



# **CORONERS COURT OF QUEENSLAND**

## **FINDINGS OF INVESTIGATION**

**CITATION:** **Non-inquest findings into the death of Reginald Stimpson**

**TITLE OF COURT:** Coroners Court

**JURISDICTION:** Brisbane

**FILE NO(s):** 2015/1192

**DELIVERED ON:** 18 July 2017

**DELIVERED AT:** Brisbane

**FINDINGS OF:** Christine Clements, Brisbane Coroner

**CATCHWORDS:** **Health care related death, orthopaedic surgery, Aspirin prescribed post-operatively, pulmonary emboli and deep vein thrombosis, medication error - double up of anticoagulants (Clexane and Xarelto), adequacy of education, communication, handover and documentation**

## **Introduction**

1. Mr Stimpson was a 73 year old man who resided with his wife Colleen at 7 Wirraway Drive in Wilsonton Queensland. He had a past history of Alzheimer's dementia, hyperthyroidism and cancer of the left kidney with kidney removal in 2011. He had an episode of delirium after the kidney operation.
2. Mr Stimpson died unexpectedly at the St Andrews Hospital Toowoomba (the Hospital) on 27 March 2015. His death was therefore reported to the coroner as a health care related death.

## **Chronology of Events**

3. On 12 February 2015, Mr Stimpson was referred to an Orthopaedic Surgeon, Dr P for an opinion in relation to his bilateral knee pain and loss of mobility.
4. On 16 March 2015, Mr Stimpson was admitted to the hospital for an elective total knee replacement due to osteoarthritis. The operation took place on 17 March 2015 under a spinal anaesthetic. He was routinely admitted to the Intensive Care Unit (ICU) post-operatively.
5. Post operatively, Dr P prescribed Mr Stimpson with foot pumps, antibiotics and aspirin 300mg daily. Overnight he had an episode of decreased oxygenation and low blood pressure. This situation responded to oxygen via a non-rebreather mask and Intra Venous (IV) fluids. He had urinary retention and a catheter was inserted. Oral antibiotics were prescribed.
6. On 19 March he was noted to have developed a left lower lobe pneumonia. Chest physiotherapy was ordered and his antibiotics continued. He was discharged to the ward.
7. On 20 March 2015, Mr Stimpson showed signs of delirium and ongoing low oxygen saturations. He was sweaty and dehydrated. There were abnormal sounds in both lung bases (medium to coarse crackles) possibly due to infection. The Computed Tomographic Pulmonary Angiography report revealed pulmonary emboli in the upper lobes of both lungs. In the lower lobes of both lungs there were areas of lung collapse.
8. IV antibiotics were commenced (to cover possible pneumonia) and IV fluids were ordered to treat dehydration. Mr Stimpson was also commenced on subcutaneous Clexane 80mg twice a day (a form of heparin, an anticoagulant to treat the pulmonary emboli).
9. Between 21 March 2015 and 25 March 2015, Mr Stimpson continued to be medically reviewed. The progress notes indicate that his tachycardia resolved and he was mobilising with input from the physiotherapist. He continued on his current medical management with consideration to be given to commencing him on an oral anticoagulant.

10. On 26 March 2015, Dr B ordered the Clexane to be changed to oral Xarelto which is another type of anti-coagulant.
11. Dr B's rationale for changing Clexane to Xarelto was that the treatment of pulmonary embolism required anticoagulation for a period of three to six months. Dr B advised that it is standard practice to change from an injectable anti-coagulant (Clexane) to an oral anticoagulant (Xarelto) due to the period of time over which treatment is required.
12. The following process was in place at the time to communicate and document Mr Stimpson's change from Clexane to Xarelto:
  - Doctor to put single line through prescription;
  - Doctor to put single line through administration section;
  - Doctor to ensure next due doses are crossed out;
  - Doctor to write 'Cease' and date in administration section;
  - Doctor to document the change of orders in the clinical notes; and
  - Nursing staff to apply a 'Ceased' sticker to administration section of chart if aware of cancellation.
13. Dr B did document the change in the progress notes where she wrote *Clexane to Xarelto for 3/12*. Dr B also documented the Xarelto in the medication chart. However, Dr B overlooked ceasing the Clexane in the medication chart as outlined above.
14. At some time after 12:30 on 26 March 2015, Enrolled Endorsed Nurse (EEN) LC flagged Clexane in Mr Stimpson's medication chart. EEN LC had identified that, as a subcutaneous injection, Clexane was located in the treatment room and would therefore need to be given separately to the pills. Sometime later, Registered Nurse (RN), KB said she would assist by giving all of the treatment room medications which had been flagged for the patients. RN KB took the medication charts, including Mr Stimpson's, to do this.
15. At some time between 16:00 and 16:30, Nurse Unit Manager (NUM) JA recalls Dr B verbally advising her of the change to the anticoagulants for Mr Stimpson. The NUM recorded this advice on the 'surgical extra care day pathway' dated 26 March 2015 where she stated *anticoag as per Dr B*.
16. The NUM says that at the time of Mr Stimpson's death it was standard practice for information about changes to medication to be recorded on the surgical pathway. The NUM was aware that Clexane and Xarelto should not be given together.
17. NUM JA recalls attending training when Xarelto was first introduced at the Hospital. She says that the education was quite extensive, as the drug is used mainly for orthopaedic patients.
18. NUM JA acknowledged that she should have placed a *medication ceased* sticker in the medication chart for Clexane. Once Dr B informed her of this change, it would have been her standard practice to do so. NUM JA says

that her workload including rounds with other doctors contributed to this being overlooked. She did not check the medication chart to see if the Clexane had been ceased because she assumed that Dr B had done so.

19. At 20:00 on 26 March 2015, 80mg of Clexane was administered by RN KB. Also at this time, 15mg of Xarelto was administered by EEN LC.
20. RN KB says that at the time of administering the Clexane, there was no line through the medication chart to indicate that the Clexane had been ceased. She did not read Mr Stimpson's progress notes which indicated that Dr B had ceased the Clexane.
21. RN KB says that a doctor does not always document a change of medication orders in the progress notes and sometimes just writes the change on the medication chart. She says that she relies upon what is contained in the medication chart.
22. RN KB knew Xarelto was a fairly new anticoagulant on the market but did not receive any education about it. She knew there was an overlap with Clexane and Warfarin until the patient's International Normalised Ratio<sup>1</sup> (INR) is at a certain level. She was under the impression that Clexane and Xarelto could be used together as is the case with Clexane and Warfarin. RN KB thought that the only difference between Xarelto and Warfarin was that regular blood tests with Xarelto were not required to check the INR.
23. Similarly, EEN LC had not attend the Xarelto education when that drug was first introduced. She did not work at the Hospital nor had she completed her nursing diploma at that time. She was not aware that Clexane and Xarelto are not supposed to be given together.
24. On 27 March 2015, RN AB was working a morning shift and preparing to give Mr Stimpson his medication. She says that she was not advised that Mr Stimpson's Clexane had been changed to Xarelto. There was no line through the Clexane on the medication chart to indicate that it had been ceased.
25. RN AB would have expected the change of medication, as documented in the progress notes, to be communicated to her during handover when she began the morning shift. However this information was not included in the handover. RN AB does not recall attending any education about Xarelto. She too was under the impression that the administration of Clexane and Xarelto could be overlapped as is the case with Clexane and Warfarin.
26. At 08:00 on 27 March 2015, 80mg of Clexane and 15mg of Xarelto was administered by RN AB.
27. At approximately 09:00 on 27 March 2015, Mr Stimpson was medically reviewed by the Registrar and a Consultant Physician. At this time, it was discovered that Mr Stimpson had received two inadvertent double-ups of

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<sup>1</sup> INR is a measure of how long it takes for blood to clot.

Clexane and Xarelto. This consisted of one inadvertent double-up the evening prior and one inadvertent double-up that morning. The Clexane was immediately ceased by the Consultant.

28. The Registrar says that despite the inadvertent double-ups, Mr Stimpson seemed okay as he was walking around and talking. However she noticed that he was “not quite as bright”. She suggested to the Consultant that they should keep an eye on him.
29. By 12:40, Mr Stimpson had become very agitated and was noted to have deteriorated significantly since the morning. The Consultant was notified. At 13:00, Mr Stimpson had become non responsive to verbal stimuli, was very agitated and had weakness in his right side. An oxygen mask was applied and a MET call made.
30. An urgent CT scan of Mr Stimpson’s head showed a massive intracerebral haemorrhage which was incompatible with survival. He was provided with comfort measures and he died later that evening.

### **The Autopsy Report**

31. On 8 April 2015, a full internal autopsy was performed by Forensic Pathologist Dr Rohan Samarasinghe. The autopsy report was finalised on 25 November 2016 and peer reviewed by Forensic Pathologist Dr Rebecca Williams.
32. The major observation at autopsy was intracerebral haemorrhage and left sided subdural haemorrhage, as confirmed by CT scans. It appeared that an intracerebral haematoma had drained into the subdural space through the left frontal lobe laterally. Specialist neuropathological examination was recommended however the brain was returned to the body prior to this examination in accordance with the family’s wishes. There were no other significant areas of haemorrhage in the body.
33. No pulmonary thromboembolism was identified at post-mortem examination, as confirmed by histology. Occasional small blood clots were found within the left calf veins. Histology showed that some of these clots were a few days old.
34. There was no evidence of definite pneumonia. Histology showed only a microscopic focus of acute bronchiolitis (inflamed small airway). Histology of the lungs also showed the presence of scattered haemosiderin-laden macrophages throughout the lungs. This was consistent with previous pulmonary haemorrhages of unknown cause. It was noted that heart failure is one of the causes of previous pulmonary haemorrhages.
35. It was considered that although CT scan pattern of intracranial haemorrhage was non-specific, it was consistent with acute haemorrhage in the setting of significant coagulopathy.

36. Whilst the absence of pulmonary emboli at autopsy could be due to anticoagulant therapy, Dr Samarasinghe said it has been well documented that abnormal coagulation profile or thrombocytopenia is not rare in hospitalised patients who have symptoms consistent with acute pulmonary emboli described in the clinical history.

37. The thrombi (clots) in the left calf veins were considered to be the origin of pulmonary emboli described in the clinical history.

38. The cause of death was determined as:

- 1(a) Acute intracranial haemorrhage, *due to or as a consequence of*;
- 1(b) Coagulopathy, *due to or as a consequence of*;
- 1(c) Pulmonary embolism (anticoagulant therapy), *due to or as a consequence of*;
- 1(d) Deep vein thrombosis, *due to or as a consequence of*;
- 1(e) Osteoarthritis (elective total knee replacement).

### **Clinical Forensic Medicine Unit Advice**

39. Following Mr Stimpson's death, advice was sought from Dr Don Buchanan, an independent clinician from the Clinical Forensic Medical Unit. Dr Buchanan advised that Mr Stimpson was not provided with prophylactic anti-coagulation post-operatively. Mr Stimpson developed pulmonary emboli and was then provided therapeutic (i.e. treatment doses) of Clexane.

40. Dr Buchanan made reference to the National Health and Medical Research Council Guidelines (the NHMRC Guidelines'. The NHMRC Guidelines recommend low molecular weight heparin or medications such as Xarelto, but not aspirin as the sole pharmacological agent for thromboprophylaxis following total knee replacement.

### **Root Cause Analysis**

41. Following Mr Stimpson's death, the Hospital commissioned a root cause analysis (RCA) pursuant to the *Hospital and Health Boards Act 2011*. This is a systemic analysis of what happened and why and is designed to make recommendations to prevent adverse health outcomes from happening again. It is not aimed at apportioning blame or determining liability. Nor is it an investigation of an individual clinician's professional competence. It is conducted by a review team who had no involvement in the patient's care.

42. A number of causal factors were identified by the RCA team. These can be summarised as follows:

- Nursing staff lack of knowledge about novel anticoagulants;
- Two medication charts for anticoagulants meant the Physician did not see the Clexane order had not been cancelled;

- Split nursing responsibilities for administration of oral and subcutaneous medications;
- Lack of communication with Mr Stimson's family of development of confusion/ dementia;
- Inadequate Physician handover and documentation;
- Lack of a post-operative surgical complication clinical pathway meant Mr Stimson continued on a pathway which did not consider the post-operative Pulmonary Embolus complication;
- Delay in escalation of care;
- Availability of extra ampoules of Clexane 80mg meant Pharmacy did not flag possible overlap of anticoagulants;
- Due to ongoing symptoms of hypoxia and tachycardia Mr Stimson would have been observed more effectively by remaining in the ICU;
- Inadequate education in relation to Xarelto and no review of the medication charts occurred;
- Current Venous Thromboembolism (VTE) risk assessment tool was more relevant to medical patients and orthopaedic surgeons only consider high risk if history of a previous VTE; and
- 'High risk medication policy' was only in draft format.

43. The RCA team made fifteen recommendations for improvement. All of the suggested recommendations were accepted for implementation by the Hospital's management.

### **Root Cause Analysis Outcomes**

44. The Hospital provided information about the implementation of the recommendations made by the RCA team. Extensive supporting documentation to demonstrate implementation of the recommendations was provided. This included copies of new policies and forms, training attendance sheets and communiques with staff.

45. The Hospital advised that the correct process for cancelling medications was communicated to Visiting Medical Officer (VMO) groups at the Hospital on 15 July 2015. This was accompanied by an example of a medication chart with a correctly cancelled medication.

#### ***Recommendation 1 - Physician group to review Clinician Handover and documentation***

46. On 27 April 2015, the Hospital's Chief Executive sent a letter to the General Physicians Group requesting that they review their Clinical Handover and documentation processes. As a result, a 'Medical Consultation' handover form was developed and is now in use. This records (among other things) relevant history; inactive co-morbidity; current treatment (i.e medications);

physical examination (i.e. blood pressure, heart rate; temperature); assessment and recommendations.

***Recommendation 2 - Implement nursing staff education sessions on novel anticoagulants hospital-wide***

47. The Hospital advised that education sessions on novel anticoagulants were conducted on 6 May 2015 and 14 May 2015 for the orthopaedic ward where the incident occurred. Further sessions were delivered on 2 March 2016, 9 March 2016, 16 March 2016, 23 March 2016, 27 April 2016 and 4 May 2016 for all nursing staff.
48. These sessions focussed on the types of anticoagulants available, indications, contraindications, adverse effects, prescribing, administering and supply as well as specific risks.
49. On 12 July 2016, a nursing grand rounds presentation on anticoagulants was delivered. This focussed on use of oral anticoagulants, identifying when and which anticoagulants can be given together and reinforcement of the 'Traffic Light Medication Process'.
50. On 27 July 2016, a Grand Rounds session was delivered for medical, nursing and allied health staff. This session covered the benefits of anticoagulants, safe prescribing and appropriate administration, what can go wrong and examples of near misses as well as medication safety suggestions and improvements.
51. The Hospital advised that regular sessions on high risk medications, including novel anticoagulants, will be scheduled in the 2017 Hospital in-service calendar.

***Recommendation 3 - Revise nursing medication competency to include novel anticoagulant related questions***

52. A High Risk Medication Management online medication competency was developed in late 2016. This will be introduced for all nursing staff during their 2017 annual medication competency completion.
53. Education about anticoagulants is included during the clinical orientation day. Attendees are provided with a table providing guidance on converting between anticoagulants utilised. An A3 laminated version of the table is located in all ward treatment rooms. An A4 copy is contained in all medication charts.

***Recommendation 4: Nursing staff involved in any medication errors to complete NPS medication package online***

54. In 2016 the Hospital introduced the 'NPS Medicinewise' online competency hospital-wide for nursing staff to complete annually. This is in



addition to the regular Hospital medication online competency which included formulae calculations.

55. The Hospital advised that the '*Traffic light non-compliance and high risk medication incident review policy*' ('Policy PM44') was developed and approved in July 2016.
56. Policy PM44 implements a new process whereby nursing staff involved in a medication incident involving non-compliance with the traffic light system or a high risk drug, also complete a Medication Incident Review Form.
57. Relevant nursing staff involved with Mr Stimpson's care also provided Coroners Court of Queensland with evidence (certificates of completion) that they had completed the NPS Medicinewise education in relation to medication safety.

***Recommendation 5: Include 'checking when two drugs with same indication prescribed' in the Traffic Light Medication Safety System***

58. On 16 April 2015 the new '*Traffic light medication safety system and medication administration checking processes policy*' ('Policy PM34') was circulated.
59. The Policy PM34 sets out a number of requirements applicable to all nursing staff when administering all medications. Some of the key requirements include that nursing staff:
  - Check patient observations;
  - Check it is the right patient;
  - Check it is the right documentation;
  - Check it is the right medication;
  - Check it is the right dose;
  - Check it is the right route (Oral, IV or other);
  - Look up the medication if the action is not known; and
  - If two drugs have the same/ similar indication, check that both are to be given.

60. Multiple Traffic Light Medication Safety System posters which target nursing staff and patients were also developed. These are now located in every patient room, ward treatment rooms and on medication trolleys.

***Recommendation 6: Review the inpatient medication chart and consider putting all anticoagulants in the same flagged area near current Warfarin order***

61. The Hospital reviewed the medication chart and decided to separate the chart into two. One for anticoagulants and antiplatelet therapy and one for Heparin infusions with the heparin infusion guidelines.

***Recommendation 7: Introduce process where one nurse, whether the RN or the EEN, completes the full round and administers all drugs for each patient during that round. Round only involves patients allocated to that nursing team***

62. In 2015, a new policy 'Medication Round Procedure' (Policy PM35) was approved and implemented. This requires RN's or EEN's to complete the administration of all medications for all patients within their allocated patient group during any one round. It also requires nursing leadership to ensure there are sufficient staff to provide support during medication rounds and minimise staff interruptions during these periods.
63. The Hospital advised that there has been no further medication incidents involving an overlap or misinterpretation since Mr Stimpson's death.

***Recommendation 8: Develop and implement a Cognitive Impairment risk assessment tool which has triggers in place to ensure that family/next of kin are notified of issues when a patient is cognitively impaired***

64. A 'Cognitive Screening Tool' was finalised in May 2016 and has been introduced Hospital-wide for all patients. This tool assesses a patient's cognitive function depending on their ability to answer key questions (what is the date, what year is it, etc.). For patients with a low score (0-4) patients will be re-assessed if they become confused or disorientated. For those with a medium score (5-8), continued monitoring is required along with a re-assessment 24 hours post hospitalisation. For those with a high score (9-15), certain recommendations for care are to be followed. These include ensuring the patient is highly visible in bed, consideration of a nurse special and encouraging family members to stay overnight.

***Recommendation 9: Review current surgical Clinical Pathways and develop a surgical post-operative complication clinical pathway. Develop policies and procedures to ensure patients who develop complications are changed to the appropriate clinical pathway***

65. A surgical 'Post-Op Complications Pathway' was developed and approved and introduced in 2016. This is divided into morning, afternoon and night shift and addresses areas of nutrition, hygiene, toileting, discharge planning and outcomes.

***Recommendation 10: Educate all nursing staff to complete regular observation of vital signs overnight, particularly when any abnormal vital sign readings have been noted. Nursing staff to escalate care via a MET call when applicable***

66. On 27 April 2015, the Director of Clinical Services sent a memorandum to all nursing staff requesting they re-familiarise themselves with the following Hospital policies:

- 'Assessment and Documentation of Vital signs'; and
- 'Escalation of the patient experiencing clinical deterioration'.

**Recommendation 11: Implement process where high risk drugs, including anticoagulants, are not to be stored in ward areas as extra stock. Un-used high risk drugs are to be returned to Pharmacy**

67. The Hospital advised that the Policy PM44 was revised to provide that high risk drugs are not to be stored as extra stock on the ward. The high risk medication register is now also reviewed as part of the standing agenda at Pharmacy Management Committee meetings.

**Recommendation 12: Intensive Care Unit reviews its step-down/discharge criteria for unwell patients no longer requiring ICU level care**

68. This recommendation was considered by Critical Care Forum intensivists. A determination was made that the current step down criteria for unwell patients remained appropriate and did not need revision.

**Recommendation 13: Pharmacy to review process for high risk drug education**

69. The Hospital advised that this recommendation had already been implemented by the Pharmacy provider (EPIC Pharmacy) immediately after the events involving Mr Stimpson. This information was also included in Policy PM34.

**Recommendation 14: Review VTE risk assessment tool to consider surgical high risk factors, while still complying with the best practice guidelines from the NHMRC**

70. The Hospital reported that the VTE risk assessment tool had been revised to include VTE surgical risk assessment and VTE medical risk assessment forms. These forms were finalised in June 2015 and have been in use since Mr Stimpson's death.

**Recommendation 15: Review and implement the 'High Risk Medication Policy' and communicate policy to all nursing staff**

71. Policy PM44 was approved at the Pharmacy Management Committee in May 2015. It was then circulated to all clinical staff and made available on the intranet for access by all staff.

### **Response from Orthopaedic Surgeon**

72. During the investigation, Dr P, the Orthopaedic Surgeon involved with Mr Stimpson's care, was given an opportunity to respond to the advice from Dr Buchanan about his anticoagulation management.

73. Dr P stated that when he first saw Mr Stimpson on 23 February 2015, he did not have a history of venous thromboembolic disease in the past and there was no family history of this. Dr P advises that the standard prophylactic measures to prevent Deep Vein Thrombosis (DVT) after a total hip and knee arthroplasty include 'physical' means such as foot pump and multimodal pain management to allow early mobilisation of the patient and 'pharmacoprophylaxis'.

74. Dr P followed the guidelines of the Arthroplasty Society of Australia for VTE prophylaxis for hip and knee arthroplasty from 2010 (AAS Guidelines).

75. Dr P stated that Mr Stimpson did not have any of the following conditions to be classified as 'increased risk of PE' under the AAS guidelines:

- Previous documented history of PE;
- Previous documented history of other thrombo embolic events;
- Maintenance treatment with anticoagulants;
- Limitation to mobility that would impair early adequate mobilisation post-surgery;
- Known hypercoagulable status;
- Documented family history of PE;
- Marked obesity, smoking, venous stasis, insulin dependent diabetes mellitus, concomitant fracture;
- Hormone replacement therapy or on oral contraceptive; and
- Any event that limits mobility during peri-operative period.

76. Dr P considered Mr Stimpson a 'low risk of VTE'. Aspirin was recommended (as per the AAS Guidelines) and was therefore prescribed. He advises that the NHMRC Guidelines for the prevention of VTE was published in 2009 and has not been revised since.

77. Dr P referred to two International publications<sup>2</sup> to support his views that Aspirin and mobile compression devices were appropriate for Mr Stimpson.

### **The Hospital's views about VTE risk and post-operative prophylactic anticoagulation**

78. At the time, the Hospital considered Mr Stimpson to be at high risk of thromboembolism based on the VTE risk assessment tool completed at his admission.

79. The VTE risk assessment tool was developed based on the NHMRC Guidelines which considered Mr Stimpson's age >60 a risk in itself. The

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<sup>2</sup> 'Prevention of Venous Thromboembolism in Orthopaedic Surgery Patients', Antithrombotic Therapy and Prevention of Thrombosis, 9<sup>th</sup> ed: American College of Chest Physicians Evidence – Based Clinical Practice Guidelines 2012

Editorial, *Thromboprophylaxis for Patients Undergoing Joint Replacement*' Bone and Joint Journal, RL Barrack, Washington School of Medicine, St Louis, United States, January 2014

Hospital does not utilise the Australian Arthroplasty Society (AAS) guidelines for VTE prophylaxis referenced by Dr P.

80. The Hospital considers Heparin to be appropriate VTE prophylaxis for patients undergoing total knee and hip replacements. The Hospital does not provide advice to Visiting Medical Officers (VMO's) such as Dr P, regarding which VTE prophylactic drug they must prescribe. VMOs are not employed by the Hospital and therefore the Hospital does not have the ability to direct VMO's to prescribe a certain type of VTE prophylaxis.
81. However, VMOs are credentialed to have visiting and admitting privileges. VMO credentialing papers support the VMO being required to comply with the hospital medical bylaws as follows: *'Accredited Practitioners must comply with all policies and procedures (including amendments) adopted by the Hospital Board from time to time'*.
82. The Hospital's VTE Prophylaxis Policy recommends the use of research supported 'subcutaneous low-dose unfractionated heparin, low molecular weight heparin and the pentasaccharide fondaparinux for preventing VTE.
83. The Hospital advised that during the period 1 – 17 March 2017, a hospital-wide VTE audit was carried out. This examined the appropriateness of VTE prophylactic prescribing within a retrospective sample of admissions categorised at a high risk of a VTE. Data was collected from a sample of 61 surgical and medical patients that were admitted in February 2017.
84. The audit report was tabled at the SATH Pharmacy Management Committee (Committee) meeting on 27 April 2017 and the Committee is now reviewing the VTA risk assessment tool.
85. The results of the hospital-wide VTE audit, a copy of the revised VTE Prophylaxis Policy and/or assessment tool will be sent to all VMOs at the Hospital. This will be accompanied by an individual letter encouraging appropriate prescription of prophylaxis in accordance with Hospital policy.

## **Conclusion**

86. Health care related deaths such as Mr Stimpson's are often multifactorial, involving a combination of system and human errors. The correct procedure to cancel the Clexane in Mr Stimpson's chart was not followed by both the medical and nursing personnel. There was inadequate communication and hand over about the change in medication between medical and nursing staff. Nursing staff administering the Clexane and Xarelto were not aware they the two drugs could not be given together because they had not received appropriate training and education.
87. The Hospital undertook a significant review of its policies and procedures following Mr Stimpson's death. This was part of the RCA process. A separate anticoagulation medication chart has now been implemented by the Hospital. The correct process for cancelling medications was

communicated to VMO groups at the Hospital on 15 July 2015, along with an example of a medication chart with a correctly cancelled medication.

88. The relevant nursing staff involved in the incident have now completed training in relation to anticoagulants and medication safety. Anticoagulation training has also been rolled out across the Hospital for all nursing and medical staff.
89. New policies have been introduced by the Hospital which aim to ensure (in particular) that nursing staff look up the medication if the action is not known. If two drugs have the same/ similar indication, nursing staff are now required to check that both are to be given. High risk drugs are no longer stored as extra stock on the ward/in treatment rooms.
90. No similar incidents have occurred at the Hospital since Mr Stimpson's death. Nursing and medical staff have expressed their regret about the incident.
91. Mr Stimpson's death highlights the differing schools of thought within the medical profession in relation to post-operative anticoagulation management.
92. The NHMRC Guidelines state that Aspirin is **not** recommended as the sole pharmacological agent for thromboprophylaxis following total knee replacement. The NHMRC Guidelines are not binding per-se but stipulate that recommendations should be followed subject to the judgement of clinicians caring for individual patients and patients' own preferences.
93. Dr P's clinical judgment was that Mr Stimpson was 'low risk of VTE'. Aspirin was recommended (as per the AAS Guidelines) and was therefore prescribed following his surgery.
94. On the other hand, the Hospital considered Mr Stimpson was at a 'high risk of VTE'. The Hospital follows the NHMRC Guidelines not the AAS Guidelines.
95. The NHMRC Guidelines and the AAS Guidelines differ in relation to the risk factors that may pre-dispose a person to VTE. The NHMRC Guidelines identify 'age' as a risk factor. The AAS Guidelines do not. The key factors in the AAS Guidelines are a documented history of PE or a family history of PE.
96. VMOs are not employed by the Hospital and therefore the Hospital does not have the authority to direct VMO's to prescribe a certain type of VTE prophylaxis. However, the Hospital does credential VMO's on the basis of their compliance with Hospital policy. VMO compliance with Hospital policy is a matter for the Hospital.
97. Even with the benefit of hindsight, it is difficult to say whether Mr Stimpson would have experienced DVT had his post-operative anticoagulation

management been different. It is also difficult to conclude that the subsequent medication error would not have still occurred.

98. There are clear differences of opinion between the respective organisations in relation to post-operative anticoagulation management. Fundamentally, the circumstances of Mr Stimpson's death involve a medication error. I therefore do not consider these differences could lead to any useful recommendation or comment to prevent deaths occurring in similar circumstances.
99. The focus of the coronial jurisdiction is to make the findings required to be made by section 45 of the *Coroners Act 2003* where possible. There is sufficient evidence to do so in the circumstances. In all the circumstances, I have decided it is not in the public interest to hold an inquest into Mr Stimpson's death.
100. The findings are published on the Queensland Coronial website. This may raise awareness about the potentially fatal outcome of medication errors in the hospital context. It will also highlight the differing approaches taken in relation to post-operative anticoagulation management.

## **Findings required by s. 45 of the *Coroners Act 2003***

### **Identity of the deceased - Mr Reginald Stimpson**

#### **How he died -**

He was admitted to St Andrews Hospital Toowoomba on 16 March 2015 for an elective total knee replacement due to osteoarthritis. Post-operatively, he was provided with foot pumps, antibiotics and aspirin 300mg daily. According to independent advice, no therapeutic anti-coagulation was provided.

On 20 March 2015, a CT pulmonary angiogram confirmed bilateral pulmonary embolus in both upper lung lobes, with collapse in the lower lobes. Intra venous antibiotics were commenced. He was also commenced on anticoagulation at therapeutic doses - Clexane 80mg twice a day.

On 25 March 2015, Clexane was ordered to be changed to oral Xarelto another type of anti-coagulant. The Clexane was not ceased once the Xarelto was commenced. Mr Stimpson received two inadvertent double ups of both medications. A MET was called on 27 March 2015 at 13:00 as he suddenly deteriorated with weakness of the right side and decreased consciousness.

An urgent CT head showed a massive intracerebral haemorrhage that was incompatible with survival.

- Place of death –** St Andrew’s Hospital Toowoomba, Queensland Australia
- Date of death–** 27 March 2015
- Cause of death –**
- 1(a) Acute intracranial haemorrhage, *due to or as a consequence of*;
  - 1(b) Coagulopathy, *due to or as a consequence of*;
  - 1(c) Pulmonary embolism (anticoagulant therapy), *due to or as a consequence of*;
  - 1(d) Deep vein thrombosis, *due to or as a consequence of*;
  - 1(e) Osteoarthritis (elective total knee replacement).

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