**CORONERS COURT OF NEW SOUTH WALES 44-46 Parramatta Road GLEBE**

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| **Jurisdiction:** | Coronial |
| **Name of Deceased:** | Nicholas Choon Choon ANG |
| **File number:** | 1360/2005 |
| **Hearing dates:** | 24-27 November 2008 and 14-16 February 2011 |
| **Date of Decision:** | 2 September 2011 |
| **Coroner:** | M.MacPherson |
| **Representation:** | Ms Penelope Wass counsel assisting instructed by Brett Thomson Solicitor Crown Solicitors Office; Richard Sergi of counsel instructed by Katherine Lawrence Solicitor for South Western Sydney and Illawarra Area Health. Neale Dawson Solicitor instructed by Patricia Robertson Solicitor for NSW Nurses Association; Patricia Robertson Solicitor for Janice Lum; Simon Davis of counsel instructed by Tony Mineo Solicitor on behalf of Dr. Kathleen Smith; Phillip Boulten SC of counsel for Jeffrey and Lilian Ang |

## Introduction

1 On 12 August 2005, Nicholas Ang was admitted to the Acute Psychiatric Unit of Sutherland Hospital. He was diagnosed with Schizoaffective disorder and was admitted under the care of his consultant, Dr Kathleen Smith, the staff specialist psychiatrist at Sutherland Mental Health Unit.

2 Between 04.00am and 04.30am on Monday 22 August 2005, Nicholas Ang was found by nursing staff to be unresponsive, not breathing and without a pulse. The hospital's Medical Emergency Team (MET) attempted to resuscitate Nicholas, but he was declared dead at 05.02am on 22 August 2005.

3 Nicholas Ang was of Chinese Malay descent, and at the time of his death was 29 years of age. He stood 173 cm tall and weighed 77.27kg, was a non-smoker and was considered generally to be physically fit and healthy.

4 His death in a facility that was supposed to protect him was tragic and a shock to his family as it was to the staff that were looking after him.

5 This Inquest has examined why he died and whether anything in his care and treatment, including the mixture of drugs he was taking at the time, caused or contributed to his death and whether any recommendations should be made to prevent similar tragedies.

## Role of Coroner

6 My role as Coroner is to establish, if possible, the identity, the date of death, the place of death and the manner and cause of death. The formal finding will be recorded at the Registry of Births, Deaths and Marriages

7 A Coronial Inquest is essentially an enquiry. It is not a criminal or civil trial in which two opposing parties engage in legal combat. It is not the role of the Coroner to attribute fault or make findings in relation to negligence or breach of duty of care

8 Another important function of an inquest is the making of recommendations, which are necessary or desirable in relation to any matter connected with a death. In this way the

coronial proceedings can be forward looking, aiming to prevent future deaths, rather than allocating blame.

9 I say this not so much for the benefit of leaned counsel, but more for the benefit of the family and friends of Nichlolas Ang who may not always appreciate and understand the role of a Coroner or the Coronial Inquest.

**Background**

10 I have essentially adopted the factual background set out in counsel assisting's submissions to this Inquest.

11 Nicholas Ang had suffered for some time prior to his admission in August 2005 from a severe schizoaffective disorder. He had been under the care of Sutherland Hospital and Sutherland Community Mental Health Team since February 1997, and under the care of Dr Kathleen Smith since May 2004.[1]

12 Dr Smith had looked after him as a Registrar since January 2003.[2] At the time of his death, Nicholas Ang had had 15 admissions to the acute psychiatric unit of Sutherland Hospital. When typically unwell, he became very elevated and was psychotic in the sense he held delusional beliefs.[3]

13 On Nicholas Ang's 14th admission to the acute psychiatric unit of Sutherland Hospital between 20 January and 7 April 2005, he was again admitted under Dr. Smith and continued with his apripiprazole (Abilify) trial.[4] This was prescribed in combination with other drugs of varying quantities[5]. During this admission, the dose of Abilify was increased from the initial starting dose of 15mg to a maximum recommended dose of 30mg.[6]

14 Dr Smith continued to prescribe this drug for Nicholas Ang until 7 March 2005[7]. According to Dr Smith, Nicholas '*had no significant clinical response to the Abilify*'.[8]

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[1] Transcript 27/11/08 page 3 paragraph 15
[2] Ibid
[3] Ibid page 7 paragraphs 1-25
[4] Exhibit '5' and Transcript 27/11/08 page 2 paragraphs 5-45
[5] Prescription chart for Admission 13 – 11 to 19 January 2005
[6] Transcript 27/11/08 page 2 paragraph 40
[7] Prescription chart for Admission 14 - 20 January to 7 April 2005
[8] Transcript 27/11/08 page 2 paragraph 40

During Nicholas's 14th admission to the acute psychiatric unit, he was placed in seclusion on no less than 21 separate occasions[9]. He was first subjected to seclusion on 26 January 2005 (six days after he was admitted) and the last time he was placed in seclusion was on 10 March 2005[10], three days after he was taken off Abilify Dr Smith recommended he change back to clozapine.[11]

15 On 3 March 2005, Dr Smith sought a second opinion from Dr William Andrews, another psychiatrist and the '*medical superintendent on the ward*'.[12] Dr. Andrews recommended that while clozapine was '*strongly indicated*' he advised that this should be limited to '< *200mg/ day', lithium be ceased & probably valproate (sodium valproate) will be unnecessary"*.[13]

16 On 8 March 2005, Dr Smith prescribed clozapine for Nicholas Ang, having already ceased his lithium on 3 March 2005. The dose of clozapine was increased in incremental rises until it reached a '*maximum [daily] dose*' of 200mg by 16 March 2005, which was eight days later.[14]

17 Clozapine was also prescribed in combination with other drugs of varying quantities, one of which was Epilum or sodium valproate. According to Dr Smith, '*the two side effects that [she] considered medically significant at the time were the propensity for clozapine to drop the white cell count and the neutrophil count, and the association of clozapine with myocarditis and sudden death*'.[15]

18 Dr. Smith made mention of her understanding that Nicholas Ang '*typically experienced an increase in salivation on clozapine*' and that he '*experienced the clozapine to be very sedating, in the sense that he would sleep for a 12 or 14-hour period a day when he was on a stable dose of clozapine*'.[16] According to Dr Smith, 450mgs was the 'highest dose' of clozapine that was prescribed for Nicholas Ang during his 14th Admission in 2005.[17]

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[9] Clinical 'progress notes' from 20 January – 7 April 2005
[10] Clinical 'progress notes' from 26 January – 10 March 2005
[11] Mr Ang had been on clozapine from 2 April 1998 (Admission 4), stopped clozapine in July 2004 (Admission 11) and reintroduced clozapine on 8 March 2005 (Admission 14)
[12] Transcript 27/11/08 page 3 paragraph 45
[13] Andrews (2005) clinical progress note entry dated 2 March 2005.
[14] 'Variable dose regimens' prescription chart.
[15] Transcript 27/11/08 page 4 paragraph 20
[16] Ibid page 27 paragraph 45
[17] Ibid page 5 paragraph 40

19 This does not appear to accord with Nicholas Ang's prescription chart for this period, which indicates that he was prescribed a maximum dose of 200mg of clozapine a day[18]. Dr Smith also stated that consideration had been given to Nicholas Ang's Chinese Malay ethnicity when adjusting the dose of the drug, and because of his *'personal experience with the medication'*.[19]

20 Dr Smith stated that *'people from Asian background will have an increased sensitivity to some side-effects and can require lower doses to achieve the same benefit in treatment'*:[20]

21 Dr. Smith also stated that of all of the medication that Nicholas Ang had tried in the past, clozapine '*seemed to give [Nicholas Ang] the best clinical response*' [21] When Nicholas Ang was admitted to the acute psychiatric unit 12 August 2005 (last admission), his medications at the time were listed as being: Epilum 700mg nocte[22]; clozapine 25 mg[23] (nocte), olanzapine[24] 10mg PRN and diazepam 10-20 mg PRN[25]. Following his admission to the unit, Nicholas's clozapine was increased to 100mg by 14 August 2005 and to a maximum dose of 200mg per day by 18 August 2005. This was prescribed concomitantly with other medications in varying doses[26].

22 On 21 August 2005, Nicholas was found to have sustained deep partial thickness burns to both hands, arms and to his face. Following her examination of Nicholas on Sunday 21 August 2005, Dr Asha Mathews, the night Resident Medical Officer, prescribed Panadeine Forte ii QID PRN. Dr Smith was not consulted regarding Dr Mathews' decision to prescribe Panadeine Forte for Nicholas Ang.[27]

23 According to hospital records, Nicholas Ang was given doses of Panadeine Forte at 09.30 and again at 19.30 hours on Sunday 21 August 2005, in conjunction with his scheduled medications, however the evidence of Nurses Janice Lum and Sarah Jequier at

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[18] 'Variable dose regimens' prescription chart and prescription charts from 8 March to 7 April 2005.
[19] Transcript 27/11/08 page 6 paragraph 5
[20] Ibid page 22 paragraph 5
[21] Ibid page 3 paragraphs 0-5
[22] Epilum or Sodium Valproate is thought to be a derivative of valporic acid, which is a known inhibitor of cytochromes P450 2D6 and 2C9 and inducers
Of CYP2C19. (see attachments to Dr Irina Priatkov's report dated 16 March 2009).
[23] Clozapine's metabolism is associated with CYP2D6 and CYP2C19 enzymes, and is also a known inhibitor of CYP 2D6.
[24] Olanzapine is metabolised through Cytochrome P-450 2D6. Ref: www.healthanddna/healthcare-professional/p450-2d6-genotyping.html.
[25] Clinical progress note entry by Dr J de Vera dated 13 August 2008.
[26] Mr Ang's Prescription Chart – Admission 15
[27] Transcript 27/11/08 page 21 paragraphs 0-5

the Inquest suggests that 2 doses (of 2 tablets) was likely given in the afternoon or evening of 21 August 2005, rather than one.

24 Nicholas was observed to be snoring loudly and to be sleeping from at least 14:30 hours to 18:00 hours on Sunday 21 August 2005[28]. According to Nurse Jequier, Nicholas Ang slept through his burns dressing at 14.30 hours, which consisted of pricking his blisters with a sterile needle and dressing with Jelonet.[29]

25 According to Nurse Jequier, the dressing took about 20-30 minutes. Nurse Jequier stated that it was not 'normal' for Nicholas Ang to have slept so long during the day. At 20.30 hours on the evening of Sunday 21 August 2005, Nurse Lum took Nicholas Ang's temperature. There is no record that she took his pulse, blood pressure, counted his respirations or measured his oxygen saturation level.[30] Neither did she record that these observations were to be continued in his clinical progress notes.[31]

26 Nurse Lum stated that Nicholas Ang was found in another's patient's bed on the night of Sunday 21 August 2005.[32] The last set of observations consisting of temperature, pulse and blood pressure had been taken on 14 August 2005[33], seven days prior to his death.

27 During the inquest, Dr Smith was asked to review Nicholas Ang's observation chart from 12 to 14 August 2005. Following her review, Dr Smith described Nicholas as having had '*a 48-hour period of stable observations*'.[34] During that period, Nicholas's pulse rate had varied from 100 to 112 bpm.[35]

**Detailed analysis of 12 to 20 August 200**

28 On 12 August Nicholas Ang was found wandering around North Sydney in a psychotic state. Pursuant to the *Mental Health Act* he was admitted to Royal North Shore Hospital and later transferred to Sutherland Hospital. He had been non-compliant with his Clozapine treatment.[36] His starting dose on recommencing Clozapine was 25mg.[37]

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[28] Nurse Lum's progess notes entry dated 21 August 2005 at 19.00 hours.
[29] Transcript 24/11/08 page 58 paragraphs 0-25
[30] Observation chart dated 21 August 2005.
[31] Nurse Lum's progess notes entry dated 21 August 2005 at 19.00 hours.
[32] Transcript 25/11/08 page 53 paragraphs 5-35
[33] Observation chart from 12 August to 14 August 2005, and his oxygen saturation level on admission on room air had been recorded as being 97%.
[34] Transcript 27/11/08 page 30 paragraph 25
[35] Observation chart from 12 to 14 August 2005.
[36] Transcript 27/11/08 page 9 paragraph 40

29 From 12 to 14 August an observation chart was kept. His chest was clear and his heart sound was normal. His medical chart,[38]showed 3 blood pressure and pulse readings, but no respiration readings. An oxygen saturation reading that was taken on admission (O/A) is recorded as being 97%.

30 The results of blood tests performed on 15 August 2005, included a full blood count: [39]

31 On 16 August 2005, Dr Smith commenced a plan to increase the clozapine dose over time to 200mg. The Epilum was increased immediately to 700mg, morning and night.[40]

32 In their submission to the State Coroner dated 31 October 2005[41], as well as in their letter of complaint to the Office of the Health Care Complaints Commission dated 25 July 2007[42], Nicholas Ang's parents, Jeffrey and Lilian Ang, noted generally that over the years that Nicholas had been on his prescribed medication, their son endured a number of side-effects. These included '*chest pain; chest tightening; laboured breathing at rest; polyuria; polydipsia; constipation; haemorrhoids; pronounced hypersalivation or drooling; pronounced drowsiness and muscle weakness; being unsteady on his feet, dizziness and excessive and persistent vomiting*'.

33 On 16 August 2005, Nicholas Ang's clozapine dose was increased to 125 mg, with a corresponding increase in the rate of sodium valproate to 400mg in the morning and 1000mg at night.

34 On 16 August 2005, Nicholas Ang was pushed backwards by a patient and hit his head on the floor. He was helped up by nursing staff and taken to his room.[43] One witness reports that this took place on 21 August 2005, the night before he died, but other witnesses and the contemporaneous progress notes suggest this occurred on 16 August 2005.[44]

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[37] Ibid page 10 paragraph 10
[38] Bundle page 27 and Transcript 27/11/08 page 29 paragraph 35
[39] Bundle 24-26
[40] Transcript 27/11/08 page paragraphs 45-50
[41] Mr and Mrs Ang's submission to dated 31 October 2005 to Ms D Comarmond, Registrar State Coroners Court – cover letter Page 3 & 4 – item iv.
[42] Mr and Mrs Ang's Letter of Complaint to the Health Care Complaints Commission dated 25 July 2007 – Page 5 – No 5 ii)8.
[43] Transcript 24/11/08 page 20
[44] Transcript 24/11/08 page 30 paragraph 41; Ibid page 33 paragraphs 18-23 and Tab 36 page 1

35 No neurological observations were performed on Nicholas Ang at the time. However, brain autopsy results provided with Dr Schwarts' report show no abnormality and there is no suggestion by any witness that this had any causal effect on Nicholas Ang's death.

36 By 18 August 2005, Nicholas Ang's clozapine levels were 200mg.

37 On 20 August 2005, Nicholas Ang is recorded in the notes as being physically healthy, rushing around, laughing inappropriately and of being overly intrusive. His parents were constantly present during the day and recall that he was fit and well. Nurse Lum describes him as very active, awake and disorganised, although not disorientated. This behaviour was not uncommon.[45]

38 In her evidence to the inquest, Nurse Lum further stated that she had found Nicholas Ang settling down to sleep in another patients' bed at 21.00 hours on Saturday 20 August 2005.[46] He was taken to his own bed and within 5-10 minutes was observed to be snoring heavily. Under cross-examination, Nurse Lum conceded that this probably occurred on the evening of Sunday 21 August 2005, the night before he died.[47] The nursing staff did not see this behaviour by Nicholas as unusual or surprising.[48]

**21 August 2005**

39 Shortly after they had commenced their shift at 07.00 hours on Sunday 21 August 2005, Nurses Callum Ritchie and Michelle Pocklington found Nicholas Ang walking with burns to his hands, right hand and to his left elbow[49]. The registered medical officer, Dr Mathews was called to see Nicholas Ang.[50]

40 Dr Mathews stated that when she examined him; '*He appeared well. He did not appear sick or septic did not appear that he was systemically unwell in the sense that he did not feel warm or clammy to touch, he did not display any signs of audible cough or moist cough*'. Further, she said that he had no stridor. Dr Mathews stated, '*stridor is loud or hoarse sound coming through the airway, in the instance that he might have had blisters*

[45] Transcript 25/11/08 page 41 paragraph 42
[46] Ibid page 42 paragraph 43
[47] Ibid page 53 paragraphs 5-35
[48] Transcript 24/11/08 page 66 paragraphs 45-50; Transcript 25/11/08 page 42 paragraphs 10-25
[49] Nurse Ritchie statement dated 30 August 2005 and Nurse Pocklington's statement dated 5 November 2005
[50] Nurse Pocklington's statement dated 5 November 2005 and contemporaneous progress note by Dr Mathews on 21 August 2005

*in his airways [from the burns], that would one of the indications there could have been upper airway problems with blisters'.*[51]

41 At 08.00 hours, Nicholas Ang was given his scheduled medication of 500mg sodium valproate, 2mg clonazepam and clozapine 200 mg.

42 On questioning Nicholas Ang about the cause of his injuries, Nicholas is said to have attributed them to "*Ben the dragon*".[52] His reference to mythical creatures was not considered unusual and was often part of his usual presentation whilst florid. Dr Mathews prescribed Panadeine Forte X2 QID PRN for Nicholas.

43 Dr Mathews confirmed that at the time that she prescribed this medication for Nicholas, she knew the other medication that he was on.[53] She stated that she had not been "*intimately aware of the potential side-effects of clozapine*", and that she had not discussed the prescribing of Panadeine Forte for Nicholas with any of the psychiatric medical staff.[54] Nicholas Ang was given two tablets of Panadeine Forte at 09:30 hours. His hand was noted to be hot to touch.

44 Sometime between 08.00 hours and when Nurse Ritchie wrote his file note at 11.15 hours, Nicholas Ang was observed with '*white foam on his face*', which Nurse Ritchie attributed to '? *Hypersalivation*' in Nicholas Ang's progress notes. Nurse Pocklington also described seeing "*dry saliva over the right side of* [Nicholas Ang's] *face*"[55].

45 The notes also record that Nicholas Ang's pillow was found to be wet but not with urine. A friend who helped Nicholas Ang out of his room described seeing him, '*with foam on his face, could have been mucus I'm not sure, but I think some kind of white foamish stuff around his mouth and nose area*'.[56]

46 Nichlolas Ang had also been observed urinating in or near his rubbish bin when he got up that morning. While Nurse Lum observed this to have not happened often, she did

[51] Transcript 27/11/08 page 56 paragraphs 40-45
[52] Clinical Progress Note dated 21/8/05; Nurse Ritchie statement 30/8/05 and Nurse Polkington's statement 5/11/05
[53] Transcript 27/11/08 page 51 paragraph 40
[54] Ibid page 52 paragraphs 5-10
[55] Statement by Nurse Pocklington dated 5 November 2005.
[56] Written account of his observations of Mr Ang on Sunday 21 August 2005, by Mr Phillip Marshall provided to Mr & Mrs Ang, copy given to NSW State Coroner

recall that Nicholas Ang had done this before when he was mentally unwell.[57] It is unknown as to whether he urinated in or around the bin. Nurse John Holmes could not recall Nicholas having done this before.[58] Nurse Holmes had been aware that Nicholas Ang had urinated either in or near the bin in his room '*during the course of August*',[59] but he was not specifically asked if this had been on the morning of Sunday 21 August 2005.[60]

47 Ritchie's contemporaneous notes on 21 August 2005 state that he urinated in the bin. In the circumstances it is difficult to know whether this indicated a rushing to urinate in the bin rather than in the bathroom or simply a desire to do so. Accordingly, it is also unknown as to whether or not this indicated any loss of bladder control.

48 Between 13.30 and 18:00 hours, Nicholas was observed to be, '*Very drowsy he was actually spending a lot of time in his room with his parents..he was quite drowsy. He had been asleep for quite a fair bit of the afternoon. This was quite different to his normal presentation. He seemed quite drowsy and quite sleepy.*[61] *It was unusual that he was drowsy in the daytime.*'[62]

49 During the Inquest, Nurse Lum stated that she understood Nicholas Ang to sleep during the course of the day, '*Very regularly.*'[63] However, in her statement to police dated 11 October 2005, Nurse Lum stated that Nicholas Ang was sleeping, '*Until 7pm ... [which] was unusual for him..*' She also stated that it was '*Unusual for him to sleep for that length of time in the afternoon*',[64] and that, '*he had been in a peaceful sleep.*'[65]

50 In her clinical progress note that she made contemporaneously, she stated that Nicholas Ang, *"was asleep until 7pm"*. According to Nicholas Ang's mother's statement, '*he was sleeping between 13.30 – 18.00 hours – I found my son quite sedated – he was in deep sleep.....*'[66].

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[57] Transcript 25/11/08 page 55 paragraphs 1-15
[58] Transcript 26/11/08 page 51 paragraph 15
[59] Ibid paragraph 10
[60] Ibid
[61] Transcript 24/11/08 page 37 paragraph 38
[62] Ibid page 54 paragraph 41
[63] Transcript 25/11/08 page 45 paragraph 15
[64] Ibid page 47 paragraph 40
[65] Ibid page 52 paragraph 27
[66] Mrs Ang's statement to the Police dated 31 October 2005 – Page 3 – No.10 (b)

51 At about 14.30 hours, Nurse Pocklington and Nurse Jequier treated Nicholas Ang for the burns to his skin. Nurse Pocklington confirmed that she attended Nicholas Ang's dressing[67] *'pierced the blistered with sterile needle, then dressed the wounds with Jelonet gauze and wrapped his hand in a crepe bandage. I elevated his hand on a pillow. Nicholas Ang was asleep while I treated his wounds.'* This accords with Nurse Pocklington's contemporaneous progress notes entry [68].

52 During the time that Nicholas Ang had his dressings done he slept during the entire process. Nurse Jequir thought this took about 15 to 20 minutes, during which time Mr Ang did not stir.[69]

53 Nicholas Ang's mother stated that, '*He was in deep sleep – snoring unusually loudly and breathing heavily – this could be heard from the corridor near the entrance to the nursing station. He did not wake up even when he was checked by the Surgical Registrar, or when his burns/wound was dressed and blisters pricked by two nurses, or even when 4 to 5 other nurses joined the two nurses in his room.*'[70] By her account, Nicholas slept in the afternoon from at least 14.30 to 18:00 hours. Nurse Jequir stated that he did not sleep all of the afternoon.[71]

54 The nursing staff took it to be sleeping rather than being unconscious, although particular enquiries in this regard were not made other than to observe a recollection that, '*He did move a bit at times.*'[72] The nurse had no concerns so she assumed he was asleep rather than unconscious, concluding only now that this must be so. Nurse Jequier stated, '*I'm pretty sure I remember him stirring, because otherwise I would have been a bit concerned that he wasn't stirring.*'[73]

55 According to Nurse Lum, Nicholas Ang's dressings were changed at 17.00 hours and occurred whilst Nicholas Ang was asleep. She stated that, '*He had his arm up on two pillows he was in bed we changed his sheets. We changed the pillowcases. We changed his dressing. He was lying propped up in pillows; he was sleeping. There was crepe bandages, Gelanet and wadding. We just had to check it and redress it and make sure it*

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[67] Statement by Nurse Michelle Louise Pocklington dated 5 November 2005 – Page 2 item 12
[68] Nurse Michelle Pocklington's clinical notes of 21 August 2005 at 1430 hours
[69] Transcript 24/11/08 pages 58 and 59
[70] Mrs Ang's statement to the Police dated 31 October 2005 – Page 3 – Item 10 (b)
[71] Transcript 24/11/08 page 60 paragraph 45
[72] Ibid page 71 paragraph 15

*was clean. You can change a bed without the patient getting out if it .I can't remember accurately, but usually you take the pillows away, sit them up take the dirty sheet down, put a clean sheet at the top, lift them over the rumpled sheet, and pull the dirty sheet out, and put the clean sheet in. You can do that without actually getting a patient out of a bed. I couldn't be sure; I might have done it another way. I cannot remember if I got him up. I wouldn't have woken him up from a sleep to change a bed.'*[74]

56 According to Mrs Ang's statement, the only nurses that dressed her son's burns were Nurse Pocklington and Nurse Jequier[75], and that this occurred at about 14.30 hours. According to Mrs Ang, she, '*was by his bedside whilst he was asleep for most of the time, except i) when the nurses ushered me out of the room when they dressed his burns ii) when I went to speak to the Surgical Registrar and iii) when Dr Maoicchi wanted to speak to me in the family room.*'[76].

57 Nurse Jequier recalls that Nicholas Ang did not snore particularly loudly during the day:[77] Nurse Lum thought that Nicholas Ang was a loud snorer. She stated,' *He was lying on his back, and, of course, you tend to snore a lot more if you lie on your back.'*[78]

58 None of the nursing staff in particular Nurse Jequier, or indeed his parents, noticed any kind of a cough, high temperature, wheeze, flushing or sweating of his skin, expectorating, fast, or any shortness of breath. No pulse is record has having been taken at this time. No one appears to have gained the impression that he was physically unwell apart from the burns that he had sustained to his hands and face.[79]

59 Nurse Lum did not hear that his breathing was laboured in any way and described it as normal.[80]

60 At about 7pm, his parents fed Nicholas. There is no suggestion that he refused his food or that they considered his behaviour at that time to be particularly out of the ordinary.

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[73] Transcript 24/11/08 page 71 paragraph 20
[74] Transcript 25/11/08 pages 51 and 52
[75] Further submission September 2008 to NSW State Coroner by Mr & Mrs Ang - Mrs Ang's statement Page 8 – No.29
[76] Statement by Mrs Ang to the Police dated 31 October 2005 – Page 3, 10 b)
[77] Transcript 24/11/08 page 71 paragraphs 40-50
[78] Transcript 25/11/08 page 45 paragraphs 5-10
[79] Transcript 24/11/08 pages 68 to 70
[80] Transcript 25/11/08 page 64 paragraphs 10-18

61 Nurse Jequier recalls Nicholas making an, '*Odd groaning noise, in the sense that it was not sounds that she had heard him make before.*'[81]Nurse Jequier stated that Nicholas Ang said that his hand did not hurt, but nonetheless it appeared to her that Nicholas was '*Groaning in pain.*'[82]

62 Both Jeff and Lillian Ang recall their son saying that he was not in pain at the time the Panadeine Forte tablets were administered[83]. It is not suggested that Nicholas was a particularly reliable historian and Nurse Jequier appears to have questioned Nicholas Ang further and thought it appropriate to administer 2 tablets of Panadeine Forte in any event. There is no suggestion that in normal circumstances, the providing of the Panadeine Forte, even if a patient is not particularly complaining, is inappropriate if the view is taken after appropriate enquiry that he is probably in pain.

63 Between 19.15 and 19.30 hours, Nicholas Ang was given Panadeine Forte tablets for his burns. Although only one occasion of administration is recorded on his prescription chart,[84] it is likely that sometime in the afternoon or evening Nicholas was given another 2 Panadeine Forte making a total of 4 tablets. This is because both Nurse Jequier and Nurse Lum asked Nicholas Ang if he was in pain on apparently two different occasions and both appear to have given Nicholas Ang 2 Panadeine Forte tablets.[85]

64 As a result of the confusion surrounding the issue of whether Nicholas was given 2 or 4 Panadeine Forte tablets Nurses Lum and Jequier returned in February 2011 to give evidence about their recollections on this issue.

65 Nurse Jequier gave evidence that she was certain that she discussed the matter with Nurse Lum and that they agreed that Nicholas Ang should be given one dose (2 tablets) of Panadeine Forte and that they both went into his room together and administered that dose of Panadeine Forte to Mr Ang together.[86]

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[81] Transcript 24/11/08 page 39 paragraphs 0-20
[82] Ibid page 43 paragraph 40
[83] Further submission September 2008 to the NSW State Coroner by Mr & Mrs Ang – Mr Ang's statement – Page 7 – Nos.28 & 29, Mrs Ang's statement to the Police dated 31 Oct 2009 – page 4 (item c)
[84] Tab 2 Medications Chart Bundle 30-31
[85] Transcript 24/11/08 pages 41 to 43 and 64 paragraph 30; Transcript 25/11/08 pages 49 to 50
[86] Statement Sarah Jequier 4/11/2010

66 Nurse Lum stated with equal certainty that she alone gave Nicholas a dose (2 tablets) of Panadeine Forte and that she did not see Nurse Jequier give him any.[87] Accordingly it appears that 2 doses were given in the afternoon or evening.

67 Further, the nurses' account is consistent with the toxicology data. Professor Olaf Drummer stated, '*I am not able to say whether this dose necessarily reflects the administration of two or four panadeine forte tablets at about 21.00-21.30 on the 21st August, although the toxicology data tends to favour the administration of more than 2 tablets.*'[88]

68 Between 19.15 and 19.30 hours, Nicholas Ang was observed to be, '*..quite awake again.*'[89] Nurse Lum stated that when he awoke, he was, '*Loud and noisy and manic.*'[90]Nurse Lum stated, '*When he woke up at 7.00 [pm], he was so manic and unwell and loud and accelerated.*'[91]Nurse Lum described him as, '*..elevated, loud. He was running around the ward, casting spells, gesturing. He wouldn't sit still.*'[92]

69 This version of events is supported by Nurse Lum's contemporaneous progress notes entry at 19.00 hours on Sunday 21 August 2005.[93]

70 At about 19.30 hours, Nurse Lum took Nicholas's temperature and found it to be, 'normal*..at 37°*'[94] Nurse Lum also stated that, *'his pulse was normal, his breathing was normal.*'[95] She said, '*There was no distress.*'[96] No pulse or respiratory rate is recorded on Nicholas Ang's observation chart or in her progress notes.

71 At 20.05 hours, just as Nicholas Ang's parents were about to leave the hospital, Nurse Jequier[97] approached Nicholas Ang to give him his scheduled medications. These included: sodium valproate 1000mg, clozapine 200mg and clonazepam 2mg.

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[87] Statement Janice Lum dated 4/11/2010
[88] Professor Drummer's report dated 11/12/09
[89] Transcript 24/11/08 page 43 paragraph 25
[90] Transcript 25/11/08 page 49 paragraph 25
[91] Ibid page 52 paragraph 25
[92] Ibid page 56 paragraph 10
[93] Ibid page s 64 and 65 and Clinical notes Tab 34 21/8/05 1900 hours
[94] Ibid pages 48 and 49 and 67 paragraphs 1-5
[95] Ibid page 63 paragraph 15
[96] Ibid page 48 paragraph 40
[97] Mrs Ang's statement to Police dated 31 October 2005 – Page 4 (f), Further submission dated September 2008 to NSW State Coroner by Mr & Mrs Ang – Mrs Ang statement Page 9 – N0.31, Mr Ang statement Page 7 – No 29

72 Sometime after Mr and Mrs Ang's departure, Nicholas Ang was observed to be, '*happy...[and] singing.*'[98]

73 By 21.00 hours, Nurse Jequier and Nurse Lum found Nicholas Ang sleeping in another patient's bed. He was encouraged back to his own room, where he went to sleep.[99] Nicholas Ang was described as being very quiet and compliant, but did not appear to be any more disorientated than normal.[100]

74 Nurse Jequier worked up until 22.00 hours when she went home, '*Popped* [into Nicholas's room] *a couple more times and he was asleep each time.*'[101] Nurse Jequier stated, '*When I went in to observe him, I did actually – I was still very concerned about his hand, so I was actually having a look at the hand, the bandage, you know, whether it was getting any better, whether there was seepage from the bandage.*'[102]

75 Sometime after 21.30 hours, upon commencement of the night shift and after the handover, Nicholas Ang was found to be asleep.[103]

76 According to Nurse John Holmes he had checked Nicholas Ang's hand at 23.00 hours. He took the dressing down, changed the wadding, looked at the fingers and checked for swelling and the circulation in Nicholas Ang's hand. This took some minutes and Nurse Homes expected that it would have been a painful procedure. According to Nurse Holmes, Nicholas Ang remained asleep during this time, although he did stir during the procedure in that he moved his legs.[104]

77 Between 23.00 and 24.00 hours, observation of Nicholas Ang was carried out. This included touching his hand and finding it to be hot. Again Nicholas Ang did not stir.

78 Professor Peter Gianoutsos opines that this high level of sedation after the administration of the Panadeine Forte in the morning and later in the evening ought to have put up a red flag to those in his care and consideration ought to have been given then (if not earlier in

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[98] Transcript 24/11/08 page 16 paragraph 20
[99] Statement Sarah Jequier Tab 19 paragraph 8; Transcript 24/11/08 page 44 paragraph 5
[100] Transcript 24/11/08 page 44 paragraphs 15-25 and page 67 paragraphs 10-15
[101] Statement Nurse Jequeir Tab 19 paragraph 8 and Transcript 24/11/08 page 51 paragraphs 10-15
[102] Transcript 24/11/08 page 52 paragraph 20
[103] Statement of Assistant Nurse Cecilia McIver Tab 18 paragraph 6; Transcript 24/11/08 page 75 paragraphs 15-20
[104] Statement Nurse Holmes Tab 17 paragraph 6; Transcript 26/11/08 page 54 paragraphs 20-45 and page 65 paragraphs 10-35

the day) to whether or not Nicholas Ang was over sedated, resulting perhaps in Nicholas being given paracetamol only.

79 The fact that Nicholas Ang did not react during the procedure of having his burns re bandaged where that was expected to be painful must have suggested to staff an unusually high level of sedation and at the very least, as Professor Gianoutsos said, put up a red flag.

**<u>22 August 2005</u>**

80 Between 21.30 hours on 21 August and 04.15 hours on 22 August 2005, Assistant Nurse Cecilia McIver and Registered Nurses Nichole Cidral, Brook Everingham or John Holmes performed close observations. This was usually carried out in groups of 2, where they split the task and each observed half of the rooms.

81 The observation sometimes consisted of simply pointing a torch into the room, which has a night light on and if breathing evidenced for instance by any snoring, could be heard, they may not enter the room.[105]

82 Between 00.30 and 01.00 hours, Nicholas Ang was heard to be snoring particularly loudly by Assistant Nurse McIver. It was also noticed that he had repositioned himself. Nothing unusual was noted.

83 Nurse Everingham stated in a draft unsigned statement that at about 02.15 hours Nicholas Ang was checked. This was the last time she had sighted him[106]. She said he had been snoring loudly prior to that and that the snoring had quietened down a little bit and that Nicholas 's head was off the pillow, that she checked his airway and found it to be good.[107]

84 In her evidence Nurse Everingham stated that she had not actually checked his airway but that she had heard him snoring loudly from the nurses station.[108] As for the 15

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[105] Transcript 24/11/08 pages 78 and 83
[106] Statement Nurse Everingham Tab 21 paragraph 6
[107] Ibid paragraph 10
[108] Transcript 15/2/11 page 20 paragraphs 45-50

minutely close observations she stated that this did not occur every 15 minutes, as it was simply not possible to complete the rounds in that time.[109]

85 The form used, which was to be signed in 15 minute blocks, does no more than acknowledge that a particular time has passed whilst that nurse has been doing his or her observation rounds.

86 Nurse Everingham stated that it is usually not possible to see a patient 15 minutely, as depending what is occurring, it takes longer than this to perform the rounds. According to her close observations are no more than ensuring that the patient has been sighted and in the case of Nicholas Ang on this occasion, apparently asleep.[110]

87 At about 03.00 hours, Nicholas Ang was observed to have changed position and it was said that the nurses would have heard him breathing.[111]

88 Assistant Nurse McIver recalls that twice during the shift Nurse Cidral actually went into the room but she did not know how long Nurse Cidral stayed or what she did as she was checking other rooms.[112]

89 Assistant Nurse McIver describes Nicholas Ang as a loud snorer and initially stated that this is always the case and that it could be heard from the nurses' station, located nearby.[113] Later she was asked if Nicholas always snored loudly she replied, 'No. Sometimes.'[114]

90 Nurse Cidral recalls Nicholas Ang's breathing or snoring on the night as *'It was a loud snore.'*[115] However, she wasn't able to say whether or not this was normal for Nicholas.[116]

91 Nurse Holmes described Nicholas Ang's snoring as, '*It was probably usual, maybe a little heavier than usual.*'[117]At the time, Nurses Holmes and Everingham thought this

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[109] Transcript 15/2/11 page 18 paragraphs 5-45
[110] Ibid page 23
[111] Statement Nurse Cidral Tab 24 paragraph 7
[112] Transcript 24/11/08 page 86 paragraphs 25-45
[113] Statement Assistant Nurse McIver Tab 18 paragraph 8; Transcript 24/11/08 page 85 paragraph 25
[114] Transcript 25/11/08 page 1 paragraph 30
[115] Transcript 26/11/08 page 30 paragraph 5
[116] Ibid paragraph 15
[117] Ibid page 57 paragraph 20

was good because previously Nicholas did not sleep well at night and because he was suffering from the burns. Nurse Holmes stated that Nicholas Ang often slept only for short periods and was quite distressed at times during the night.[118] .

92 Assistant Nurse McIver initially could not recall on the evening of 21 August whether Nicholas was snoring or not.[119] Later she recalled he was[120] and her more contemporaneous statement records that Nicholas Ang was '*asleep and snoring loudly.*''[121]

93 Although Assistant Nurse McIver stated that Nurse Cidral had checked Nicholas Ang at the commencement of the round and found him to be all right[122], that statement is inconsistent with Nurse Cidral's evidence, but given Nicholas Ang's condition at the end of the round and Assistant Nurse McIver's concessions that this could have been on a different night to the night that Nicholas Ang died, this is unlikely to be accurate. [123]

94 In her statement made one day after the event[124], Nurse Cidral stated that she recalled walking past Nicholas Ang's room at 03.00 hours or shortly after and checking on him., '*I remember walking past Nicholas's room checking on him. I continued to walk past, so for me to have done that I would have noticed that he had changed sides in his sleep or I could hear him breathing*'[125] but she could not be sure which.[126]

95 Just after 04.00 hours, although possibly as late as 04.25 hours, the usual close observation rounds were done. Nurse Cidral noted Nicholas Ang was '*..way to quiet,*' '*...his face was a weird colour. It was not a normal colour*' and '*..he didn't respond.*'[127]

96 Nurse Cidral said that she called Assistant Nurse McIver to call 777, the emergency Hospital number, while she went back to the nurses' station to retrieve a pocket mask. Nurse Cidral then described how Nurse Holmes entered the room, and on ripping open

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118 Transcript 26/11/08 page 57 paragraphs 25-40
119 Transcript 24/11/08 page 85 paragraph 45
120 Transcript 25/11/08 page 1 paragraphs 40-45
121 McIver statement dated 26 August 2005 [8] and [9].
122 McIver at TT15-16, 27-32
123 Transcript 25/11/08 page 32 paragraph 15
124 Cidral Statement dated 23 August 2005 at[7]
125 Cidral statement Tab 24 paragraph 7
126 Transcript 26/11/08 pages 10 and 11
127 Cidral statement Tab 24 paragraph 8

Nicholas's shirt, he commenced the first cardiac compressions while she breathed into Nicholas Ang via the pocket mask.[128]

97 Assistant Nurse McIver describes going to retrieve the resuscitation trolley while two nurses were left administering CPR to Nicholas Ang[129]. Nurse Everingham described in her statement assisting Assistant Nurse McIver to get, *'the resuscitation trolley to the bed,'*[130] while Nurse Holmes and Nurse Cidral performed CPR on Nicholas Ang.[131]

98 In their statements, Nurse Holmes, Nurse Everingham and Nurse Cidral claimed that they continued administering CPR until the Medical Emergency Team (MET) arrived and took over. In addition, Nurse Holmes states that he was approached by Nurse Cidral regarding Nicholas Ang's, *'lack of vital signs'* between 04.00 and 04.20 hours.[132]

99 Dr Athula Karunanyaka, who arrived as part of the Medical Emergency Team said;

> *I asked at the time, when was the last time anyone has seen this patient? What happened to him? And they said that possible there was some contact with him, or some sort of observation of him making a noise about, probably, quarter past 4 or some – they couldn't verify the time, but they said that they thought that they felt that he was still breathing or snoring at roughly about 4.15 or 4."*[133]

100 Accordingly, the last known time that Nicholas Ang was seen asleep and apparently breathing was as early as 03.00 and as late as just before 04.15 hours. This fact alone makes it clear that the close observations form is inadequate.

101 It is not possible to know when Nicholas Ang stopped breathing from the presence or absence of audible snoring. Although the nursing staff were often outside the soundproof nurses station[134] there is no evidence as to when anyone noticed that Nicholas Ang had stopped snoring, if indeed he had been.

102 As soon as he was found, Assistant Nurse McIver stated that she rang the internal emergency number. This was at 4.25am according to the call log MFI#C and Dr

[128] Cidral Statement dated 23 August 2005 at
[129] McIver statement dated 26 August 2005
[130] Everingham Sstatement Tab 21 paragraph 11
[131] Everingham statement dated 26 August 2005.
[132] Transcript 26/11/08 page 55 paragraphs 15-40
[133] Transcript 25/11/08 page 72 paragraphs 25-30
[134] Transcript 26/11/08 page 46 paragraphs 30-45

Karunankaya notes recorded him being paged at about 4.31am.[135] She stated that Nurses Cidral and Holmes performed CPR for 5-10 minutes until the resuscitation staff arrived.[136]Nurse Cidral stated that Nicholas Ang felt warm through his flannelette shirt at this time.[137]

103 According to his testimony to the inquest, Dr Karunanyaka arrived within about 1 minute of being paged.[138]When he arrived he was told by a nurse, '*that he patient is blue; he doesn't have a pulse*'[139]and observed that no one was using oxygen[140]or performing CPR when he entered Nicholas Ang's room.[141]

104 Dr Karunanyaka described how he unlocked the wheels of Nicholas Ang's bed and pulled it out from against the wall so he could get behind and commence ventilating him with an, '*ambulatory respiratory bag within about 10 seconds or so.*'[142]

105 This evidence contradicts Nurse Holmes' account of events. Nurse Holmes stated that he was the one who had pulled the head of Nicholas Ang's bed away from the wall and that he continued to perform cardiac compressions on Nicholas until the MET arrived.[143]

106 By the time that Dr Karunanyaka arrived, Nicholas Ang had no pulse, had no blood pressure and intubation was required. Dr Karunanyaka variously described Nicholas Ang's condition as;

> "*He was still blue from head to toe, with no cardiac output; no feelable pulse, and particularly he didn't have heart rate on the monitor when I arrived there it looked like he was either deceased or imminently dead, and there was no pulse that I could feel, which confirmed that he did not have a heart rate. On arrival Mr Ang had no pulse and was blue and cold both peripherally and centrally. He was 'medically acrocyanotic' centrally as well as peripherally. He didn't have a heart rate. He heart was not pumping and there was not pulse peripherally. His fingers were cold and blue peripherally.*"[144]

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[135] Transcript 25/11/08 pages 68 and 69
[136] Transcript 26/11/08 page 15 paragraphs 1-5, page 49 paragraphs 15-20 and page 57 paragraphs 1-11
[137] Ibid page 19 paragraph 40 and page 38 paragraphs 0-5
[138] Transcript 25/11/08 page 69 paragraphs 25-30 and page 70 paragraphs 5-10
[139] Ibid page 70 paragraph 30
[140] Ibid page 71 paragraph 5
[141] Ibid page 70 paragraph 40
[142] Ibid page 70 paragraphs 45-50 and page 71 paragraphs 0-5
[143] Transcript 26/11/08 page 56 paragraphs 5-15
[144] Transcript 25/11/08 page 73 paragraphs 15-45

107 Dr Karunanyaka and his team also performed chest compressions[145]from 4.33am.

108 The resuscitation procedures were maintained for about 30mins. However, by this time Nicholas already had circulatory collapse and did not have any artery or supply or blood supply to his body. They were unable to successfully give intravenous cannular medicine, as they were unable to get into any artery or vein due to complete lack of blood pressure at this time.[146]

109 Nicholas Ang was declared dead at 5.02am.

110 Staff appeared to have acted with due speed and consideration in the performance of the resuscitation process in what must have been a very difficult situation.

**Expert Findings**

111 Dr Lillian Schwartz prepared forensic pathology reports dated 19 December 2005 and 19 November 2008 respectively. In the first report on page 4 under the list of drugs found, nodasipine ought read no-diazepam. In the second report, the first paragraph mononuclear ought read normal cellular.[147]

112 Dr Schwartz originally took four heart section slides, corresponding to the anterior wall, posterior wall, and lateral wall and septal of the left ventricle. She later took further sections from the same areas and also the conduction system.[148] Dr. Schwartz found no evidence of cardiomyopathy or myocarditis.[149]

113 Dr Schwartz found the direct cause of death to be acute bronchopneumonia and the antecedent cause to be multi-drug toxicity.[150] Although not a pharmacologist, when asked what she meant by multi-drug toxicity, Dr Schwartz stated;

> *"There were many drugs. You have Clonazepam, you have clozapine, you have codeine, you have morphine, you have Nordiazepam, you have paracetamol, and you have valproic acid. All of these drugs will cause a depression of the*

[145] Transcript 25/11/08 page 71 paragraph 45
[146] Ibid page 72 paragraphs 30-45
[147] Transcript 26/11/08 page 73 paragraphs 35-40
[148] Ibid page 73 paragraphs 10-20
[149] Ibid paragraph 5
[150] Transcript 26/11/08 page 72 paragraphs 15-20

*respiratory centre. They will interact, and that will – that may cause - then they start the chain of events that lead to the acute bronchopneumonia."*[151]

114 When later questioned about her use of the word 'may', Dr Schwartz corrected this understanding she said;

> "I don't know why I used the word "may". All these drugs will cause depression of the respiratory centre. That means that a patient will not be able to breath well, will develop very quickly –pulmonary oedema, and when there is fluid in the lungs there is a good setting for development of acute bronchopneumonia. Bacteria will use that as a catchment area and then will grow very quickly and there will be an inflammatory response, which in this case were the neutrophils and then they will have the acute bronchopneumonia."[152]

115 Dr Schwartz found that the sequence of events was such that Nicholas Ang had a certain level of medication in his system and then he developed acute bronchopneumonia, which was the last cause of death.[153] Dr. Schwartz was unable to say from her observations when he developed the acute bronchopneumonia.[154] Her findings are broadly in line with the findings of other expert witnesses.

116 According to Dr Schwartz, one of Nicholas Ang's lungs was found to be, *'quite heavy and both lungs were congested and histologicallly there was evidence of neutrophils in the alveoli and in some of the bronchi. Ane also the tissue was quite rich in fluid.'*[155]

117 While Dr. Schwartz had not performed the stains for bacteria,[156] she did not believe the acute bronchopneumonia to be viral as she saw no features of surplus oedema fluid or mononuclear cells in reaction.[157]

118 Dr. Schwartz stated;

> "If was viral, the inflammatory process would be totally different. There would be pulmonary oedema again. Some of the viruses will cause inclusion to be present in some of the cells. There could be fibrin deposits as well in the alveoli. All those things I didn't see. What I saw is neutrophils in the oedema. I saw

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[151] Transcript 26/11/08 page 76 paragraphs 25-35
[152] Ibid page 78 paragraphs 45-50 and page 79 paragraphs 0-5
[153] Ibid page 72 paragraphs 15-25
[154] Ibid paragraph 25
[155] Ibid page 75 paragraphs 30-35
[156] Ibid page 76 paragraphs 0-5
[157] Ibid paragraphs 20-25

neutrophils in some areas. I saw neutrophils in the capillaries as well. I didn't see any feature that suggests a virus."[158]

119 Dr Schwartz observed that often bacteria appear after death and not necessarily causing of the bronchopneumonia.[159]

120 Dr Michael Dally provided a report dated 10 December 2009. He was not provided with the set of assumptions, which had been prepared following the evidence given in November 2008 and was provided by the Crown Solicitor to the other expert witnesses.

121 Dr Dally stated in his report that, in his opinion, the pneumonia, (or a viral pre-cursor) commenced unrelated to hospitalization or medication and quite possibly from living rough in cold weather prior to 12 August, however his evidence as to the timing of the commencement of the pneumonia was more consistent with Nicholas Ang having contracted pneumonia, whether viral or bacterial, during the course of his stay in hospital.

122 Dr. Peter Gianoutsos, Clinical Associate Professor of Medicine at the University of Sydney, who provided a report dated 17 November 2009, was of the view that the signs of saliva and frothy material noted prior to Nicholas Ang's death was more indicative of aspiration of acid gastric contents, from the stomach, into his lungs which was acting as an acid irritant to cause the bronchitis which in turn would predispose to bacterial [pneumonia] invasion.[160]

123 Dr Dally did not agree and was of the view that the pneumonia was more likely to be viral. This opinion is inconsistent with the autopsy findings. Accordingly, it is more likely that the pneumonia was bacterial, and occurred very shortly before his death, whilst he was in hospital.

124 However, during his admission Nicholas did not exhibit any signs or symptoms that he had contracted pneumonia so there was no reason for any of the hospital staff to have been alerted to that fact.

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[158] Transcript 26/11/08 page 79 paragraphs 20-25
[159] Ibid page 76 paragraphs 5-10
[160] Supplementary Volume Tab 6 page 5 of report of Gianoutsos

125 At post-mortem, blood was taken from the femoral vessels and toxicology screens performed. The femoral vessels were chosen to limit the post-mortem redistribution effect for the drugs.[161]

126 Urine and stomach contents were also taken.[162] Codeine, morphine[163], clozapine[164] and clonazepam[165] were found at toxic levels in the blood. For Dr Winston Liauw, the reported level of codeine appeared '*to be exceptionally high given a total ingestion of 120mg (4 x 30mg) over a 10 hour period*' (Liauw 2006[166]).

127 According to Dr Liauw, '*above the upper limit of the therapeutic range the probability of toxicity rise steeply*'[167] and that '*in the context of polypharmacy the possibility of pharmacodynamic drug interactions resulting in CNS depression is high.*'[168] At 51mg/L, Nicholas Ang's post-mortem level of valproic acid[169] was considered to be in both in the therapeutic and toxic ranges. Dr Schwartz also found paracetamol levels at 27mg per litre were at a high level, the toxic range commencing at 30mg.

128 Professor Gianoutsos found that the level of sedation sustained by Nicholas Ang as a result of his usual medication, Clozapine, Epilim and Clonazepam, and then the superimposition of Panadeine Forte, resulted in respiratory centre depression, due principally to the high levels of codeine and morphine in the blood.

129 He found Nicholas Ang died as a result of;

a. the combination of those drugs, primarily due to the toxic levels of codeine and morphine, causing severe respiratory centre depression, hypoxia then death;

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[161] Transcript 26/11/80 page 80 paragraphs 25-30

[162] Ibid page 75 paragraph 10

[163] According to Dr Schwartz's forensic report dated 19 December 2005, Mr Ang's post-mortem levels of codeine and morphine were found to be 1.6mg/L and 0.62mg/L respectively. According to the literature attached to her forensic report, the therapeutic range for codeine is [0.025-0.05mg/L], while the therapeutic range for Morphine is < 0.08ml/L. Correspondingly, the toxic range for codeine is reported to be [1.3-5mg/L] while the toxic range for morphine is reported to be [0.08-1.6mg/L].

[164] Clozaphine levels were 1.3 mg per litre. Dr Schwartz opined that the texts proscribe the therapeutic range as 0.23-0.65mg per litre: T(3)79:45-50, T(3)80.

[165] The therapeutic range of clonazepam is reported to be (0.015-0.06)

[166] (Liauw (2006) '*Re: Review of the Case of the deceased NA (DOB 7 Aug 1976 MRN 0438222) Request dated 31 January 2006. Documents provided include cover-letter, summary of medication chart, Autopsy Report for The Coroner dated 19 December 2005, and the Sutherland Hospital Medical Record of the deceased.*

[167] Liauw (2006:5)

[168] Liauw (2006:7).

[169] The therapeutic range of valporic acid is [40-100mg/L], while the toxic range of this drug is reported to be [45-135mg/L].

b. acute bronchopneumonia and acute bronchitis, likely to be bacterial and possibly the aftermath of aspiration; and

c. the influence of diminished activity of cytochrome P450 enzyme which resulted in raised toxic levels of codeine and morphine in the blood. Due, in layman's terms, to Mr Ang's poor inability to process the Panadeine Forte.[170]

130 Professor Gianoutsos found that the sedative effects of his regular medication had been accentuated considerably by the administration of the Panadeine Forte tablets and that if the four, rather than two Panadeine Forte tablets were administered between 1900 and 1930 hours, and given the evidence of Nurses Lum and Jequier that seems likely, then this would have had a more significant and material impact on his level of deep sleep and drowsiness.[171]

131 The effect on the blood levels, after four rather than two Panadeine Forte tablets of codeine and morphine found at autopsy would have been significantly higher. Codeine is metabolised in the body to morphine and the level of codeine found in the body at autopsy was 1.6mg/l with a reported fatal does being in excess of 1mg/l. The morphine level was found to be 0.62 mg/l and the reported fatal dose is greater than 0.08mg/l which means the morphine value was twice that deemed to be in the potentially fatal range."

132 Professor Gianoutsos found that the levels of codeine and morphine would have had a materially significant effect on the respiratory centre in his brain, slowing both his rate and depth of breathing and suppressing its normal response to a drop in oxygen or a rise in carbon dioxide in his blood. In normal situations, where there is no drug induced suppression of the respiratory centre, a drop in oxygen or rise in carbon dioxide will stimulate the respiratory centre to INCREASE both the RATE and DEPTH of respiration.

133 Professor Olaf Drummer, the Head of the Department of Forensic Medicine at Monash University, found that the toxicology results tend to support the view that on the evening

[170] Exhibit 11 Supplementary Volume Tab 6 pages 6 and 7 of report Gianoutsos
[171] Transcript 14/02/11 page 5 paragraphs 30-40

of 21 August, more than 2 tablets of Panadeine Forte were administered to Nicholas Ang. [172]

134 This is consistent with the evidence given by nurses Jequier and Lum set out earlier. Professor Drummer found that so far as the drugs contributed to Nicholas's death, *'the drugs most likely to have contributed to his death were clozapine and codeine through its metabolite morphine. The codeine concentration is much higher than expected based on the prescribed doses and would be expected to contribute to the death of Nicholas Ang.'*[173]

135 Professor Gianoutsos also commented on the absence of symptoms of pneumonia. He stated that the absence of a cough, fever and breathlessness ordinarily would have been unusual for a 29 year old. However he opined that, '"*any cough or breathlessness due to an underlying pneumonia, would have been suppressed by the high levels of codeine and morphine in his blood.*"[174]

136 Finally, Professor Gianoutsos commented on the ability of Nicholas Ang to metabolise the drugs administered, and in particular the role of the class of enzymes Cytochrome P450. He stated that the post-mortem blood showed that CYP2D65 polymorphism was present. This is associated with poor Cytochrome P450 enzyme activity. Accordingly, he opined that the potential inability of Mr Ang to metabolise Clozapine, Epilim and Codeine would have made the blood levels of codeine and its metabolite morphine higher than would ordinarily be the case.

**Finding**

137 I am satisfied that Nicholas Ang died between about 2am and 5.02am on Monday 22 August 2005 at the Sutherland Hospital Psychiatric Unit, following an admission to that unit on 12 August 2005. That Nicholas Ang died from acute bronchopneumonia and acute bronchitis, likely to be bacterial and possibly the aftermath of aspiration, complicated by multi-drug toxicity as a result of the administration of his regular anti-psychotic medication together with Panadeine Forte, given for the treatment of pain caused by burns, which caused severe respiratory centre depression, hypoxia then death..

[172] Transcript 14/2/11 page 26 paragraphs 0-10
[173] Exhibit 11 Supplementary Volume Tab 7 report Professor Drummer paragraph 89
[174] Ibid Tab 6 page 5 report of Gianoutsos

138 A possible contributing factor was the influence of diminished activity of the cytochrome P450 enzyme that possibly resulted in raised toxic levels of codeine and morphine in the blood.

**Formal Finding**

**I FIND THAT NICHOLAS CHOON CHOON ANG DIED ON THE 22 AUGUST 2005 AT SUTHERLAND HOSPITAL PSYCHIATRIC UNIT FROM ACUTE BRONCHOPNEUMONIA COMPLICATED BY MULTIDRUG TOXICITY.**

**Recommendations**

**Recommendations Regarding the collecting of blood**

139 Counsel assisting supported the call by counsel for the family Phillip Boulten SC that consideration be given by the NSW State Coroner in the appropriate cases, such as those where drug toxicity is an issue, to arrange for the forensic pathologist to collect sufficient blood for toxicology and any possible genetic testing and to retain sufficient additional blood samples for any further testing in the future.

140 I have spoken to the State Coroner who points out that it would be a Health NSW issue not a matter for the Coroners Office; however, I will raise the problem that arose in this Inquest with the Chief Pathologist, Associate Professor Dufou with a view to overcoming the problem in the future.

**The "Close Observation" Form**

1. Consideration be given by Health NSW to requiring the completion of a "close observations" form by the relevant nursing staff which has the following features:

   a. *That it takes into account that observations are more likely to be conducted less regularly than every 10 or 15 minutes. It is recommended that the nurse write in the actual time that the observation was carried out; and*

*b. That the nurse performing the close observation is required to write at least a summary comment of observations made on each occasion and the purpose for which that observation is made.*

**A form similar to that set out below is suggested:**

**Patient Name:**
**Date:**
**Desired Interval between Observation to be carried out: not more than (minutes):**

| Time | Nurse's Name | Signature | Purpose | Observation |
|---|---|---|---|---|
| | | | | |

**The Administration of Drugs**

2. Whenever material changes are made to a patients drug regime, consideration is given by NSW Health to requiring a suitably experienced and qualified medical practitioner be engaged to advise as to the effect of the change in drug regime and to give consideration as to what special considerations are required, including the need to change the nature and/or frequency of any observations.

**The Treatment of Mental Health Patients for Non Mental Health Illness and Injury**

3. Consideration be given by NSW Health to the most appropriate way to treat mental health patients ordinarily kept within the mental health unit, for non mental health illness or injury, whether it be by regular visits from a relevant consulting medical practitioner, treatment in a non mental health ward or otherwise.

**The training and education of Mental Health Staff**

4. Consideration be given by NSW Health as to the knowledge of pharmacognerics/pharmakinerics and the interactive, including any toxic effects, of medications given to mental health patients by all medical officers, nursing staff and pharmacists employed in NSW Health mental health wards and, where necessary, that any further training and/or education be provided.

**Appropriate training of staff**

5. Consideration be given by NSW Health as to the best way in which mental health nursing staff can update their general nursing skills and knowledge base, including

where possible and appropriate, the rotation of mental health nursing staff onto general medical and surgical wards.

141 I thank my counsel assisting and instructing solicitor for their assistance.

142 Finally I extend my sincere sympathies to Nicholas's family for their sad loss.

M.MacPherson

Deputy State Coroner

2 September 2011