QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of Shirley Fay McGuane**
TITLE OF COURT:	Coroners Court
JURISDICTION:	Brisbane
FILE NO(s):	2014/428
DELIVERED ON:	18 March 2016
DELIVERED AT:	Brisbane
FINDINGS OF:	John Lock, Deputy State Coroner
CATCHWORDS:	Coroners: investigation, health care related death, escalation of deteriorating patient, recording of medical documentation

Contents

Introduction

Shirley Fay McGuane was aged 84. She had an extensive medical history.

She had been admitted to St Andrew's War Memorial Hospital on 24 June 2013 for major surgery involving removal of the large bowel and the anus.

There appeared to be no intra-operative complications.

Early on the morning of 28 June 2013 a CODE BLUE was called after Mrs McGuane was found unresponsive. CPR commenced with some return of spontaneous circulation but little response neurologically and with agonal respiratory efforts only. Advanced life support was ceased after discussion with the intensive care specialist as further efforts were considered to be futile.

A cause of death certificate was completed by the surgeon, Dr Petersen on the basis that her death was due to a cardiac arrest due to arrhythmia due to ischaemic heart disease.

Mrs McGuane's death was discussed with the after-hours coroner by the Intensive Care Unit registrar, Dr Jeremijenko on the early morning of 28 June 2013. On the basis of those discussions and particularly with reference to what was thought to be a background history of ischaemic heart disease, the coroner considered that the death was not a reportable healthcare related death. No family concerns were indicated during that discussion.

The death was also discussed with the Office of the State Coroner by the surgeon, Dr Damien Petersen during business hours. Those discussions were with the coronial registrar, and as a result a similar decision was made that the case required no further investigation and was not reportable.

It is now evident there were family concerns, although these were first raised with the SAWMH in early December 2013, at which time the family and hospital commenced an ongoing dialogue concerning the management of Mrs McGuane's condition.

On 29 January 2014, the Office of the State Coroner received a letter from the SAWMH advising there had been ongoing discussion about family concerns. As a result, a coronial investigation commenced. Mrs McGuane's family provided details of those concerns.

Family concerns

The family expressed many concerns regarding the treatment and management of Mrs McGuane at SAWMH.

These included:

1. Failure to call a medical emergency response team (MERT) call with ongoing Atrial Fibrillation with a rapid ventricular response
2. Failure to investigate chest pain
3. Delay in treating hypovolaemia

4. Delay in managing poor urine output (oliguria)
5. Failure to report a ‘faint’ episode to medical staff
6. Inadequate documentation by Dr Petersen
7. ECG interpretation and ‘clearance’ by nursing staff

The family particularly did not consider her death was due to a cardiac arrest, or that her medical history demonstrated ischaemic heart disease of ‘years’ duration as the main underlying co-morbidity contributing to her death. They raised concerns as to the accuracy of information provided to the coroner.

Review by the Clinical Forensic Medicine Unit

Dr Natalie MacCormick of the CFMU provided a review of medical management. This included review of over 1000 pages of medical records from SAWMH.

Mrs McGuane had an extensive medical history including as follows:–

- Atrial fibrillation and on warfarin and digoxin
- Atypical chest pain with suspected coronary artery spasm
- Stable valvular heart disease
- Sinus node dysfunction
- Degenerative neuronal disease
- Obstructive sleep apnoea treated with CPAP
- Bowel cancer with hemicolectomy in November 2009 and chemotherapy in January 2010
- Raised liver enzymes
- Depression and on antidepressant medication
- Known extensive peritoneal adhesions with previous bowel obstructions
- Gastro-oesophageal reflux disease
- Melanoma 2011.

Mrs McGuane was admitted to SAWMH on 24 June 2013 for an elective proctocolectomy and planned ileostomy for an unresectable polyp at the level of the transverse colon. This major surgery involved removal of the large bowel and the anus. The formation of an ileostomy involved creating an opening for the remaining bowel to connect to the abdominal wall, so bowel contents could empty into a bag.

A pre-operative assessment by her regular cardiologist took place on 5 June 2013. Dr Masterson advised that Mrs McGuane was fit to proceed with surgery from a cardiac point of view. He confirmed that she should cease her warfarin 3-5 days prior and made no recommendations regarding bridging anticoagulation.

A pre-operative physician review by Dr D'Intini took place at SAWMH on 24 June 2013. He noted she was in atrial fibrillation and requested

bloods and ECG. She was reviewed again the next day and was noted to be clinically well.

On 25 June the intended laparoscopy was converted to a laparotomy due to the presence of intestinal adhesions. The surgery otherwise appeared to be uneventful.

At 5.15am on 26 June, Mrs McGuane reported chest pain to the nursing staff. An ECG was performed and the records noted it was deemed to be not cardiac related by the after-hours coordinator. Dr MacCormick noted that in fact the ECG showed atrial fibrillation at a rate of 125 with a new right bundle-branch block. Dr MacCormick stated the significance of this is that it supports myocardial infarction, and as such requires further investigation. Such investigations would include blood tests monitoring markers of heart muscle damage such as troponin.

Dr D'Intini reviewed her later that morning and considered that she was in fast AF and appropriately increased her oral digoxin dose and requested to be advised if she had further chest pain. Although this was an appropriate treatment of AF, Dr MacCormick considered the usual management of a patient with chest pain would include, at a minimum, blood tests.

At 10am nursing staff noted she had persistent fast heart rate and Dr D'Intini gave a further order for oral digoxin and this was repeated at 1.50pm. Dr MacCormick considered this would have been an opportune time to consider ordering additional blood tests.

Digoxin levels were elevated and her evening dose was appropriately withheld.

On 27 June Mrs McGuane started to develop an abnormally low urine output and was noted by the physiotherapist to be drowsy, to have decreased responsiveness and to be sweaty and pale. That afternoon the surgeon was notified of her tachycardia and low urine output and requested a bolus of gelofusion.

Early on 28 June 2013 a CODE BLUE was called at 4.48am. Mrs McGuane had been found unresponsive, cold, clammy, and with a low-grade temperature. CPR was commenced by nursing staff. When the CODE BLUE team arrived she was noted to have pulseless electrical activity, meaning cardiac arrest with measurable electrical activity but no cardiac output. Advanced life support procedures were implemented but at 5.20am this was ceased as further efforts were considered to be futile.

Dr MacCormick noted the multiple previous admissions at SAWMH between 2001 and 2013 for multiple conditions. After reviewing these admissions Dr MacCormick agreed there did not appear to be sufficient

evidence from cardiac investigations to confirm a history of ischaemic heart disease.

The cardiac arrest was most likely from a coronary thrombotic event. Elements of the history that support a primary cardiac event include recent chest pain, new right bundle-branch block on the ECG the day before and significant anaemia reducing oxygen supply to the heart.

Dr MacCormick did not identify any documentation considering the risk versus benefit ratio of having surgery.

The absence of routine post-operative blood tests was very concerning. She considered the ECG being cleared by the after-hours coordinator as inappropriate. The episode of chest pain was not adequately investigated or treated.

The episode of rapid atrial fibrillation should have triggered a MERT call involving further investigation and management including physician review, blood tests, intravenous therapy and cardiac monitoring. Dr MacCormick noted the recent introduction of the *Adult Deterioration Detection Score* (ADDS) in hospitals across Queensland may reduce the likelihood of similar situations occurring in the future.

There was concern about the lack of consultant notes in the hospital medical chart.

The CODE BLUE team management appeared to be competent and appropriate and the episode was clearly documented.

Dr MacCormick stated there was not enough evidence due to lack of cardiac investigations performed at that time to confirm or refute the background of ischaemic heart disease. Other potential causes of death may have included intra-abdominal bleed, aspiration, stroke, or pulmonary embolism.

Dr MacCormick considered that the death was a reportable death. It is possible that failure to provide healthcare contributed to her death and she may not have died if health care had been provided. This included routine post-operative monitoring of bloods, correction of anaemia, adequate fluid resuscitation and investigation and management of possible myocardial infarction and early response to patient deterioration.

Mrs McGuane was an elderly woman with multiple co-morbidities, and her risk of complication, including death, after significant surgery was reasonably high. Dr MacCormick however agreed with the family that her death certificate may not accurately reflect the nature of her death.

Response by St Andrew's War Memorial Hospital and Doctors

Response by SAWMH

SAWMH advised that an open disclosure meeting took place on 30 January 2014. As a result, an action plan was prepared to address issues that had been raised in the course of those discussions.

The hospital investigated the issue concerning the diagnosis of the ECG performed early on the morning of 26 June 2013 and also the matter concerning the lack of a MERT called by nursing staff on 27 June 2013.

On investigation it was discovered the ECG was reviewed and signed off by a cardiologist and returned to the test results tray for consideration by the treating physicians.

The process for ECG review and escalation of concerns during and after hours was documented in a clinical procedure and requires that any abnormal results identified be escalated immediately to the visiting medical practitioner or ICU RMO. An extensive education program was undertaken with staff as to the required actions to be taken in the case of any abnormal ECG results.

An additional medical officer for ward based care to work from the late afternoon and into the evening is currently being recruited and will provide a further avenue for review of ECG results in combination with clinical assessment of the patient, as required, in the event that the treating medical practitioner is not on site at the time.

The introduction of the Queensland Adult Deterioration Detection System (QADDS) throughout the hospital, now provides nursing staff with a tool to assist with the appropriate management and escalation of a vasovagal episode and any patient clinical deterioration episode through a MERT call in order to involve the medical team in a timely way. A modified MERT criteria has been formalised to support the QADDS introduction. Monitoring of MERT responses occurred on a monthly basis and as reported to each hospital specialist craft group. The number of MERT calls has increased by 38% following the introduction of the QADDS. Ongoing training on the National standard relating to deteriorating patients takes place on an annual basis.

The hospital is in the process of implementing a process designed to assist and support patients, relatives and carers to improve communication with health professionals and enable early intervention in the case of a deteriorating patient.

The hospital now requires daily reporting to the Director of Medical Services of reportable deaths and any communication with the coroner by a medical practitioner about whether a death is reportable. This

allows the Director of Medical Services to review the matter by way of a backup at an early stage to check whether the death is reportable and also as a flag to initiate communication by the hospital with the family. The internal death review process has also been strengthened with the addition of the Deputy Director of ICU to membership of the review committee.

Response by Dr D'Intini

Dr D'Intini stated that the preoperative blood tests were within normal range. The procedure had been straightforward with no concern for blood loss. On that basis often bloods are not repeated. Clinically there were no signs to suggest significant anaemia and she was on physiological fluids with electrolyte replacement.

He agreed that in retrospect, blood tests would have been useful.

With respect to the episode of chest pain he stated there was a long cardiac history. There were two cardiac episodes several months earlier and reviewed by Dr Masterson. Blood tests showed abnormal serum troponin reflecting cardiac injury. She was told she had cardiac spasm and chronically elevated serum troponin. The cardiological opinion was that she was safe to have the planned elective operation.

He stated the post-operative chest pain was self-limiting and there were no ST/T changes suggestive of STEMI. There was a new RBBB. He stated that coronary angiogram is not necessarily always indicated and such a procedure can be associated with well-documented morbidity.

Dr D'Intini agreed that the episode of rapid atrial fibrillation probably did fit MERT criteria.

Response of Dr Petersen

Mrs McGuane had been referred to Dr Petersen by a gastroenterologist. There was a concern about a high-grade dysplastic lesion that was unable to be removed successfully at colonoscopy. This was against a clinical background of previous high anterior resection for Duke's C/stage III sigmoid carcinoma in 2009 and since then, regular twelve monthly colonoscopies with multiple adenomatous polyps removed from her colon during these examinations.

There was an extensive family history of cancer. He stated that in his discussions with her she was adamant that she did not want to wait for a cancer to form and she wanted surgery to remove the colon polyp to prevent this outcome. He considered her view reasonable.

Due to her problem of marginal/poor incontinence he also discussed with her the option of having a further colon resection with anastomosis being performed but advised against this because further resection would worsen her incontinence. He explained that by removing the

residual colon and giving her a permanent ileostomy, she would not need to undergo further colonoscopies and would also reduce one of the major risks of this type of surgery being an anastomotic leak.

He discussed the risk of surgery with her including infection, internal bleeding, possibility of conversion from a laparoscopic to open procedure if there were unexpected events or complications encountered, death and he also discussed the risks of DVT. He specifically discussed with her that her age, history of heart disease and neurological condition put her at risk of peri-operative complications.

He noted her treating cardiologist had advised she was fit to proceed with surgery. He told her he intended to get a general medical specialist Dr D'Intini to review her the day before surgery. Dr Petersen did not consider her perioperative risk was such that it automatically required her to be admitted into ICU post operatively.

During the operation he encountered limited but dense adhesions so the procedure converted to an open laparotomy. During the operation there was no significant blood loss. She came through the surgery well and he had no concerns about her condition. There was no need for an ICU admission after recovery. He expected that she would make steady improvement and be fit enough to be discharged in 7-10 days.

He stated that both he and Dr D'Intini were responsible for her post-operative care. He was primarily responsible for abdominal issues and issues regarding her gut function. Dr D'Intini was responsible for the decisions regarding cardiac, respiratory and neurological issues.

He stated that he reviewed Mrs McGuane on each post-operative day during his ward round with a senior nurse on duty. He communicated the decision he made directly to senior nursing staff.

Although he usually would write an entry in the hospital chart each day, as Dr D'Intini had already reviewed her and made notes in the chart he did not consider he needed to make an additional entry. Usually the senior nurse who accompanies him on the ward round will, if he is busy, write in the chart a note to the effect that the patient had been seen by him. He assumes that due to pressure of work the senior nurse did not have time to do this.

Dr Petersen stated he has standing orders at the hospital requesting post-operative blood tests on day one following surgery. He would then repeat these tests second daily. He is unable to say why the blood tests were not done on day one post-operation.

On day two he saw that Dr D'Intini had asked for digoxin tests to be performed and understood full bloods would be performed. His

experience is that post operatively day one blood test results are typically normal and given there was no significant intra-operative bleeding and no significant post-operative bleeding, he expects that blood tests would have returned normal in any event. He did not order a troponin test as this falls within Dr D'Intini's expertise.

He recalls that on day two her observations looked normal. She appeared a little drowsy but responded to questions. He thought she may be affected by the analgesia she was receiving and requested nursing staff remove her patient-controlled analgesia device. He received a telephone call in the evening advising she was experiencing tachycardia and low urine output. He ordered further fluids therapy. There was nothing indicating he should review her himself.

He heard nothing further until he received a telephone call advising that a CODE BLUE had been called. By the time he arrived at the hospital Mrs McGuane was deceased.

In his discussions with Dr D'Intini they understood there was a history of atrial fibrillation across a number of years with mild-to-moderate aortic incompetence and mild mitral incompetence. They both considered the likely cause of death was due to cardiorespiratory arrest related to arrhythmia.

Further review by CFMU

Dr MacCormick who provided the original review was on maternity leave. Dr Adam Griffin, the CFMU Director had peer reviewed the first report and reviewed the further information received.

Dr Griffin noted the hospital executive has responded to the issue around the ECG review by the nurse. They have stated that Dr Pritchard (a cardiologist) reviewed the ECG. On examining the medical records, Dr Griffin noted there are two copies of the same ECG apparently included (page 551 and 553 of medical records volume 2). One has a date and time visible as the 26 June 2013 at 0511hrs with a patient sticker attached (553). The second has the same measure parameters and appears the same but has no time stamp or date visible (551). This second ECG on page 551 is signed by Dr Pritchard but carries no date or time. Further, it just states that he ‘agrees’ with the automated report provided by the ECG device and does not otherwise suggest action or response. Dr Griffin stated it is in no way clear what information Dr Pritchard had in making his assessment, in particular whether Mrs McGuane had chest pain or not. In the absence of evidence regarding the ‘realtime’ examination by Dr Pritchard of this ECG at 5:11hrs on the 26 June, particularly without a time or date stamp and further the lack of reference to such an ECG by any in the treating team, Dr Griffin said he was left to believe this was overlooked or not acted upon. The correct response would be to identify the association with chest pain and investigate. This did not occur. Further,

the hospital needs to confirm the time and date of Dr Pritchard's assessment before relying on it.

If Dr Pritchard's 'reports' on the ECG are to be of value they should have a time and date reference and an effort to correlate with clinical symptoms. Chest pain was not mentioned and Dr Pritchard may not have been informed the patient experienced chest pain. It is unclear if or how Dr Pritchard routinely communicates positive findings to requesting or involved physicians. It may not have occurred here.

The hospital has referenced the introduction of the 'ADDS' tool as their approach to managing the response to the AF and the faint episode. Dr Griffin stated that if this form is used correctly this should indeed mean a response should occur in the future.

Dr Griffin noted Dr D'Intini's response in relation to three issues raised.

The first is that Dr D'Intini did not believe (prospectively) that Mrs McGuane should have had routine postoperative blood tests. Retrospectively, he believes she should have. Chest pain may be a sign of anaemia and is certainly an independent reason to consider blood tests. Dr D'Intini does not address this and it remains an issue as at issue 2 (failure to investigate chest pain). His subsequent reply does not exclude ordering blood tests to check for cardiac damage. The diagnosis of myocardial injury is based on chest pain, blood tests and abnormal ECG. This is not adequately addressed.

Dr D'Intini did acknowledge Mrs McGuane should have had additional medical intervention and investigation (MERT call). The hospital decision to introduce the ADDs observation form should assist with this prospectively.

Dr Petersen stated in his statement that he would have expected blood tests to have been done and cannot explain why they were not. Dr Petersen does not explain why he did not seek the results of the routine tests as this is the usual practice if ordering routine blood tests. Dr Petersen states he has altered his practice in relation to timing of post-operative blood tests which are not based specifically on time since surgery. Instead the timing is individualised to each patient.

Dr Petersen adequately explained his decision to ask Dr D'Intini to review Mrs McGuane before the operation.

Dr Petersen felt Dr D'Intini had responsibility for aspects of Mrs McGuane's ongoing care. Fluid balance issues were shared.

Dr Petersen did not provide adequate documentation. Dr Griffin considered that Dr Petersen's thought that another doctor's entry precluded his need to document is unusual; particularly given he has

declared certain aspects of care to be Dr D'Intini's role and other aspects his own role. A daily documented consultation in the post-operative period would be the minimum expected of a treating surgeon. This would be particularly of value since he describes a post-operative complication arising (ileus) in his statement but not in the hospital record. Dr Petersen further felt Mrs McGuane was drowsy, that the explanation was her medication and that he ceased this medication. Dr Griffin stated this would be of value for other doctors involved in Mrs McGuane's care to know and as such should have been documented.

Having read criticisms about his documenting practices, Dr Petersen has since then, been more aware of how he documents with the aim of improving his documentation. Further, he no longer relies on the Nursing Manager to document details of his attendances with patients.

Response by family

The family have also responded to the replies by Dr D'Intini and Dr Petersen. Many of their concerns are reflected in the issues raised by Dr Griffin.

The family disagree with much of the detail of Dr Petersen's statement but Dr Petersen was not invited to make further comment. However, coming to some definitive conclusion is unnecessary for the purposes of making this finding.

During the investigation, the SAWMH provided the coroner with the Chest Pain Management Policy in place at the time of Mrs McGuane's death. The view of Dr MacCormick was that there was inadequate investigation and management of a possible myocardial infarction on 26 June. The policy provided for the patient's doctor to be advised if the patient has no medication ordered. There is no evidence in the medical record that the doctors caring for her were contacted.

GTN spray was listed as a current medication on admission but was not written up as a medication during her admission. The policy provided for the spray to be given if it had been ordered.

As well the policy provided that an ECG should be performed (it was) and if there were ECG changes (there were) then her doctor should be contacted (they were not).

The family also noted the significant other symptoms of signs of delirium, an episode of fainting, tachycardia and AF that had failed to respond to medication changes and her falling urine output. All of these were matters that Dr MacCormick considered should have been investigated but were not.

Dr MacCormick considered the list of possible causes of non-shockable PEA. She was able to rule out Tension pneumothorax, digoxin toxicity,

Cardiac tamponade, Hypo/hyperkalaemia, hypoglycemia, and hypo/hyperthermia.

Possible causes of death

Dr MacCormick stated it was difficult to exclude aspiration given the large vomitus found in her mouth during resuscitation. Given her noted drowsiness and confusion and the fact she was on an opioid PCA, it is conceivable she could have had a massive vomit and aspirated. However, it is also possible this occurred as a result of a cardiac arrest.

Hypovolaemia from internal haemorrhage was possible. Her haemoglobin was noted to be 72 which was significantly lower than her pre-operative level of 127. The clinical picture of low urine output, acute kidney impairment, low JVP, increasing tachycardia and decreasing blood pressure also fits with the possibility of an acute bleed. She would have expected that this would have been clinically evident with a distended, rigid and tender abdomen however in the absence of any notes referring to an abdominal examination in the post-operative period and during the CODE BLUE, this possibility cannot be excluded.

Pulmonary embolism was possible given recent surgery and immobility, however this is less likely as Mrs McGuane was receiving appropriate thromboprophylaxis.

Myocardial infarction was highly suspected given the evidence of recent chest pain and a new right bundle-branch block on ECG the day before.

Conclusions

Mrs McGuane had a significant medical history. She was undergoing major surgery. She had been cleared by her cardiologist for surgery. She had an ongoing history of atrial fibrillation but there was no other history suggestive of ischaemic heart disease.

Her surgeon, Dr Petersen provided a statement after the event detailing his involvement in pre-operative, operative and post-operative care. Mrs McGuane's family dispute some of the detail concerning his recollections. Dr Petersen did not record any of this involvement in the medical records in any meaningful manner. He should have.

It is evident the operation proceeded without significant complication.

What is also evident is that in the post-operative phase there was a diminution in care provided. Mrs McGuane had an episode of chest pain. An ECG noted fast AF and right bundle branch block. This was not investigated and should have with blood tests at a minimum.

Dr Petersen's assertion that he has a standard order to repeat blood tests after an operation does not appear to be supported on the

evidence. There is nothing in the medical record indicating this and he did not enquire as to the results.

There were a number of other symptoms of concern that warranted further investigation, and these were not considered in a meaningful manner and acted upon.

If investigations had been carried out, a definitive reason for her symptoms may have been discovered and action taken. There may have been a decision that no action be taken, given there may have been other risks involved, but this would have been at least considered on an informed basis.

Mrs McGuane became unresponsive suddenly and could not be revived.

Her death was discussed with two officers from the Office of the State Coroner. A decision was made that the death was not reportable on the basis of there being a significant history of ischaemic heart disease, and there were no family concerns. It is evident this is incorrect in respect to both issues.

The most likely cause of her death is due to myocardial infarction, although there are other possibilities that cannot now be excluded. The events leading up to the episode of myocardial infarction were not adequately investigated. Mrs McGuane's death was a reportable health care related death.

The cause of death should be certified as:

1a Myocardial infarction

2 Atrial fibrillation, elective proctocolectomy/ileostomy, Bowel cancer 2009

I consider the investigation has revealed sufficient information to enable me to make findings about Shirley's death. A copy of my findings will be sent to the hospital and doctors. The introduction of various tools to aid in recognition of deteriorating patients has been ongoing over a number of years but has been largely implemented state-wide. It is therefore not considered there would be any other recommendations made.

In addition, after consultation with the family, I consider that this is an appropriate case and being in the public interest to publish non-inquest findings.

Findings required by s. 45

Identity of the deceased – Shirley Fay McGuane

Place of death – St Andrew's War Memorial Hospital

Date of death– 28 June 2013

Cause of death –

1(a) Myocardial infarction
2. Atrial fibrillation, elective proctocolectomy/ileostomy, Bowel cancer 2009

I close the investigation.

John Lock
Deputy State Coroner
BRISBANE
21 March 2016