**Coroners Act 1996**

**[Section 26(1)]**

***Western Australia***

# ***RECORD OF INVESTIGATION OF DEATH***

*Ref No: 22/13*

*I, Barry Paul King, Coroner, having investigated the death of* ***Evelyn Taylor*** *with an inquest held at the* ***Perth Coroner's Court, Court 51, CLC Building, 501 Hay Street, Perth,*** *on* ***20-21 May 2013 and 24 July 2013****, find the identity of the deceased person was* ***Evelyn Taylor*** *and that death occurred on* ***2 December 2010*** *at* ***Fremantle Hospital*** *as a result of* ***heart failure and probable pneumonia in an elderly lady complicated by morphine toxicity*** in *the following circumstances:*

**Counsel Appearing:**

Kate Ellson assisting the Coroner
Belinda Burke and Guy Stubbs appeared on behalf of Nurses Jaun-Marie Le Roux and Rejoice Chinoso Ndulaka
Robyn Hartley appeared on behalf of Fremantle Hospital and Health Service

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## INTRODUCTION

1. Evelyn Taylor (**the deceased**) was a resident at the St Ives aged care facility in Murdoch (**St Ives Murdoch**).

2. On the morning of 26 November 2010 the deceased became unwell. As her regular doctor, Dr Peter McCarrey, was on leave at the time, arrangements were made for a locum doctor to attend after hours.

3. When a registered nurse, Rejoice Ndulaka, examined the deceased at 6.00pm that day, the deceased was alert, communicative and able to drink water. Some 20 minutes later, Senior Carer Jaun-Marie Le Roux notified Nurse Ndulaka that the deceased was cyanosed and unresponsive.

4. Nurse Ndulaka administered oxygen to the deceased and the deceased's condition improved.

5. The locum doctor, Dr Alexandra Boyd, then attended. She examined the deceased and concluded that the deceased was suffering from a myocardial infarction.

6. Dr Boyd administered the deceased at least 20mg of morphine as well as an anti-emetic, Maxalon. She had brought the morphine with her in an ampoule which had an expiry date of April 2009.

7. Dr Boyd then directed Nurse Ndulaka to arrange for an ambulance to take the deceased to Fremantle Hospital. Dr Boyd left St Ives before the ambulance arrived.

8. The deceased became drowsy after the injections. She became unresponsive and her respiration rate slowed.

9. The deceased was transferred to the emergency department at Fremantle Hospital where she responded favourably to naloxone which was administered to counteract the morphine.

10. Following a medical review that evening, the deceased's prognosis was determined to be poor. She was then

treated palliatively until she died in the evening of 2 December 2010.

11. A post-mortem examination was conducted by forensic pathologist Dr Jodi White. Dr White obtained opinions from Professor David Joyce, clinical pharmacologist and toxicologist, in relation to the possible contribution of the morphine to the cause of death, and from Dr Vicki Fabian, neuropathologist, in relation to brain related issues.

12. An inquest was held on 20 and 21 May 2013 and 24 July 2013 in the Perth Coroners Court.

13. The primary issues for investigation were whether the administration of morphine by Dr Boyd was appropriate in the circumstances and whether it caused or contributed to the death of the deceased.

14. The documentary evidence adduced at the inquest comprised the relevant St Ives Murdoch and Fremantle Hospital records, including the St John Ambulance patient care record. The empty ampoule which had contained the morphine administered to the deceased by Dr Boyd was attached to a St Ives Murdoch incident report admitted into evidence.

15. Oral testimony was provided by Ms Le Roux (now a registered nurse), facility manager Caroline Richardson RN, Nurse Ndulaka, Dr McCarrey, Dr White, Dr Joyce and Dr Boyd.

## THE DECEASED

16. The deceased was 87 years old in November 2010. She was born in Narrikup in 1922, the fifth of eight children. She moved to Mt Barker and met her husband to be, William Taylor, with whom she had four children.[1]

[1] Exhibit 1 Volume 1 Tab 5

17. The deceased and her family lived on a farm in Mt Barker where, as her children grew up, the deceased became an orchardist growing mostly stone fruit.

18. When the deceased's children moved away from home, the deceased and her husband moved to Mandurah. They lived there until the deceased's husband died in 2005. The deceased then moved into St Ives Melville, a retirement village.[2]

19. The deceased began to develop dementia so, when St Ives Murdoch aged care facility opened in 2010, she was moved there where she could receive ongoing care.[3]

20. At St Ives Murdoch, the deceased was admitted with a diagnosis of type 2 diabetes, hypothyroidism, osteoarthritis, hypertension, depression and dementia. She needed assistance with all activities of daily living. She was prone to anxiety and panic attacks, particularly if engaged in an unfamiliar activity.[4]

21. St Ives Murdoch was comprised of a number of units, or 'houses' in which residents were accommodated and assisted. In each unit at all times on weekdays were an enrolled nurse and two carers. Overseeing all of the units was a registered nurse. On weekends there were no enrolled nurses on duty.[5]

22. At the time that the deceased resided at St Ives Murdoch, the facility manager was Caroline Richardson who was also a registered nurse. She had no direct role in caring for residents, but often provided advice to doctors and nurses at the facility.[6]

23. The deceased was housed in Forrest house, which was a 'locked unit' for dementia patients, meaning that residents were not able to leave the unit without

[2] Exhibit 1 Volume 1 Tab 5
[3] Exhibit 1 Volume 1 Tab 5
[4] Exhibit 1 Volume 1 Tab 24
[5] Ndulaka, R.C. ts 67
[6] Richardson, C.F. ts 29-30

assistance from staff. Some but not all of the residents in the unit suffered from dementia.[7]

24. The deceased was considered by those responsible for her care to be a quiet, mostly self-mobilising resident. She did become anxious and scared and needed encouragement to socialise, but was relatively fit and healthy. She was considered a lovely lady. She had dementia, but remembered her family and her carers' names.[8]

25. The deceased's family members were loving and caring and generally visited the deceased weekly.[9]

26. Over the weeks prior to 26 November 2010, the deceased had been feeling very anxious and jittery. She frequently was tearful and distressed. She was receiving diazepam as required which helped to settle her.[10] Dr McCarrey's view was that the medication he had prescribed was starting to work in relation to the deceased's anxiety and that the deceased's depression was also starting to lift.[11]

## 26 NOVEMBER 2010

27. On the morning of 26 November 2010 the deceased became unwell. She had a chesty cough and was unsteady when walking. Her temperature was 36.8°, her pulse was 88 and her blood pressure was 135/88, so those observations were within normal limits.[12]

28. It was noted by an enrolled nurse in the St Ives Murdoch integrated progress notes for the deceased that Dr McCarrey was away for the weekend and that the registered nurse on duty would organise the attendance of the locum service after hours. The locum service was

[7] La Roux, J.M. ts 6-7
[8] La Roux, J.M. ts 7-8; Ndulaka R.T. Ts 70
[9] La Roux, J.M. ts 7
[10] Exhibit 1 Volume 1 Tab 24 Progress Notes
[11] McCarrey , P. ts 45
[12] Exhibit 1 Volume 1 Tab 24 Progress Notes; Ndulaka R.C. ts 74

contacted during the day because of the deceased's condition.[13]

29. Senior Carer Le Roux checked on the deceased every half an hour during the day.[14]

30. At 6.00pm that day, Nurse Ndulaka examined the deceased and noted that she was alert and was drinking water. The deceased responded when Nurse Ndulaka asked how she was feeling.[15]

31. Nurse Ndulaka called the locum service at that time to ask how long the doctor would be.[16]

32. Nurse Ndulaka left the deceased's room but was called back by Senior Carer Le Roux by telephone about 20 minutes later because the deceased's lips and face had turned blue. Nurse Ndulaka returned to the deceased's room where she assessed the deceased and checked her vital signs.[17] In the meantime, Senior Carer Le Roux had connected an observations machine to the deceased.[18]

33. The deceased's oxygen saturation was low at 84%, so Nurse Ndulaka administered 6 litres of oxygen with a Hudson mask. The deceased's oxygen saturation then rose to 94% and she became more alert and responsive, but her blood pressure was high at 210/115, her pulse was 115 and her temperature was 36.5°.[19]

34. While Nurse Ndulaka was attending to the deceased, at about 6.20pm Dr Boyd arrived as the locum doctor referred by the locum service. According to Nurse Ndulaka and Nurse Le Roux, what then took place is as follows.

35. Dr Boyd expressed little concern or interest in the deceased's condition. She asked no questions of Nurse

[13] Exhibit 1 Volume 1 Tab 24 Progress Notes; Exhibit 1 Volume 1 Tab 15 paragraphs 12-13.
[14] La Roux, J.M. ts 11
[15] Exhibit 1 Volume 1 Tab 14 paragraph 7; Ndulaka, R. C. ts 80
[16] Ndulaka, R. C. ts 74
[17] Exhibit 1 Volume 1 Tab 24 Progress Notes
[18] La Roux, J.M. ts 12
[19] Exhibit 1 Volume 1 Tab 24 Progress Notes

Ndulaka and did not consult either the deceased's integrated progress notes or the medication charts at any stage.[20]

36. Nurse Ndulaka showed Dr Boyd the observations she had obtained earlier but Dr Boyd did not react. Instead, Dr Boyd asked the deceased how she felt and the deceased may have been able to communicate that she had chest pain.[21]

37. Dr Boyd told Nurse Ndulaka that the deceased had chest pain. Dr Boyd then produced an ampoule of a drug from her clothing and asked Nurse Ndulaka to get a syringe.[22]

38. Nurse Ndulaka obtained a syringe for Dr Boyd and asked her what the drug was. Nurse Ndulaka was curious to see what Dr Boyd was going to administer to the deceased because Nurse Ndulaka was aware of a previous incident where Dr Boyd had given a patient an expired drug. Dr Boyd said that it was morphine but did not let Nurse Ndulaka see the ampoule.[23]

39. Dr Boyd then drew all the morphine from the ampoule and administered it to the deceased intramuscularly. She also injected the deceased with 10mg of an anti-emetic, Maxalon. Dr Boyd put the empty ampoules in a sharps container. She told Nurse Ndulaka that the deceased had chest pain and would be all right. She instructed Nurse Ndulaka to call for an ambulance.[24]

40. Nurse Ndulaka initially remembered the morphine to be in a 20mg ampoule until she was shown the actual ampoule which was clearly marked as containing 30mg of morphine.[25]

41. Dr Boyd then went to the nurses' station where she made an entry into the doctors' progress notes for the deceased. Those notes indicate that Dr Boyd examined

[20] Ndulaka, R. C. ts 78-80
[21] Ndulaka, R. C. ts 81
[22] Exhibit 1 Volume 1 Tab 14 paragraph 16; Ndulaka, R. C. ts 84-84; Exhibit 1 Volume 1 Tab 8
[23] Ndulaka, R. C. ts 83-84
[24] Ndulaka, R. C. ts 85-86, 93
[25] Ndulaka, R. C. ts 85, 93

the deceased and found that she had dull chest pain, a pulmonary oedema, peripheral cyanosis and central cyanosis. Dr Boyd noted the deceased's blood pressure of 210/115 and pulse rate of 115. She provided a diagnosis of myocardial infarction. The medications administered were morphine 20mg and 10mg Maxalon intramuscularly. An ambulance was called.[26]

42. After Dr Boyd had made the entry in the doctors' notes, and before the ambulance arrived, she left the unit. Nurse Ndulaka stated that doctors usually stay until an ambulance arrives and that when doctors give morphine they stay to monitor the patient.[27]

43. After Dr Boyd gave the deceased the injections and before the ambulance officers arrived, Nurse Ndulaka noticed that the deceased's respiration rate and consciousness decreased and that her throat was swollen.[28]

44. The ambulance officers arrived at 6.51pm. They noted that the deceased was pale and clammy and had a slight expiratory crackle. She had a respiration rate of 10 per minute, pinpoint pupils and the ECG showed a normal sinus rhythm at 116 beats per minute. Her Glasgow Coma Scale was 9/15 and her oxygen saturation was 88%.[29]

45. Nurse Le Roux stated that the ambulance officers told her that their ECG monitor showed no heart attack. Nurse Ndulaka said that the officers told her that the ECG showed no ST elevation.[30]

46. Nurse Ndulaka copied relevant medical records and provided the copies to the ambulance officers to pass along to the hospital.[31]

[26] Exhibit 1 Volume 1 Tab 8
[27] Ndulaka, R. C. ts 85; McCarrey, P. ts 49
[28] Ndulaka, R. C. ts 90; La Roux, J.M. ts 16
[29] Exhibit 1 Volume 2 Tab 25 SJA Patient Care Record
[30] La Roux, J.M. ts 17; Ndulaka, R. C. ts 86
[31] Ndulaka, R. C. ts 96

47. The ambulance left St Ives Murdoch with the deceased at 7.27pm to convey her to Fremantle Hospital. On the way, the deceased's respiration rate dropped so the officers administered oxygen to bring her oxygen saturation level up. She had a normal sinus rhythm with tachycardia. The deceased could not take an oropharyngeal airway but her airways were clear.[32]

48. After Dr Boyd and the ambulance had left, Senior Carer Le Roux and Nurse Ndulaka found the empty morphine ampoule and the Maxalon vial in a sharps container.[33] They noted that the expiry date was April 2009, so brought it to the attention of Ms Richardson who instructed them to complete medical incident reports.[34]

## FREMANTLE HOSPITAL

49. Upon arrival at the Fremantle Hospital Emergency Department, the deceased was initially diagnosed with congestive cardiac failure, pneumonia and narcotic overdose induced central respiratory depression. She was given naloxone which caused her respiration rate to increase, and she opened her eyes.

50. The deceased was then seen by an emergency consultant who diagnosed the deceased with pneumonia with pulmonary oedema, acute coronary syndrome and opiate toxicity. The plan was then to continue with naloxone and to administer intravenous antibiotics and frusemide. As her prognosis was poor, a decision was made following discussions with the deceased's family to make a 'not for resuscitation' order.

51. The deceased was then admitted into a medical ward for full medical management.

52. When the deceased was reviewed by the medical registrar, she was drowsy and unrousable to verbal commands. The registrar discussed the deceased's condition with her family and a decision was made to

[32] Exhibit 1 Volume 2 Tab 25 SJA Patient Care Record
[33] La Roux, J.M. ts 17; Ndulaka, R.C. ts 85; Exhibit 1 Volume 1 Tab 8
[34] Exhibit 1 Volume 1 Tab 8

provide comfort treatment only. She remained unresponsive thereafter until she died in the evening of 2 December 2010.

## DR MCCARREY

53. While the deceased was in Fremantle hospital, Dr McCarrey contacted the hospital to raise concerns about his understanding that the deceased had been administered 20mg of morphine from an expired ampoule.

54. In oral evidence, Dr McCarrey said that as far as he was aware, the deceased had not been prescribed an opiate before 26 November 2010.

55. He said that there were other ways of alleviating the symptoms that the deceased presented with, and that if he had attended her on 26 November 2010, he would have given her a nitrolingual spray and aspirin.

56. He considered that it may have been appropriate for Dr Boyd to have given the deceased morphine, but he believed that the dosage she administered was an appalling judgment by Dr Boyd. He said that 20mg was an extremely high dose which, in the deceased's case, was likely to depress respiration.

57. Dr McCarrey said that, in the circumstances where the deceased was elderly and relatively small and had not had narcotics previously, he would have started with a low intravenous dose such as 1.25mg or maybe 2.0mg. If he were to give it intramuscularly, he thought that the deceased would be all right with 2.5mg.

## DR WHITE

58. Dr White conducted a post mortem examination of the deceased on 7 December 2010. Dr White prepared a

Confidential Report to the Coroner[35] in which she provided a summary of findings as follows:

1. Mild to focally severe coronary artery disease with almost total occlusion of the right coronary artery.

2. Focal scarring in the posterior left ventricle. Pericardial adhesions.

3. Left ventricular hypertrophy.

4. Thickened mitral valve.

5. Heavy congested lungs (probable right sided pneumonia)

6. Chronically congested liver.

7. Diverticular disease.

8. Abdominal adhesions.

9. Scarred kidneys.

10. Peripheral oedema.

11. Atrophic thyroid.

12. Evident medical intervention.

59. Given the circumstances of the death, Dr White sought a toxicology analysis, a toxicological opinion from Professor Joyce and a neuropathology report from Dr Fabian.

60. In her supplementary report dated 28 December 2011, Dr White determined that the cause of death was heart failure and probable pneumonia in an elderly lady complicated by morphine toxicity.[36] In the conclusion to the report, Dr White stated:

[35] Exhibit 1 Volume1 Tab 20
[36] Exhibit 1 Volume1 Tab 20

> Whilst I am of the opinion that the morphine has significantly contributed to the deceased's death (given the clinical findings on admission and toxicological results) given the presence of other acute underlying conditions and other contributory factors such as the deceased's age and general state (of) health, I am unable to specifically determine the role and thus the significance that these other factors may have also played in her demise.[37]

61. In her oral evidence, Dr White was referred to the list of findings reproduced above. She said that the first four items together indicated a fairly complex heart disease that put the deceased at risk of a heart failure.[38] She noted that the histology which she had done of the heart indicated that there had not been 'a large event' occurring at least a day or more before the deceased died.[39]

62. When asked if there was any evidence during the course of her examination of a myocardial infarction on 26 November 2010, Dr White said, 'Not that I saw.'[40] She stated that the almost total occlusion of the right coronary artery could potentially have caused the events on 26 November 2010 if the deceased was complaining of chest pain.[41]

63. As to her finding that the cause of death was heart failure, Dr White said that it was longstanding heart failure, consistent with the finding of a congested liver and peripheral oedema. The congested lungs were also consistent with heart failure, but she noted that other causes of heart failure such as myocardial infarction can also cause pulmonary oedema.[42]

64. Dr White's view about the role of morphine toxicity was that it may have worsened the deceased's respiratory

[37] Exhibit 1 Volume1 Tab 20
[38] ts 100
[39] ts 103
[40] ts 107
[41] ts 108
[42] ts 111

functions and thereby predisposed the deceased to, or worsened, her chest infection, and it could have lowered her blood pressure which could lead to the ischaemic damage that Dr White saw in the kidneys and bowel and that Dr Fabian saw in the brain.[43]

65. However, Dr White noted that, although heart failure and sepsis can also reduce blood pressure, she was not able to rank or quantify the significance of the morphine toxicity in the cause of death. She did say that she considered that the level of morphine found in the deceased was significant and that it was a significant contributing factor to the death, but that it was not the only factor. Dr White went on to explain that the level of morphine found could lead to a worsening of pre-existing lung, heart and kidney problems.[44]

66. When asked how likely it would have been for the deceased to have died if she had not suffered morphine toxicity, Dr White said that it was a bit hard to say because the deceased had been in hospital for five days, but she might have lived if there was no morphine; there were a number of complicating factors.

## PROFESSOR JOYCE

67. Professor Joyce prepared a report dated 15 December 2011 in order to explore the contribution to morbidity and death from the morphine dose that was administered to the deceased on 26 December 2010.[45] He had been provided with Dr White's report of 7 December 2010, the Fremantle Hospital file for the deceased, the St Ives Murdoch file for the deceased, and the toxicology analysis report from the Chemistry Centre.

68. Professor Joyce determined that, having regard to the fact that the time that the blood sample taken from the deceased at the time of her admission into Fremantle Hospital was at least an hour after she had been administered the morphine, the blood concentration of

[43] ts 105
[44] ts 106
[45] Exhibit 1 Volume1 Tab 23 p2

free morphine seen in the toxicology report would have been higher than approximately 0.2mg/L at its peak. That is a toxic level which can lead to suppression of breathing and lowering of blood pressure. [46]

69. The level was around three times the peak concentration from a typical analgesic dose given to a 70kg otherwise healthy adult after surgery and would be expected to cause serious morphine toxicity. Death from that level of toxicity would be rare in a healthy person, but the risk of death from respiratory depression would be increased if the person were old and debilitated or there were a pre-existing respiratory impairment. [47]

70. In the deceased's case, pre-existing respiratory failure was evidenced by pulmonary oedema, cyanosis, low oxygen saturations and metabolic acidosis.[48]

71. Professor Joyce considered that a free morphine concentration of approximately 0.2mg/L in a person with existing respiratory failure would almost inevitably have caused serious respiratory depression and would carry a significant risk of lethality.[49]

72. In his view, the appropriate dosage of morphine for the deceased given her well-recognised risk factors of age, debility, neurological disease and respiratory failure would have been low, with a typical test dose of 2.5mg intravenously.[50]

73. Professor Joyce stated that the appropriate emergency care of the deceased at St Ives Murdoch would have included the administration of oxygen, a diuretic to force the excretion of excess fluid, and sublingual glyceryl spray to reduce the workload on the heart. Morphine could also have been particularly valuable given the deceased's apparent chest pain.[51]

[46] Exhibit 1 Volume1 Tab 23 p3
[47] Exhibit 1 Volume1 Tab 23 p6
[48] Exhibit 1 Volume1 Tab 23 p6
[49] Exhibit 1 Volume1 Tab 23 p7, 8
[50] Exhibit 1 Volume1 Tab 23 p8
[51] Exhibit 1 Volume1 Tab 23 p8, 9

74. While the amount of morphine given by Dr Boyd to the deceased had the potential to cause serious harm, in Professor Joyce's view there was no definite evidence that it did so.[52]

75. Further, Professor Joyce noted that an acute pulmonary oedema such as that suffered by the deceased carries a substantial risk of mortality in an elderly infirm person with dementia, even if treated. The best, safest and most timely treatment may not have prevented the deceased's death.[53]

76. In his oral evidence, Professor Joyce confirmed that the deceased had shown signs of morphine toxicity while in the ambulance and upon arrival at hospital, but he was unable to say whether a 20mg dosage of morphine caused her death. He noted that the deceased survived the dose and lived for some days after it, and that the administration of oxygen and artificial ventilation in the ambulance followed by the administration of naloxone may have been sufficient to neutralise the damage done by the morphine.

77. Professor Joyce reiterated that, while the morphine had the potential to contribute to the death, he cannot say whether it did so in fact.[54] Nor could he say whether the deceased would have survived had she not been given the high dose of morphine since she faced a high mortality risk from her illness anyway.[55]

78. Professor Joyce considered that there were sufficient indications that the deceased would have benefitted from the administration of morphine.[56] He said that the conventional way to administer morphine is intravenously. If intravenous access cannot be obtained then a conservative intramuscular dose might be appropriate. In older people whom may have respiratory impairment, a typical starting dose intravenous dose

[52] Exhibit 1 Volume1 Tab 23 p10
[53] Exhibit 1 Volume1 Tab 23 p10, 11
[54] ts 122
[55] ts 127
[56] ts 125

would be 2.5 milligrams. Intramuscularly, a 7.5 milligram dose might be safe. [57]

79. As to the administration of morphine that had passed its expiry date by about 19 months, Professor Joyce said that the morphine had probably not lost any of its potency and that there would not have been any changes to it to enhance its toxicity.[58]

## DR BOYD

80. Dr Boyd was a registered medical practitioner but had retired 'a couple of years ago'.[59] She said that she had trained in England in tropical medicine and then worked for about eight years in Somalia, Sudan and Ethiopia as a medical volunteer before returning to Australia. For the last 10 years of practice, she had been doing clinical work as well as attending nursing home patients. For about 20 years she had also be doing locum work.

81. The clinical work provided by Dr Boyd involved a general practice for three days a week and attending regular patients in five different nursing homes for two days a week.

82. Her locum work involved visiting up to 12 of patients after normal clinic hours in order to treat patients who had called the locum service provider. It was additional to her other work, resulting in her working about 70 hours a week altogether.

83. In order to visit the allocated patients in the course of an evening, there was a lot of pressure for her to keep moving from one patient to the next.

84. On 26 November 2010 Dr Boyd visited the deceased as part of her locum practice. When she went into the deceased's room she saw that the deceased was clutching her chest, was incoherent and appeared very

[57] ts 124
[58] ts 125
[59] ts132

distressed. The nurse, presumably Nurse Ndulaka, told her the blood pressure.

85. It looked to Dr Boyd that the deceased was having a heart attack, so she decided to give her morphine. It was the first time that Dr Boyd had administered morphine in a nursing home.[60] She had an ampoule in her bag which she transferred to a pocket in her vest before examining the deceased and taking her pulse.

86. Dr Boyd then drew two millilitres or 10mg of Maxalon into a two millilitre syringe, which left enough room for another .6 of a millilitre of morphine which she drew from the ampoule. Her intention was to administer the deceased 20mg of morphine.

87. Dr Boyd said that she could not find any veins so she decided to administer the morphine intramuscularly.[61]

88. Dr Boyd did not look at the deceased's medication chart or her progress notes. She did not ask the nurses about the deceased's history, relying instead on what she saw. Dr Boyd accepted that she had failed to do a lot of things that she should have done.

89. Dr Boyd did not take into account the deceased's frailty or the fact that the deceased had not had opiates previously. She said that it would not have affected her view that the deceased needed morphine at the time, but she accepted that it appeared that she had no regard to the deceased's age, history of opiate use or overall clinical picture when determining the dose of morphine to give her.[62]

90. When asked whether the fact that the deceased was opiate naïve would have informed her of the appropriate dose, Dr Boyd answered that the appropriate dose was what you think is going to control the pain.[63]

[60] ts 159
[61] ts 140
[62] ts 155, 159
[63] ts 154

91. At the time, Dr Boyd thought that she had assessed the deceased's condition correctly so she did not await the arrival of the ambulance after administering the morphine to the deceased. She expected the morphine to take 10 to 20 minutes before having a full effect, but was not concerned to determine what that effect might be. Yet, it seemed to her that the deceased relaxed after the injections.[64]

92. As to the fact that the ampoule of morphine was past its expiry date, Dr Boyd said that she probably did not check the expiry date because she did not have her glasses with her.

93. Dr Boyd said that she had intended to administer 20mg of morphine from a 30mg ampoule. The notes made by Dr Boyd indicated that she had given the deceased 20mg.

94. As to the inconsistency between the evidence of Nurse Ndulaka and Dr Boyd on the amount of morphine administered, I consider that the preponderance of evidence establishes that Dr Boyd's evidence on this issue is more reliable. The notes she made almost contemporaneously accord with Nurse Ndulaka's report made that evening that Dr Boyd administered 20mg of morphine.[65]

95. However, there is no doubt that a dose of 20mg of morphine was potentially lethal to the deceased at the time and, in fact, caused her to suffer morphine toxicity.

96. Dr Boyd acknowledged that 20mg was an inappropriately high dose to give the deceased. She was not aware at the time that it was too high and, as I understand her evidence, was not aware why she did not know.[66]

97. Earlier in her evidence, Dr Boyd said that the dose was too high and that she had probably done things in too much of a hurry and had not been thinking clearly at the

[64] ts 155
[65] Exhibit 1 Volume1 Tab 8
[66] ts 160

time.[67] When asked what the appropriate dose would have been, she said 10mg most probably. Dr McCarrey's and Professor Joyce's evidence suggests that 10mg was still too high a dose.

98. In the end, Dr Boyd accepted that the deceased's clinical picture militated against a high dosage of morphine, yet that is what she consciously chose to administer. She said that it was obviously a bad mistake.[68]

## WAS THE ADMINISTRATION OF MORPHINE TO THE DECEASED APPROPRIATE?

99. The evidence of Dr McCarrey and Professor Joyce support the use of appropriate doses of morphine in circumstances such as that faced by Dr Boyd when treating the deceased.

100. There is no doubt, however, that that the dosage administered by Dr Boyd was inappropriately high, resulting in the deceased suffering from opiate toxicity and consequent respiratory depression and low blood pressure.

101. Professor Joyce's evidence makes clear that the dosage caused the deceased serious toxicity and exposed the deceased to a serious risk of lethality.

102. That the deceased initially survived that overdose appeared to be due only to the efforts of the ambulance officers and the emergency department staff at Fremantle Hospital.

## DID THE DOSE OF MORPHINE CAUSE THE DEATH?

103. A finding that the dose of morphine caused the death would be tantamount to a finding that Dr Boyd caused the death. In these circumstances, I need to apply the well-known principle from *Briginshaw v Briginshaw*

[67] ts 140, 142
[68] ts 160

[1938] HCA 34; (1938) 60 CLR 336, roughly to the effect that the more serious the allegation, the higher the level of satisfaction required by the decision-maker: *Anderson v Blashki* [1993] 2 VR 89.

104. The applicable test in my view is that of 'the application of common sense and experience' in accordance with *Saraf v Johns* [2008] SASC 166 at [18] and, of course, on the basis of the available evidence. See also *Krakouer v the State of Western Australia* [2006] WASCA 81 in the criminal context.

105. In particular, the evidence established that the deceased had significant co-morbidities which triggered the acute pulmonary oedema, hypoxia and hypertension on 26 November 2010 before Dr Boyd arrived at St Ives Murdoch.[69]

106. As noted, Professor Joyce pointed out that the deceased survived the overdose and lived for several days afterwards following treatment.[70]

107. When that fact is coupled with Dr White's evidence that it was hard to say whether the deceased would have died had she not been given the morphine because the decease had been in hospital for five days, but that the deceased 'might have lived … if there was no morphine at all involved',[71] it appears to me that the evidence is not sufficiently cogent or certain to ground a finding that, from a common sense perspective applying the Briginshaw principle, the dosage caused the death.

108. It is also worth noting that the medical notes from Fremantle Hospital impliedly suggest that the deceased's treating doctors considered that she died from natural causes.

[69] ts 108 per Dr White
[70] ts 122
[71] ts 106

## CONCLUSION ON CAUSE OF DEATH

109. In my view, the evidence of Dr White and Professor Joyce taken together indicates that, while there was a potential for the morphine to have been a causal factor in the death of the deceased, it is not possible to be satisfied to any degree of certainty that it did in fact contribute to so significant a degree that it could be said to have caused her death. To put it in terms of the 'but-for' test, it is not possible to be satisfied that the deceased would not have died if she had not been given the dose of morphine at the time.

110. In these circumstances, I adopt Dr White's determination that the cause of death was heart failure and probable pneumonia in an elderly lady complicated by morphine toxicity with the qualification that I am unable to quantify the role ultimately played by the morphine.

## CONCLUSION ON MANNER OF DEATH

111. As I am unable to determine whether the excessive dose of morphine caused the death, I cannot determine whether the death arose from misadventure or from natural causes. I am obliged to make an open finding as to the manner of death.

## REFERRING DR BOYD TO AHPRA

112. Dr Boyd administered a potentially lethal dose of morphine to the deceased without considering the deceased's history or full clinical picture. She could offer no explanation for her actions except to imply that she had made a misjudgement because she had been overworked and had put herself under a great deal of pressure by carrying on the locum practice on top of her other work.

113. Dr Boyd surrendered her registration as a medical practitioner in January 2010. Notwithstanding that, Counsel Assisting submitted that I should refer the evidence of the inquest to the Australian Health

Practitioners Regulation Agency since Dr Boyd was registered at the time she treated the deceased.

114. Since the holding of the inquest, the Western Australian State Administrative Tribunal has ordered[72] that Dr Boyd's name be removed from the Register of Medical Practitioners. There would now appear to be no practical purpose in referring evidence of her treatment of the deceased to that agency.

B P KING
CORONER

11 September 2013

[72] *Medical Board of Australia and Boyd* [2013] WASAT 123