



# MAGISTRATES COURT of TASMANIA

## CORONIAL DIVISION



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## Record of Investigation into Death (Without Inquest)

*Coroners Act 1995  
Coroners Rules 2006  
Rule 11*

I, Rod Chandler, Coroner, having investigated the death of Heather Mary Bird

### **Find that:**

- (a) The identity of the deceased is Heather Mary Bird;
- (b) Mrs Bird was born in Hobart on 31 March 1948 and was aged 66 years;
- (c) Mrs Bird died at the Royal Hobart Hospital (RHH) in Hobart on 12 July 2014;
- (d) The cause of Mrs Bird's death was a retroperitoneal haemorrhage due to anticoagulation following right cerebrovascular infarct following intra-arterial cannulation of the right carotid artery.

### **Background**

Mrs Bird had been married to Kevin James Bird for 48 years. They resided at Murdunna and had 3 children. She had a complex medical history including a perforated diverticulum requiring extended hospitalisation, a stroke with significant residual effects, Type 2 diabetes, obesity and severe rheumatoid arthritis requiring the use of a wheelchair.

### **Circumstances Surrounding the Death**

On 5 June 2014 Mrs Bird was an emergency presentation to the RHH with vomiting and abdominal pain. She was admitted to a ward. A CT scan demonstrated a small bowel obstruction but this resolved within 36 hours. However, clinical signs suggested a pneumonic process and by 7 June a diagnosis of left lower lobe pneumonia (with possible aspiration) was made. Mrs Bird made a steady improvement over the following days and by 13 June was keen to go home. However, her temperature spiked overnight on 14/15 June. The following day a decision was made to place a central venous catheter (CVC) into the right internal jugular vein. The purpose was to facilitate blood sampling and to enable the administration of intra venous fluids and antibiotics to treat the pneumonia. The procedure was undertaken by consultant anaesthetist, Dr Peter Peres, under ultrasound guidance. It proved to be difficult and required multiple attempts. The records show some confusion

upon the site of insertion, the medical record indicating the left internal jugular vein was used whilst the radiology shows it to have been the right jugular vein. The colour of blood extracted via the line was considered by the anaesthetic registrar to be consistent with venous blood. A sample of blood was subject to a blood gas analysis at 5.02am on 17 June which clearly showed it to be arterial and not venous. However, this was not recognised by the medical staff at this time. Over the following days Mrs Bird's condition deteriorated. On 18 June she had a further temperature spike and became tachypnoeic (quick and shallow breathing) necessitating a medical emergency team (MET) call. The following day medical staff met with family members to discuss Mrs Bird's goals of care. Despite a poor prognosis both Mr and Mrs Bird were adamant that full treatment be maintained.

By 23 June there had been some improvement in Mrs Bird's condition. However, that morning it was noted by the radiology registrar, on a follow-up x-ray, that the CVC had been mal-positioned and was in the carotid artery and extending to the aorta. Medical staff met with Mr and Mrs Bird and explained the complication and that it had not been realised earlier. They were told that the catheter had to be removed and that this procedure involved some risk including the risk of stroke. The following day the CVC line was removed without incident. However, imaging at the time showed that a fibrin sheath had formed in the carotid artery and Mrs Bird was commenced on a full anti-coagulant dose of clexane to reduce the risk of cerebral embolism and stroke.

On 27 June a CT scan of Mrs Bird's brain showed a sub-acute stroke in the primary motor cortex. The plan was to continue the therapeutic clexane and to ready Mrs Bird for transfer to the rehabilitation ward. A MRI scan on 30 June confirmed that Mrs Bird had suffered a stroke which was "*likely secondary common carotid artery line*" thereby confirming an association with the CVC's insertion. On 2 July Mrs Bird was transferred to the rehabilitation ward. Imaging on 7 July showed that the fibrin sheath was still present and was mobile.

On 9 July a MET call was made for Mrs Bird due to a blood pressure of 90/55 mmHg and a tachycardia of 120 bpm. Her Glasgow Coma Score had fallen and there was no urine output for 2.5 hours with a urinary catheter in situ. The MET team stood down after the blood pressure rose to 110 mmHg systolic following IV fluid treatment. Later that day she had a percutaneous inserted central catheter (PICC) line put in place. At 4.45pm the resident medical officer reviewed Mrs Bird. Her blood pressure was 110/70 mmHg, heart rate was 90bpm and respiratory rate was 18bpm. At 7.30pm Mrs Bird was reviewed by an intern. A tender abdomen was noted with a large haematoma. The intern was concerned that Mrs Bird had either an intracerebral haematoma or an intra-abdominal haematoma. Her condition was discussed with the medical registrar and the CT radiographer. At 9.35pm a further MET call was made, again because of hypotension and tachycardia. It was noted by an attending doctor that her haemoglobin was 75 being "*likely dilutional.*" It was recorded that a transfusion would be considered if her condition deteriorated. She was then transferred to an acute ward for one-on-one nursing care. Over the next few hours Mrs Bird's condition stabilised but at about 3.30am the next day she again became hypotensive and tachycardic. Her blood pressure was 80/50 mmHg and her heart rate was 130bpm. A diagnosis of septic shock was made and further IV fluid was administered. The blood pressure rose to 102/83 mmHg and the pulse rate was 137bpm. The intensive care unit

(ICU) registrar was contacted and advised that Mrs Bird required admission to the High Dependency Unit (HDU). The registrar agreed to review Mrs Bird.

That review took place at 7.20am on 10 July. Mrs Bird remained in shock. Blood pressure was 95/50 mmHg, heart rate was 130 bpm and haemoglobin was noted to be 71 g/L. A bolus of intravenous fluid was administered. Mrs Bird remained in the rehabilitation ward. At 9.46am a further MET call was made due to hypotension and tachycardia. On this occasion her blood pressure was unrecordable, she was peripherally shut down, had no radial pulse and her haemoglobin was found to be 35. An abdominal examination revealed a dense left-sided mass. She was transferred to ICU.

In ICU Mrs Bird was rapidly resuscitated and treated for shock. An urgent CT angiogram of the abdomen showed a large retroperitoneal collection thought to be a haematoma. An arterial bleeding source was demonstrated on the left side. Anticoagulation was reversed and blood transfusion given. Mrs Bird's condition continued to deteriorate over the following two days and she died at 9.45am on 12 July 2014.

### **Post-Mortem Examination**

This was carried out by State Forensic Pathologist, Dr Christopher Lawrence. In his opinion the cause of Mrs Bird's death was a retroperitoneal haemorrhage due to anticoagulation following right cerebrovascular infarct following intra-arterial cannulation of the right carotid artery.

I accept this opinion.

In his report Dr Lawrence includes this comment: *"Autopsy reveals a large retroperitoneal haematoma which appears to be arising from lower intercostal or lumbar arteries. There is an old left occipital stroke, a subacute right occipital stroke and an acute right frontal stroke. There does not appear to be any residual fibrin in the right carotid artery. The decision to anti-coagulate after removal of the cannula in the right carotid artery to prevent a further stroke probably contributed to the intra-abdominal bleeding. However, it is not exactly clear what caused the lumbar/intercostal arteries to bleed. I cannot see any real evidence of trauma."*

### **Investigation**

The investigation has been informed by:

- Medical reports/statements provided by Dr Peres, Professor Jens Froelich, Dr Anthony Beasley, Clinical Associate Professor Andrew Turner, Dr Andrea Laborde and Mr David Cottier.
- A statement from Mr Craig Watson as Executive Director of Services - Southern Region, Tasmanian Health Service.
- An affidavit from Mr Bird.

- A review of Mrs Bird's records at the RHH carried out by Research Nurse, Ms L K Newman.
- A report upon Mrs Bird's medical management and treatment compiled by Dr A J Bell as medical adviser to the coroner.
- Meetings to review the investigation attended by myself, Ms Newman, Dr Bell, Dr Lawrence and Forensic Pathologist, Dr Donald Ritchey.

In his report Dr Bell:

1. Advises that arterial puncture occurs in 3 to 15% of venous access procedures. As such it is a known complication and does not necessarily represent sub-standard medical practice.
2. Advises that unrecognised arterial cannulation with subsequent dilation and catheter placement within the artery can be associated with life-threatening haemorrhagic and neurologic complications.
3. Opines that the cerebrovascular brain injury or stroke suffered by Mrs Bird and observed on 27 June was attributable to a portion of the fibrin sheath within the carotid artery breaking off and causing a vascular occlusion in the brain.
4. Advises that the catheter used was not the standard type used for insertion into the jugular vein. It had a smaller internal diameter than the usual catheter and may have produced a lesser flash back of blood when inserted into the artery. As a result the recognition of the arterial insertion may have been less obvious.
5. Opines that it represents poor medical practice to use a catheter which was not designed for the insertion site.
6. Points out that the radiologist who reported on the check x-ray of the catheter's position following its insertion failed to recognise its misplacement. This represented poor medical practice.
7. Advises that immediate recognition and management of an arterial puncture usually prevents subsequent complications.
8. Retroperitoneal haemorrhage is most commonly seen in association with patients with anticoagulation therapy, bleeding abnormalities or haemodialysis and represents one of the most serious and potentially lethal complications of anticoagulation therapy.
9. Opines that it was an error at the time of the second MET call to consider Mrs Bird's fall in haemoglobin from 138 g/L to 71 g/l to be 'dilutional,' particularly as she was

being anti-coagulated. Mrs Bird was obviously bleeding but there was no visible blood. In these circumstances retroperitoneal haemorrhage should have been considered as a likely explanation.

10. Opines that the MET service was deficient because of:

- a. The failure to seek appropriate consultant input. Dr Laborde, as a staff specialist in Rehabilitation Medicine, was not sufficiently experienced in acute medicine to provide such input.
- b. Its failure to seek appropriate consultant input at the time of the second and third MET calls.
- c. Its delay in making the diagnosis of haemorrhagic shock.
- d. The four hour delay in having Mrs Bird medically reviewed following the diagnosis of haemorrhagic shock being made.

11. Advises that haemorrhagic shock represents a medical emergency. When this diagnosis was made Mrs Bird required immediate admission to ICU for emergency treatment including the cessation of her anticoagulation.

12. Advises that the failure to promptly diagnose Mrs Bird's haemorrhagic shock and have her appropriately treated in ICU denied her any prospect of survival.

### **Findings, Comments and Recommendations**

It is evident that Mrs Bird's admission to the RHH on 5 June 2014 was a consequence of a small bowel obstruction. This was promptly diagnosed and successfully treated. However, it seems clear that secondary to this condition Mrs Bird developed pneumonia which, in its initial stages, was successfully managed but had relapsed by 15 June. This led to the need for the placement of a CVC. It is at this point Mrs Bird's medical care and management went awry directly leading to her death. In this context I make these findings:

- The CVC was wrongly positioned in the carotid artery rather than the jugular vein.
- The radiologist wrongly reported the catheter to be in the correct position.
- The anaesthetic registrar wrongly considered the sample of blood taken following the CVC insertion to be venous when it was arterial.
- A blood gas analysis of the sampled blood performed at 5.02am on 17 June clearly indicated it to be arterial and not venous. This was not recognised by the medical staff at this time thus no steps were taken to remove the catheter and thereby reduce the risk of any associated complications.

- Chest radiographs taken daily for four days from 16 June were not reported upon until 24 June. Earlier reporting would have identified the malposition of the CVC and led to its earlier removal.
- Eight days were allowed to elapse before the malpositioned catheter was removed. By this time a fibrin sheath had developed in the carotid artery necessitating anticoagulation treatment to reduce the risk of cerebral embolism and stroke.
- Notwithstanding the anticoagulation Mrs Bird suffered a stroke which was directly attributable to the fibrin sheath which had developed in her carotid artery.
- There was a delay, most particularly on the part of the MET team, in recognising that Mrs Bird was suffering from a retroperitoneal haemorrhage and shock attributable to her anticoagulation. This delay reduced the prospect of her being successfully treated for this condition. Her death followed.

I accept that the malpositioning of a CVC is a known complication of that procedure and I make no criticism of it in this instance. However, thereafter a litany of errors and shortcomings followed which I have set out above and which ended in a death which was almost certainly preventable.

In his statement Mr Craig Watson has advised me that Mrs Bird's death was the subject of review by the RHH's Death Review Committee and that such review did not lead to any recommendations being made. To my mind this is an extraordinary outcome given the multiple failings associated with Mrs Bird's death. In the very least it is my view that this death highlights serious deficiencies associated with the hospital's MET team and it is my **recommendation** that the RHH initiate a review of that team with a focus upon consultancy input and supervision.

I have decided not to hold a public inquest into this death because my investigation has sufficiently disclosed the identity of the deceased, the date, place, cause of death, relevant circumstances concerning how her death occurred and the particulars needed to register her death under the *Births, Deaths and Marriages Registration Act 1999*. I do not consider that the holding of a public inquest would elicit any significant information further to that disclosed by the investigation conducted by me.

I convey my sincere condolences to Mrs Bird's family and loved ones.

**Dated:** 20 March 2017 at Hobart in the State of Tasmania.

**Rod Chandler**  
**Coroner**