.20pm after another intra vascular catheter was inserted and CPR continued. Frothy pink fluid was suctioned from the ET tube on occasions and ventilating continued to be difficult. Some of the nurses report seeing abdominal distension, although this may have been before the first re-intubation.

At 4.26pm Mrs Whiting's pulse dropped to 27 beats per minute and she was given another 1mg dose of adrenaline and 600mcg of atropine.

At about this time the ET tube was accidentally displaced and Dr Reddy took the opportunity to substitute a slightly larger tube when he re-inserted it. There was no appreciable improvement from either of these actions.

CPR continued for another 10 minutes and at 4.31pm and 4.35pm further doses of adrenaline were given without effect.

At 4.39pm the attempts were ceased and Mrs Whiting was declared dead. Her family and the friend she had been staying with were notified of the death as were police and the coroner.

The autopsy results

On 16 August 2005 an autopsy was performed on Mrs Whiting's body by an experienced forensic pathologist Dr Rosemary Ashby. So far as is relevant to an understanding of this case, she found a swollen gallbladder with multiple free stones. There was also a stone just beyond the outlet of the cystic duct. The pancreas appeared normal. The endo-tracheal tube was positioned in the trachea.

She expressed the view that the cause of death was anophylactoid bronchospasm in a bronchial asthma diathesis subject attributed to adverse reaction to radiographic contrast medium investigation procedure. The other experts who gave evidence agreed with this conclusion.

Findings required by s45

I am required to find, as far as is possible who the deceased person was and how, when, where she died and the medical cause of her death. As a result of considering all of the material contained in the exhibits and the oral evidence, I am able to make the following findings:

Identity of the deceased – The deceased person was Edith Whiting

How she died - She died on the day of being admitted to the Bundaberg Base Hospital as a result of an allergic reaction to intravenous CT scan contrast medium administered in an endeavour to investigate abdominal pain. Her death followed sub optimal and uncoordinated resuscitation attempts.

Place of death – Mrs Whiting died at the Bundaberg Base Hospital in Queensland.

Date of death – Mrs Whiting died on 13 August 2005.

Cause of death – Mrs Whiting died as a result of an anophylactoid reaction to intravenous imaging contrast medium leading to a cardio respiratory arrest.

Recommendations and referrals

In addition to the findings of the particulars of the deceased and the circumstances of her death that have been detailed above, the Act in s46 requires me to consider whether changes to practices or procedures relating to the circumstances of the death could prevent deaths from happening in similar circumstances in future or otherwise contribute to public health or safety. Obviously, when considering whether to make recommendations of that nature I should have regard to any changes made since the death.

Section 48 of the Act requires I consider whether the conduct of any of those involved in the events investigated should be referred to the DPP for

consideration of prosecution if I suspect a person has committed a criminal offence. I may also or in the alternative refer information to a disciplinary body for a person's trade or profession if I conclude the information gathered during these proceedings might cause the body to inquire into or takes steps in relation to the conduct of any person over whom it has jurisdiction.

When considering those questions I need not have regard to esoteric studies undertaken overseas in years gone by – these proceedings are not an appropriate venue for the creation of new knowledge by the synthesis or analysis of multiple research projects, nor am I concerned to try and identify every possible contributory cause.

I need undertake sufficient inquiries to enable me to make the findings mandated by s45. Thereafter, when considering s48 issues it is appropriate I have regard to the standards reasonably expected of people with the experience and training of those involved in the case at hand in the circumstances in which they were acting at the time of the death. In that regard I am guided by the expert opinion of other professionals practising in this country and the published standards of relevant colleges, departments or regulatory authorities.

A number of issues have been identified which could prompt a s48 referral or warrant s46 recommendations. I shall attempt to make findings in relation to each of those issues and then determine whether either of those responses should follow.

The decision to administer I.V. contrast medium

After reviewing the ultrasound report, Dr Gupta's provisional diagnosis of stones in the distal end of the bile duct was not unreasonable. He probably over estimated his powers of palpation when he convinced himself he had felt a mass in Mrs Whiting's pancreas. However, having come to that conclusion he was bound to investigate it.

All of the experts agreed the optimal way to further investigate these possibilities was a CT scan with I.V. contrast. While Dr Vinen considered surgery could have proceeded without it, neither Dr Kruger nor Dr Kelly was of a similar view.

In view of his limited experience, Dr Vinen and Dr Kruger considered Dr Gupta should have discussed the matter with his consultant surgeon. I agree and I was concerned Dr Gupta seemed over confident, with limited powers of self reflection. Nevertheless, in this case adopting the better course suggested by the experts would not have changed the outcome. The relevant consultant, Dr Anderson, said he did not think Dr Gupta needed to consult him and had he done so he would have agreed with the scan as proposed.

In those circumstances I conclude it was not unreasonable for Dr Gupta to conclude a CT with I.V. contrast was appropriate, provided any extra risk posed by Mrs Whiting's asthma did not override the benefits to be secured.

Whether asthma increases the risk of a serious adverse reaction remains contentious. However the relevant professional college and the experts who gave evidence of the prevalent views among senior practitioners clearly consider active or acute asthma increases the risk of an adverse reaction. The risk of a reaction is low and the risk of death even lower. The order of 1 in 170,000 seems to be the accepted figure.

It is in this context that Dr Gupta's decision making should be considered.

Dr Vinen was critical of the decision on the basis that Mrs Whiting's history noted in the medical records suggested not only was her asthma severe, it was not stable. In support of this view he relied on her requirement for 3 nebulisers the previous day, the need for her asthma to be controlled with Seritide, which is a corticosteroid, and the exacerbations of her symptoms at 10.00am and 2.30pm on the day of her death requiring medication.

Dr Kruger considered that Mrs Whiting's risk of an adverse reaction based on her having a history of asthma was probably low because he considered her asthma was well controlled with preventative medication. He acknowledged however, there was no baseline against which to compare her condition on 13 August 2005. Dr Kruger's evidence was that it's not uncommon for patients with more severe asthma than Mrs Whiting apparently had on the day in question, to undergo scans with I.V. contrast medium. He also observed the desire for complete investigation is now given the highest priority in the context of a culture of medical care which he critically referred to as defensive medicine.

D Slaughter's view coincided with Dr Kruger's. He was adamant that people with asthma as least as bad as Mrs Whiting seems to have had, regularly undergo such scans at the hospital where he works. He said he would have given I.V. contrast to a patient with a similar history and symptoms of asthma as Mrs Whiting and would only have hesitated had her history included an ICU admission or was on I.V. steroids.

Dr Kruger was not dismissive of Dr Vinen's opinion and thought it reasonable because he considered this to be an issue on which sufficiently experienced and competent medical minds are likely to differ.

I accept that Mrs Whiting had asthma that required medication on two occasions on the day of her death. There is a dispute as to whether Dr Gupta was told of the second occasion this occurred. I am of the view nothing turns on it for three reasons. First, in my view he should have reviewed her medication chart when he examined the patient before deciding to proceed with the scan – this would have revealed the first occasion and brought the issue squarely into focus. Second, he should have asked Nurse Mullins whether Mrs Whiting had been symptomatic while on the ward when she rang him to raise her concerns about giving contrast to an asthmatic. Third, when she was examined by Dr Gupta after the first episode when she required medication, Mrs Whiting was not showing any symptoms that would contra indicate use of the contrast and the same situation prevailed when she was

examined by Dr Tun immediately before it was administered. In the circumstance I am of the view that the information should have come to Dr Gupta's attention one way or another but I can't see that it would have changed the way Mrs Whiting was treated.

In making the risk benefit analysis the following factors are relevant in my view:-

- Dr Gupta reasonably believed he needed to exclude or confirm his initial diagnoses.
- If he was correct both conditions would require transfer to a tertiary hospital for surgery.
- This was unlikely to be agreed to without the confirmation of one of the differential diagnoses.
- The transfer and particularly the proposed surgery involved far more risk to the patient than the scan. If the scan could obviate those procedures the risks were undeniably balanced in favour of proceeding with CT with I.V. contrast.

Having regard to these factors and as eminent practitioners highly experienced in the field considered the risk of Mrs Whiting suffering a serious adverse reaction was very slight, I conclude Dr Gupta did not act unreasonably in ordering the contrast be given provided the state of Mrs Whiting's asthma at the time of the injection did not indicate otherwise.

The injection of the contrast

The terms "stable", "maintained", "well controlled" seem to be used to distinguish benign asthma from the disease in an "acute" "symptomatic", "active" or "brittle" state, but there does not appear to be consensus among practitioners as to how these assessments are reached. Notwithstanding this, when Mrs Whiting received the contrast I conclude her condition was not such as would indicate she should not have received it.

Prior to injecting the solution Dr Tun explained the procedure to the patient, listened to her chest and heard no wheeze or any other clinical sign consistent with her asthma being acute or active. I could not be critical of Dr Tun administering the solution in the circumstances.

My view of the evidence is that he only remained in the CT control room for no more than a minute, or perhaps two after the contrast had been given. That was not in accordance with best practice. I acknowledge he only went a short distance away but I have trouble accepting a doctor working in a MED is necessarily "*immediately available*", as is required.

However it seems his actions were in accordance with accepted practice at the hospital. The point at which a professional's personal responsibility ends and that of the institution which employs him takes over is a vexed question. In this case, having regard to the fact that Dr Tun's role involved him in such procedures only as an auxiliary staff member when the trained nurse was absent, I do not consider his departure from the highest standard to be

significant. In any event, on this occasion it did not impact on his ability to assist the patient. He was able to immediately return to the CT room when needed. Accordingly I make no adverse finding against Dr Tun for not remaining in the CT room longer.

The response to the MET call

I acknowledge the doctors and nurses responsible for the resuscitation efforts were relatively inexperienced and placed in a very challenging situation. It is impossible to fully appreciate the dynamic stressors of that situation from a distance. Five years later, using the artificial processes of court proceedings to attempt to reconstruct those events is bound to fall short. However, even accepting that, I conclude the efforts of the doctors and nurses were hampered by lack of coordination and some poor decisions.

As hectic as things were, I am reasonably confident the various investigations have managed to piece together the sequence of events with reasonable accuracy. Of course there are inconsistencies and gaps in the evidence but I do not consider that prevents a reasonable assessment of what happened.

The records made by the former Nurse Cameron are crucial to that process. It has been submitted they should be disregarded because they allegedly contain information about events she could not have witnessed. That would only be appropriate if I were to conclude that on the night of the death Ms Cameron deliberately and fraudulently created a false log of the events. It is apparent that from very soon after the event the other staff members who were involved in it had access to that record to create their own reports. The RCA also relied on it. I feel sure that if Ms Cameron had not been in the CT room from soon after the emergency commenced others who were would have raised this objection by now. None has previously and none did in the inquest. There is no basis on which I could now disregard it. That does not mean it is completely accurate, but it is, in my view, largely so.

Based on all of the evidence I can confidently make the following findings:-

- Dr Tun was first on the scene very soon after the MET call, probably by 4.05pm, with at least one and probably two nurses, Justine Bert and Christine Cameron, arriving seconds later;
- With the assistance of Nurse Bert he set about intubating Mrs Whiting and achieved that by 4.08 or 4.10;
- Dr Thet remained in the MED while he finished attending to another patient, but was in the CT room within minutes, at about the time the first intubation was being completed;
- The next people to arrive around about 4.10pm were Nurse Leah McIntosh, Nurse Gerard Smith and Dr Reddy. It took a little longer for them to get to the CT room, as Ms McIntosh was working in the surgical ward, which was on a different floor from the CT room and Mr Smith and Dr Reddy were working not only on a different floor but also in a different building. All agree that by this time the patient had been intubated and she was receiving CPR;

- Dr Tin Aung arrived either shortly before or shortly after Dr Reddy and Nurses Smith and McIntosh. He took no active role in the emergency response; and
- None of the doctors assumed a leadership role. Dr Reddy who was an older, more experienced specialist, qualified in the discipline most relevant to the task at hand should have done so.

The expert reports identified three other potential deficiencies in the resuscitation attempts:

- The need to intubate Mrs Whiting on 3 separate occasions;
- The delays in the administration of the first two doses of adrenaline; and
- The relatively small volume of I.V. fluids administered.

Multiple intubations

Dr Tun based his belief that he had correctly intubated Mrs Whiting on two factors: first, he saw her epiglottis when inserting the tube; and second, the considerable resistance he encountered when attempting to ventilate her. Only the second of these is probative and it is not conclusive. Against the proposition is Dr Reddy's evidence that he listened to the patient's chest and did not hear the entry of air one would expect and Nurse McIntosh's evidence that she saw Mrs Whiting's abdomen expanding as she was being ventilated. I am left uncertain and decline to make a finding on the issue. In any event, I am satisfied Dr Tun made his best endeavour at what is universally regarded as an extremely difficult procedure when the patients airway is swollen and congested as a result of an allergic reaction.

The uncertainty could have been avoided had there been expired CO2 detectors or monitors in the emergency trolley.

When Dr Reddy arrived in the CT room, he focussed on Mrs Whiting's airway. He was concerned that she had not been properly intubated and this concern was supported by his examination of her chest. He wasn't sure the placement was correct and it needed to be if the patient was to have any prospects of being resuscitated. For these reasons his decision to re-intubate was reasonable. No criticism can be made of the decision to re-intubate on the second occasion as it was required after the ETT became dislodged.

Administration of adrenaline

It is apparent the doctors did not appreciate the significance of adrenaline in a setting of a severe anaphylactoid reaction. They were attempting to manage the resuscitation on the premise that it was necessary to attend to Mrs Whiting's airway, breathing and circulation prior to consideration of the administration of adrenaline. Drs Kelly, Kruger and Vinen all agree this was misconceived. It is the mainstay of the treatment of anaphylaxis because it assists ventilation by reversing bronchospasm, as well as raising blood pressure by stimulating heart rhythm if it has arrested, as apparently occurred in this case. Dr Vinen gave evidence that if anything was going to save Mrs

Whiting's life it was adrenaline. The experts agreed it needed to be given as a matter of priority and the first dose should ideally have been administered prior to or simultaneously with the first intubation attempt.

We know that there was at least one nurse, probably two, in attendance with Dr Tun in the very initial stages who could have administered adrenaline well before 4.10pm if its significance had been appreciated. The failure to do so compromised the group's attempts to ventilate the patient. Even if the ET tube was correctly inserted, gas transfer was hindered without adrenaline.

The second dose was administered at 4.26pm. Dr Vinen considers it should have been administered earlier because although the ECG recorded a rhythm at 4.12pm there was apparently no measurable blood pressure prior to 4.17pm. Dr Kelly said the second dose should have been given before 4.17. The very short half life of the drug meant its remedial effects quickly dissipated. Dr Kruger was less critical. He said it is difficult to know whether more adrenaline was indicated. It depended on what was happening with Mrs Whiting's respiration. However he acknowledged that even if a heart rhythm had been re-established, compromised respiration and gas exchange could have been assisted by lower, more frequent doses of adrenaline. I conclude the doctors in the CT room did not appreciate this.

I.V. fluids

The resuscitation record indicates that Mrs Whiting received only one litre of I.V. fluids at approximately 4.20pm. Dr Kelly explains in his report that large volumes of fluid are required because an anaphylactic response increases the permeability of blood vessels, with the consequence that large volumes of fluid may shift out of the vascular system and into the surrounding tissues within a short period of time. One of the treating doctors gave evidence they were concerned Mrs Whiting could have become overloaded with fluids. This was considered by the experts to be extremely unlikely. Drs Kelly and Vinen considered there is no reason why she could not have received a few extra litres. They may have helped to increase her blood pressure.

In summary, I am persuaded adrenaline could and should have been given earlier and it is also likely Mrs Whiting should have received a second dose sooner and/or more, smaller doses. More fluids should also have been given.

Nevertheless I remain of the view that the doctors did their best in challenging conditions.

Outcome of better treatment

Dr Kelly suggested the record of the fixed/dilated pupils at 4.05pm indicates that Mrs Whiting had necessarily sustained an irreversible brain injury by this time. This evidence was rejected by Drs Vinen and Kruger, who have had extensive experience in emergency room resuscitations. Both specialists said they have treated patients in similar situations who have fully recovered.

In his report Dr Kelly concluded that Mrs Whiting had suffered an asystolic arrest by the time the arrest team arrived. He conceded in evidence this was

no more than a possibility. Relevantly, even if she had suffered such an arrest, it had been successfully reversed following the administration of adrenaline as evidenced by the rhythm on the ECG strip at 4.12pm. This is significant because while the survival rates for asystolic in-hospital arrests are less than 10%, survival rates of 20-30% apply to patients who sustain in-hospital cardiac arrest which involve the presence of a cardiac rhythm, albeit abnormal.

Dr Kelly considered that even if different treatment had been provided in the course of the attempted resuscitation, Mrs Whiting's prospects of survival were not favourable because she had a severe anaphlyactoid reaction accompanied by a respiratory arrest.

Drs Kruger and Vinen were not quite so pessimistic and considered that while it cannot be said that Mrs Whiting would probably have survived with more proactive treatment, she may have.

Having considered all of the expert opinion, I have come to the conclusion that whatever treatment had been given to her, the chance of Mrs Whiting recovering from the severe cardio respiratory collapse she experienced soon after the contrast was administered was slight. Better treatment would have improved her chances but it can not be said that anything the doctors in the CT room could reasonably have done would have made survival likely.

Referral for prosecution or discipline

Mrs Whiting's sudden and unexpected death no doubt greatly distressed her family. I can easily appreciate that. I also acknowledge medical professionals must be held accountable for their actions. However it does not follow that because someone dies, someone else must be blamed or punished.

In this case I have found some of the actions of some of the doctors were not of the highest standard. However, apart from the failure of one of them to assume a leadership role, there is no doubt all did the best they could in the very difficult circumstances in which they found themselves.

Even if it could be proven that the administration of the contrast ultimately caused or significantly contributed to Mrs Whiting's death, in view of the rarity of such a serious adverse reaction it could not be shown to be a foreseeable outcome. Nor could the efforts of those who attempted to resuscitate her be shown to be criminally negligent. Accordingly, I do not consider it appropriate to refer the conduct of any of the doctors to the DPP for consideration of the commencement of criminal proceedings against them.

I have found the doctors involved in the resuscitation could have taken some more timely or other steps. However, their departure from the highest standards was not wilful, nor so gross as to warrant disciplinary action in my view. Accordingly, I do not intend to refer the conduct of any to the medical board.

Preventative recommendations.

The managers of the BBH have had regard to the findings of the RCA and have made changes to the training of the staff in the hospital that seeks to respond to the weaknesses highlighted in this case. The stocking of emergency trolleys has been standardised and CO2 monitors have been included. Changes to staffing arrangements in the DEM have had regard to the need for a senior doctor to be on hand whenever I.V. contrast is administered.

I am of the view those running the hospital are best placed to address the problems brought into focus by Mrs Whiting's sad death. The remedial action they have taken appears appropriate. Accordingly, I do not intend to make any further recommendations.

Michael Barnes
State Coroner
Bundaberg
11 June 2010