CORONERS COURT
OF NEW SOUTH WALES

Inquest:	Inquest into the death of Alex Braes
Hearing dates:	19-22 April 2021; 14-16 December 2021.
Date of findings:	30 May 2022
Place of findings:	Coroners Court sitting at Broken Hill
Findings of:	Magistrate Elizabeth Ryan, Deputy State Coroner
Catchwords:	CORONIAL LAW – death of a young man – cause of death sepsis – was clinical care at Broken Hill Base Hospital adequate – were arrangements or airlift to a tertiary hospital appropriate – recommendations.
File number:	2017/287908

Representation:	Counsel Assisting the Coroner: K Edwards and E Sullivan of Counsel i/b NSW Department of Communities and Justice Legal. Far West Local Health District, Ambulance NSW and Ministry of Health (‘the Health Parties’): R Cheney SC i/b NSW Crown Solicitor. Royal Flying Doctors Service: R Sergi of Counsel i/b Mills Oakley. RN M Murphy and RN E Keft: N Dawson of Counsel i/b NSW Midwives and Nurses Association Dr R Greenberg, Dr P Braslins and Dr A Baalbaki: M Lynch of Counsel i/b Avant Mutual. Dr R Fischer: K Burke of Counsel i/b HWL Ebsworth Lawyers. Dr D Arangala: P Dwyer of Counsel i/b Unsworths Legal. Medibank Health Solutions: M Walsh SC i/b Norton Rose Fulbright. Dr D Hooper: L McFee of Counsel i/b MDA National Insurance PL. Dr M Golding: J Harris of Counsel i/b Meridian Lawyers.
Findings:	**Identity** The person who died is Alex Braes. **Date of death** Alex Braes died on 22 September 2017. **Place of death** Alex Braes died at Royal Prince Alfred Hospital, Camperdown NSW. **Cause of death** The cause of Alex Braes’ death was multi organ failure due to sepsis from a Group A streptococcus infection. **Manner of death** Alex Braes died as a result of natural causes.

Recommendation 1

That as a matter of urgency, the NSW Ministry of Health and the Department of Health and Wellbeing (SA) continue communication to agree and formalise cross-border arrangements for the transfer of critical care patients from Broken Hill to Adelaide tertiary care facilities, whether in the form of a 'default mechanism' or other formal agreement.

Recommendation 2

That the matter be escalated to the Secretary, NSW Health, if the discussions referred to in Recommendation 1 do not lead to the establishment of formalised arrangements, as envisaged in Recommendation 1, within 12 months from the date of these findings.

The role of the Coroner

1. Pursuant to section 81 of the *Coroners Act 2009 (NSW)* [the Act], the Coroner must make findings as to the date and place of a person's death, and the cause and manner of death.
2. Section 81(1) of the Act requires that when an inquest is held, the Coroner must record in writing his or her findings as to various aspects of the death.
3. These are the findings of an inquest into the death of Alex John Braes.

Introduction

4. Alex Braes was only 18 years old when he died in the early hours of 22 September 2017.
5. Critically ill and in septic shock, Alex had been airlifted from Broken Hill Base Hospital to the Royal Prince Alfred Hospital in Sydney. Within minutes of his arrival he suffered a cardiac arrest. Tragically he could not be resuscitated, and he was pronounced deceased soon afterwards.
6. Alex's family has been devastated by his sudden death. They love him dearly and they grieve for him. They need to know how their 18 year old son could have died with such tragic suddenness while he was in hospital care. Above all, they need to know if anything could have been done to save him.
7. The inquest examined the following issues:

- what was the medical cause of Alex's death?
- was the clinical care he received at Broken Hill Base Hospital adequate?
- were the arrangements made for Alex's airlift to a higher care hospital appropriate?
- why did it take so long for the Far West Local Health District to direct a Root Cause Analysis of the circumstances of his death?

8. These findings into the circumstances of Alex's death are in two parts. The first part concerns the medical cause of Alex's death, and examines whether the care he received at Broken Hill Base Hospital [BHBH] was adequate. The second part examines the arrangements that were made for Alex's retrieval and transfer to a hospital with a higher level of care than BHBH.

9. As will be seen, the evidence at the inquest established that there were shortcomings in the care that was provided to Alex at BHBH. A significant one was the failure on 20 September 2017 to perform vital signs observations. This was a serious and unacceptable deficiency in care, and a missed opportunity to identify Alex's underlying evolving illness.

10. Two important points need to be made about this. First, the failure to take vital signs observations on 20 September 2017 was the consequence of a Business Rule then in operation in the Emergency Department of BHBH. I have accepted expert evidence that the Business Rule was a potentially dangerous clinical practice and ought not to have been introduced.

11. Since this deficiency in care was a systemic one, it would not be appropriate to criticise the individual doctors and nurses who treated Alex.

12. Secondly, since Alex's vital signs observations were not taken, it remains unknown whether the results might have prompted further medical investigations for the presence of infection.

13. However this deficiency in care did not cause or contribute to Alex's death. Whether or not infection might have been suspected by the evening of 20 September, the expert evidence was clear: there was no realistic possibility that Alex's life could have been saved by that time. The heartbreaking consensus was that there was simply not enough time for antibiotic treatment to overcome the infection's aggressive spread.

14. As regards the second issue, Alex's retrieval and transfer was beset by numerous delays. Furthermore, Alex was not transferred to the closest hospital suitable for his care, which was South Australia's Royal Adelaide Hospital.

15. This was a perverse outcome which demanded examination at the inquest.

16. The evidence established that Alex was effectively refused admission at a South Australian tertiary hospital. There was no system whereby a NSW clinician could insist that a critically ill Broken Hill patient be accepted for treatment in South Australia.

17. Almost five years after Alex died, this remains the case. Despite calls by senior clinicians with substantial experience in emergency care, the NSW Ministry of Health and its South Australian counterpart have yet to develop a formal agreement for the transfer of critically ill Broken Hill patients to an Adelaide hospital.

18. Residents of Broken Hill rightly expect that they will have the earliest possible access to critical care, and that there will be full cooperation between NSW and South Australia to ensure this happens. The lack of progress on this issue justifies the two recommendations for urgent action which I make.

19. This inquest has taken place against the background of a broader examination of healthcare within rural, regional and remote communities. Earlier this month a Committee of the NSW Legislative Council tabled its report '*Health outcomes and access to health and hospital services in rural, regional and remote NSW'.*

20. In his foreword the Committee's Chair stated that residents of rural, regional and remote NSW have '*significantly poorer health outcomes and inferior access to health and hospital services'* than do their metropolitan counterparts. This was *'a situation that can and should not be seen as acceptable'*.

21. The Inquiry also found that although health professionals in rural and remote areas were strongly committed to providing good service to their patients, they were hampered by a critical lack of staff and resources.

22. Witnesses at the inquest, including Alex's father John, voiced some of these sentiments. I hope that the recommendations made by the Committee are taken to heart, and that the health needs of Broken Hill patients will be better met in the future.

23. There could be no part of this inquest that was not heartbreaking for Alex's parents, John and Narelle. They attended every day of the inquest, and relived each one of their son's last hours. It was a deeply painful experience for them.

24. I thank John and Narelle for their goodness and their courage in participating in this inquest, in the hope that it may help prevent other families from suffering such a tragedy.

Alex's life

25. Alex was the first of two sons born to John Braes and Narelle Harvey. He lived at home with his parents and his younger brother Ryan. When Alex left

school he commenced an apprenticeship as a fitter and turner, a job which he loved.

26. At the inquest Alex's father John spoke lovingly of him as a healthy, happy young man who loved his job and was very good at it. He was their 'ray of sunshine', and the first grandchild born within their extended family.

27. John Braes told the court that their family was 'extremely proud' of Alex's intelligence, kindness, and humour. They had loved his infectious laugh and his willingness to give everything a go. There were so many things that he wanted to do in his life but as John said, these were all memories now.

28. Alex's parents know that this inquest will not bring their son back. They wanted the inquest to examine Alex's care, in the hope that other families would not have to endure the sorrow of losing a child.

Alex's care and treatment: earlier events

29. In mid August 2017 Alex had been treated at the Broken Hill Medical Practice for an infected ingrown toenail on his left foot. He was prescribed antibiotics, and the condition appeared to resolve.

30. On 18 September 2017 Alex began to experience pain in his left knee. He could not account for it by any injury or accident, and there was no visible skin injury. He went to work that day and the following day.

31. In the early hours of Wednesday 20 September 2017 Alex woke his father to tell him that the pain in his knee was 'really bad'. John drove him to the Emergency Department at BHBH. This was about a fifteen minute drive from their home.

32. Alex and his father arrived at the Emergency Department [the ED] at about 3.00am, and were attended by Registered Nurse Caroline Clemens soon afterwards. She documented that Alex had worsening knee pain, but that he had a regular pulse and appeared alert and not unwell. She assigned him a 'Triage Category 4'. This meant that he was to be reviewed by a doctor within an hour.

Dr Arangala's review: the morning of 20 September

33. At around 3.30am Alex was reviewed by Dr Devinda Arangala, a Career Medical Officer at BHBH. At that time Dr Arangala was at the level of a Senior Registrar. As was customary for the night shift at BHBH, he was the only doctor on site for the hospital's 80 beds, including its ED and Intensive Care Unit.

34. Dr Arangala thought Alex looked physically uncomfortable – he was limping and it was clearly painful for him to walk - but he seemed otherwise well. Alex told Dr Arangala that he had not suffered any injuries or accidents, but that he

had heard a '*pop'* sound when he got out of bed. This can indicate a musculoskeletal injury.

35. Dr Arangala observed Alex's left knee to be swollen but not red. In his notes he recorded that Alex said his knee' *felt hot'*, but Dr Arangala told the court at the inquest that the knee had not felt hot to touch. He had not recorded this detail, but said that he recalled it.

36. When Dr Arangala felt Alex's knee he found a good pulse, indicating good blood flow. Alex did not show signs of '*exquisite tenderness'* at the knee site, an extreme response that can indicate infection or fracture. The range of motion for Alex's leg was generally good, and there were no cuts or abrasions.

37. Dr Arangala's notes also recorded that Alex was '*afebrile'.* There was no record that he or any other staff member had taken Alex's temperature, but Dr Arangala said the *'afebrile'* notation indicated that someone must have done so. This would have made sense, he said, as this was the most obvious vital sign to measure if there was a possibility of infection.

38. Overall, Dr Arangala's impression was that Alex had a ligamentous injury which had led to swelling in the knee area. In his statement he wrote that he had seen *'no clinical evidence of septic arthritis … as the knee was nor red or hot to touch…'.* For this reason, the possibility of infection was well down on his list of differential diagnoses.

39. Dr Arangala did however see the need to exclude the possibility of a fracture, deep vein thrombosis or a cyst. He documented a treatment plan for Alex to use pain relief and to rest, use ice, compress and elevate the leg. Alex was also to have a left leg x-ray to exclude fractures, and an ultrasound to investigate for cysts or ligament/tendon injuries.

40. Dr Arangala further instructed that '*if imaging shows no cause of pain [Alex] may need bloods for inflammatory markers'.* This was to investigate for the possibility of septic arthritis or gout, if the imaging did not show a clear cause for Alex's pain.

41. Alex and his father left the hospital, returning at about 8.00am for Alex to undertake his x-ray and ultrasound. At that time the hospital was very busy. On advice they decided to return in the evening to receive the results.

Dr Hooper's review: the evening of 20 September

42. Alex and his father arrived at the ED just after 6.00pm that evening. In the ED area the only doctor on duty between 6pm and 8pm was Dr David Hooper. At that time he was a Visiting Medical Officer at BHBH. He reviewed Alex at around 7.11pm.

43. Dr Hooper had received Alex's imaging results, and he discussed these with Alex and his father. The x-ray of Alex's left leg did not show any abnormalities

or fractures, and the ultrasound found no signs of deep vein thrombosis. In his report the radiologist Dr Amalan Mahalingam had concluded that it was *'likely'* Alex had a plantaris tendon rupture. This tendon is located in the lower back part of the leg.

44. It does not appear that Dr Hooper asked Alex if the pain in his knee had worsened since the morning's consultation with Dr Arangala. At the inquest he said that he had certainly looked at Alex's knee and palpated it, as this was his usual practice. He recalled that he had observed the knee to have '*modest swelling'*, but none of the redness or hotness which might indicate infection.

45. Overall, Dr Hooper considered that a ruptured plantaris tendon would adequately account for Alex's symptoms of pain and swelling. Nevertheless he wanted to discuss his conclusions with the on call orthopaedic registrar at Dubbo Base Hospital, Dr Alexander Tiedgen. Dr Hooper rang Dr Tiedgen and read out the radiologist's report. Dr Tiedgen recommended symptomatic treatment, and said that if the pain did not settle within two weeks Alex's GP should consider an MRI. This should happen sooner if the pain worsened.

46. This was the treatment plan which Dr Hooper documented and discussed with Alex and his father.

47. As Alex and John were leaving, John mentioned his son's ingrown toenail on his left foot. Dr Hooper examined the toenail, but found nothing of concern. There was a very small amount of fluid and '*minor swelling of the nail fold'*, but no swelling or redness of the foot.

48. When they got home John applied a cold pack to Alex's leg, to try to reduce the swelling.

49. It is to be noted that neither Dr Hooper nor Dr Arangala directed that Alex's vital signs observations be taken, with the exception of a likely temperature reading directed by Dr Arangala that morning. In her expert report Associate Professor Sally McCarthy queried why a full set of Alex's vital signs observations had not been measured on 20 September. From the outset, Alex's parents also expressed deep concern that this did not happen.

50. Vital signs are measurements of the body's basic functions. They involve measuring body temperature, pulse rate, rate of breathing, and blood pressure. Associate Professor McCarthy explained they can be ' …*an early indicator of otherwise unsuspected serious illness',* in particular where the patient's presentation is unusual or atypical, or they appear otherwise well.

51. The inquest heard evidence from Dr Arangala, Dr Hooper and other clinicians as to why they had not ordered vital signs observations. I will return to this issue later in these findings.

The morning of 21 September

52. The next morning was Thursday 21 September. At about 5.00am John heard Alex moving around the house. He was unable to get comfortable due to the pain in his knee, which had worsened. John applied another cold pack, then left to go to work.

53. At around 9.00am Alex texted his father to say that his leg was feeling even worse. John came home and was alarmed at the appearance of Alex's left lower leg. He described it as *'really swollen'* and *'a real dark colour'*. The swelling and discolouration had extended to Alex's left ankle area.

54. As Alex was unable to walk, John rang '000' for an ambulance to take him to hospital. The request was declined by NSW Ambulance, and John was advised to take Alex to the ED in his car.

55. Once again John supported his son into his car, helped him to lie down in the back seat, then drove him to the ED. Tragically, this was to be the last time he did so.

At the ED, 21 September

56. Alex and his father arrived at the hospital sometime before 11.00am. Alex could not put any weight at all on his left leg, so John found a seat for him at the hospital's drop off zone and went into the ED to ask for a wheelchair. He was told one would be sent out, so John left to park his car in the general parking area.

57. When John rejoined Alex he was still seated outside, waiting for the wheelchair. Again John asked for one in the ED triage area. About ten minutes later a wheelchair arrived and Alex was brought into the ED waiting area, which John described as '*completely full'.* It had taken some twenty minutes after their arrival to physically get Alex into the ED.

58. Once in the waiting area, Alex began to feel very faint. His father described him as looking '*really worn out and fatigued'* and starting to lose colour in his face. They had been in the ED area for some ten minutes by now, so John sought help from the triage window.

59. Registered Nurse Michelle Murphy came out and spoke with Alex. She saw that he was looking sweaty, pale and '*really unwell'*, and she placed him on a bed in one of the ED cubicles. At 11.01am she assigned Alex a triage rating of 3, requiring that he be seen by a doctor within 30 minutes.

60. By 11.17am it was evident that Alex's condition was rapidly deteriorating. The skin on his left leg was observed to be '*mottled*' and his skin temperature '*cool'*. These signs were strong indicators that Alex's blood pressure was falling and his circulatory system failing.

61. Registered Nurse Kristy Kelly was rostered as Team Leader in ED that day. When she returned from a meal break at 11.30am she saw that a medical student was unsuccessfully attempting to insert a cannula into Alex's arm. RN Kelly thought that Alex looked very unwell. She moved him into the resuscitation area of the ED, and called for the ED Medical Officer Dr Ali Baalbaki to attend. He did so promptly.

62. It can be seen that after Alex arrived inside the ED, at least half an hour elapsed before he received any medical attention. He was by this stage critically unwell.

63. Dr Baalbaki could see that Alex was very ill. He strongly suspected the presence of sepsis, and he directed that the 'Adult Sepsis Pathway' commence. It was now 11.40am.

64. Sepsis occurs when chemicals which are released in the bloodstream to fight an infection trigger inflammation throughout the body. This can cause a dramatic loss in blood pressure, leading to severe organ damage and death. The Sepsis Pathway is designed to guide clinicians in the early recognition and management of sepsis. A key response is to administer fluids and antibiotics as soon as possible. Other steps include giving supplemental oxygen, and collecting blood cultures to identify which bacteria have entered the patient's bloodstream.

65. In Alex's case these steps were taken promptly. Dr Baalbaki inserted a cannula into Alex's left arm, through which intravenous antibiotics were infused. Dr Baalbaki ordered ceptriaxone, a broad-based antibiotic appropriate for use where, as here, the bacterial organism was unknown.

66. At about midday Dr Baalbaki was joined by Dr Elizabeth Richardson, a Senior Resident Medical Officer. She examined Alex's leg, and noted that he was able to extend his knee but that it was very swollen.

67. At around 12.20pm while Dr Richardson and Dr Baalbaki were discussing additional antibiotics, Alex's condition suddenly and rapidly deteriorated. He became sweaty, short of breath, and blue at his lips, hands and feet. These features indicated serious impairment to the circulation of his blood. Dr Baalbaki immediately made a call for emergency resuscitative treatment, known as a Rapid Response call.

The Rapid Response call

68. John Braes was seated nearby. He became increasingly worried as he saw teams of doctors and nurses arriving at Alex's bedside.

69. Alex's blood pressure was falling rapidly and his heart rate was very fast. His left leg was red and swollen and he was described as '*hypoxic, .. mottled, cold'.* The team assessed that Alex had severe sepsis and was perhaps suffering a pulmonary embolus (a blood clot to the lungs) which would require urgent treatment.

70. The Rapid Response team was joined by Associate Professor Phillip Braslins. Dr Braslins has expertise in internal medicine and infectious diseases, and he was the on call physician that day. Dr Braslins considered that Alex was '*gravely ill'*. Assuming the role of coordinator, he ordered a range of additional antibiotics for broad antibacterial cover.

71. Also joining the team was Dr Benin O'Donohoe, consultant anaesthetist and intensive care specialist. In his statement he graphically described Alex as rambling and incoherent, '*ice cold peripherally with profound peripheral and central cyanosis'*. Dr O'Donohoe inserted a central line through a vein in Alex's neck, through which he administered additional fluids and vasoactive medication to support his falling blood pressure. He also placed an arterial line to monitor his blood pressure. Alex was already receiving supportive oxygen.

72. Dr Braslins suspected that Alex's septic state was due to necrotising fasciitis of his left leg. Necrotising fasciitis is a very serious bacterial condition which aggressively destroys tissues under the skin. It usually requires extensive surgery and sometimes amputation to save the patient's life. Even with these measures it has a relatively high mortality rate.

73. For this reason, and while the resuscitation effort was still in progress, at 12.51pm Dr Braslins asked surgical consultant Dr Ronald Peach to make a surgical exploration of the area near Alex's left knee.

74. On arrival Dr Peach found Alex to be '*semi comatose'*, with a *'grossly swollen upper and lower left leg'* and marked discolouration from his ankles to his chest area. Dr Peach's incision and examination of the fluid from Alex's leg found no evidence of necrotic tissue, nor of the '*dishwasher fluid'* characteristic of necrotising fasciitis. Nevertheless this remained the working diagnosis, as by 1.30pm the fluid had been analysed and had shown gram positive stains.

75. In addition to severe sepsis, the team considered other diagnoses including a pulmonary embolus. Dr Braslins decided to administer alteplase, a thrombolytic medication used to break up suspected emboli.

76. To everyone's relief, by 1.15pm Alex's condition had improved. His pulse rate, oxygenation and colour returned to '*acceptable*' levels. His blood pressure also improved, albeit with the support of medication and fluids. Dr Braslin assessed that although Alex was still critically ill, he was in a stable condition.

After the resuscitation

77. The senior team of Dr Braslins, Dr O'Donohoe and Dr Peach discussed the next steps. Alex's suspected diagnosis was either septicaemia with a pulmonary embolism, or necrotising fasciitis. Either way, there was consensus that BHBH did not have the resources to safely manage his care.

78. On the basis that Alex may have necrotising fasciitis, the senior team considered taking him to the operating theatre to surgically remove the infected tissue, so as to reduce the spread of infection. However they were concerned that he would not survive the anaesthetic process. In addition as the surgery would be extensive he would require intensive post operative care, which BHBH was not staffed to provide. This was also the case, should it be determined that his leg required amputation.

79. They therefore decided the only course was to arrange Alex's immediate evacuation to a hospital with a higher level of care. In the meantime they maintained a treatment plan of giving further antibiotic infusions, continuing to support Alex's blood pressure with fluids and medication, and maintaining supplemental oxygen.

80. During the resuscitation Alex's mother Narelle had joined John at the hospital. They were advised that Alex would have to be airlifted to Sydney for higher level care. John and Narelle were perplexed that Alex was not being taken South Australia's Royal Adelaide Hospital, as they knew this was the closest higher care hospital. I will return to this issue later in these findings.

81. At about 3.00pm Associate Professor Randall Greenberg arrived at Alex's bedside to assist the medical team. Dr O'Donohoe had left, and Dr Braslins was needed for other hospital patients.

82. Dr Greenberg is an Emergency Physician and specialist in Rural and Remote Medicine. He is also the Chief Medical Officer for the Royal Flying Doctor Service [the RFDS]. On the afternoon of 21 September he happened to be at the RFDS's Broken Hill base. As the only Emergency Specialist present Dr Greenberg now became involved in Alex's care, until he handed over to the medical retrieval team at about 5.30pm.

The cause of Alex's death, and the adequacy of his care at BHBH.

83. At this point I will pause the narrative of events to consider the first two issues, namely the cause of Alex's death, and whether the clinical care he received at BHBH was adequate. I will return to the events of Alex's retrieval and transfer later in these findings.

84. Alex's death has shattered his family. They grieve for him and they have many questions about his hospital care. They need to know if anything could have been done to prevent his death.

85. It was important to examine Alex's hospital care for another reason. Since Alex died there have been many reports in the media that the hospital staff let him down badly. It has been reported for example that he was '*turned away three times'* from the ED before it was recognised that he had severe sepsis. The impression has been given that the doctors and nurses who attended him were unprofessional and uncaring, and may have contributed to his death.

There was a need to establish whether there was any foundation to these reports, which must have been very demoralising for the clinicians involved.

86. At the inquest the court heard evidence from many of the doctors and nurses who treated Alex on 20 and 21 September. It was clear that they were deeply affected by his death, and wanted to do all they could to assist in finding answers.

87. The court was also assisted by an expert investigation of the medical issues. Five medical specialists from relevant disciplines met in a conclave on 20 November 2020. The conclave produced a joint report containing their opinions upon specific questions about the cause of Alex's death and the adequacy of his medical treatment at BHBH.

88. The resulting report was of a high quality, and greatly assisted the court in reaching conclusions on these complex issues. I am very grateful for the work done by those who assist me, in preparing the questions and the groundwork of agreed facts for the consideration of the expert witnesses. I appreciate also the cooperative approach that was taken by the interested parties.

89. The medical experts were:

- Associate Professor Sally McCarthy, Senior Emergency Medicine Specialist
- Professor Anthony Brown, Senior Emergency Medicine Specialist
- Professor William Rawlinson, Infectious Diseases Specialist
- Associate Professor David Andresen, Infectious Diseases Specialist and Microbiologist.
- Doctor Matthew Hope, anaesthetist and retrieval expert.

What was the cause of Alex's death?

90. The primary evidence as to the cause of Alex's death derives from the joint expert report. The experts were unanimous that Alex died as a result of multi organ failure due to sepsis.

91. As to what had caused the sepsis, Dr Rawlinson and Dr Andresen agreed that it had almost certainly originated as a Group A streptococcus infection, known as GAS. When aspirate was taken from Alex's left leg by Dr Peach, it was cultured and the result was identified as Group A streptococcus [GAS]. No other significant cultures developed.

92. GAS is a bacterium which can cause many different infections. It is uncommon for GAS organisms to infiltrate the body's deep tissues or blood stream. When they do however, they can cause very serious and invasive infections such as necrotising fasciitis and toxic shock.

93. In his report Dr Rawlinson noted that the GAS organism is associated with '*rapid, severe progress of clinical disease',* with a high mortality rate despite antibiotics. In Alex's case it had quickly developed into generalised sepsis, toxic shock syndrome (caused by the release and spread of toxins from the GAS organism), and multi organ failure. The process was rapid, and there was insufficient time for antibiotic treatment to control the infection's spread.

94. Dr Rawlinson concluded that the GAS infection had originated in Alex's left leg, from which it had rapidly spread. However neither he nor Dr Andresen could say what the original source of Alex's infection was. Dr Rawlinson thought it may have been persisting injury to his left toe as a result of his ingrown toenail, but this was not certain.

95. Nor did Dr Rawlinson or Dr Andresen think that the presence of necrotising fasciitis had been unequivocally established, although Dr Andresen thought this was likely. They agreed however that if it had been present, Alex's condition would still have required urgent transfer to a tertiary hospital.

96. The expert evidence enables me to make the finding that Alex died as a result of multi organ failure due to sepsis from a Group A streptococcus infection.

Did Alex's care and treatment at BHBH cause or contribute to his death?

97. This was a central issue at the inquest. Should the doctors who reviewed Alex on 20 September reasonably have suspected the presence of infection? And if they had, could this have prompted treatment which would have saved his life?

98. A significant factor, and a matter of great concern for John and Narelle, was the failure of staff to take a full set of vital sign observations at 3.00am and 6.00pm on 20 September. If Alex's vital signs been measured at his first attendance, might the results have alerted doctors to the fact that he was becoming seriously ill? Dr Sally McCarthy was also strongly critical of this failure. I will return to this issue shortly.

99. The experts were asked to provide their opinion upon three distinct stages of Alex's treatment. These were:

Stage One: Alex's presentation at 3.00am on 20 September
Stage Two: Alex's attendance at 6.00pm on 20 September
Stage Three: Alex's presentation at about 11.00am on 21 September.

100. Although Alex and his father had actually attended BHBH on four separate occasions over his last two days, Alex's attendance at 8.00am on 20 September was only for the purpose of having an x-ray and ultrasound performed. For this reason it did not receive consideration as a stage in treatment.

101. I outline below the conclusions drawn by the conclave as to these three stages of treatment.

Stage One: the morning of 20 September

102. The expert conclave examined Dr Arangala's medical review of Alex on the morning of 20 September and the treatment plan he prepared.

103. The conclave agreed that there was nothing about Alex's presentation at this stage that would have pointed to sepsis. However in the opinion of Dr McCarthy, the failure to perform a full set of vital signs observations was a serious deficiency. She reiterated the opinion she had expressed in her expert report, that vital signs observations are an essential component of patient assessment, because they are '*an early indicator of otherwise unsuspected serious illness'*.

104. The balance of the conclave concluded that Dr Arangala's review was adequate and that the treatment plan he prepared was appropriate for the circumstances. Dr Anthony Brown commented that Dr Arangala's examination was diligent and that the care he provided was of an acceptable standard.

105. The conclave was asked to consider whether, had full vital signs observations been taken that morning, the resulting measurements might have revealed any abnormal results which might have prompted further investigation.

106. All the panel members expressed caution as to the speculative nature of this task. They stated it was difficult to infer what the measurements would have been, in light of what was retrospectively known about Alex's condition.

107. Dr McCarthy noted that since vital signs observations were not taken, it must remain unknown whether there was in fact a basis to suspect infection at this stage. However both she and Dr Rawlinson thought it likely that had it been measured, Alex's pulse rate would have been elevated - a non specific indication for infection.

108. In the opinion of Dr McCarthy, even a single abnormal sign in an otherwise healthy 18 year old was a prompt to consider further investigations. For his part Dr Rawlinson was less confident that an elevated pulse rate would reasonably have led to further enquiry, as it might be attributable to causes other than infection.

Stage Two: the evening of 20 September

109. The conclave then considered Dr Hooper's clinical care of Alex that evening, and in particular his acceptance that Alex's condition was most likely due to a musculoskeletal injury.

110. In their joint report, the experts noted that Alex's attendance that evening was not strictly speaking a 're presentation'. He had been medically reviewed only that morning, and was attending Dr Hooper not to report fresh or worsening symptoms, but to receive the results of his imaging. There was agreement that these circumstances would not normally prompt a thorough reassessment of his condition.

111. Within that context, the conclave concluded that it was reasonable for Dr Hooper to have been reassured by the radiologist's diagnosis of a '*likely plantaris rupture'.* Dr Hooper had not unreasonably concluded that Alex had a musculoskeletal injury, and he had prepared a treatment plan consistent with that diagnosis.

112. The conclave was again asked to consider whether Alex's presentation ought to have prompted further investigations, which may have indicated that he had an infection. Again Dr McCarthy noted that since vital signs observations were not taken, it remained unknown whether there was in fact a basis for further medical investigation. She reiterated that Alex's pulse rate was likely to have been '*mildly elevated',* and that this may have prompted further inquiry.

113. As a hypothesis, the conclave was asked to assume that on the evening of 20 September vital signs observations had prompted blood testing, which showed abnormally high levels of lactic acid and CRP (a blood protein whose concentrations rise in the presence of inflammation). Would those results have changed the treatment response?

114. All, with the exception of Dr Andresen, responded that in the above scenario they would suspect that Alex had an infection and would likely commence antibiotic treatment.

115. Could antibiotic treatment taken at that stage have saved Alex's life?

116. Sadly, none of the experts thought this was likely. Dr McCarthy considered there was only a '*rare chance'* that antibiotics at this stage could have saved Alex; the others stated that the window of opportunity for recovery had most likely closed. Such was the aggressiveness of the GAS infection that even if Alex had commenced antibiotics on the evening of 20 September, it was probably too late.

117. Relevantly, I note that in his expert report Dr Rawlinson stated that Alex's chances of survival on 20 September depended not only on receiving antibiotics, but also on recognition that he had a GAS infection. This would have indicated the need for anti inflammatory agents to reduce the effects of toxin release.

118. But neither Dr Rawlinson nor Dr Andresen thought that a GAS infection could have been identified on the evening of 20 September. Blood cultures typically take 24 hours to grow, meaning that if blood had been taken for this

purpose that evening, a positive identification of the organism was most unlikely to be available until the next day at the earliest.

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119. The experts agreed that by the late morning of 21 September, it was most likely that Alex's condition was clinically irreversible and that he could not be saved.

120. However they identified a number of deficiencies in Alex's management at the ED that morning.

121. First, it should not have been so difficult for Alex and his father to obtain a wheelchair to bring Alex into the ED. Dr McCarthy observed that patients who are unable to walk are not uncommonly brought to an ED. This experience needlessly added to the distress of Alex and his father, and delayed Alex's medical care. It was welcome news to hear that BHBH now has at least three wheelchairs available at its main foyer, for members of the public.

122. Secondly, there were unacceptable delays in obtaining a medical review. It ought to have been evident at the time of Alex's arrival that his condition required an urgent medical response. He was sweaty, pale, unable to walk and in severe pain. These signs were not sufficiently recognised by the triage nurse, who ought to have assigned him a higher category.

123. At 11.17am the appearance of Alex's leg ought to have prompted an urgent medical review. Alex's leg was observed to be '*mottled',* his skin temperature was *'cool'*, and swelling of his leg was *'large'*. In addition his respiratory rate was abnormal, at 24 bpm. Despite these signs of respiratory impairment, Alex was not escalated to a doctor until RN Kelly returned from a meal break and recognised the severity of his condition.

124. The expert panel agreed that thereafter, Alex's clinical care within the ED was of a high standard. In particular they endorsed the opinion of Dr McCarthy, that the rapid response team's management of his resuscitation was '*of an excellent standard and appropriate to Alex's clinical state'.* There was one reservation: that it would have been desirable for Dr O'Donohoe to have been asked to remain as the team leader for Alex's care, as he was the clinician with the most expertise in managing extremely sick patients.

125. My conclusion regarding the adequacy of clinical care which Alex received at BHBH must take into account the context described in the following section. This deals with the failure of staff to take a full set of vital signs observations on 20 September 2017.

Vital signs observations and the Business Rule

126. As noted, when Alex was reviewed by Dr Arangala at 3.00am on 20 September it is likely his temperature was taken, and perhaps his pulse rate

as well (although this was not recorded). Apart from these steps however, there is no evidence that any other vital signs observations were performed either then, or at Alex's evening attendance. The inquest examined why this was the case.

127. In his evidence Dr Arangala said that he would not have expected routine vital signs observations to be taken at triage. This was due to the flow on effect of a Business Rule then in force at BHBH. Dr Hooper concurred that performing vital signs observations was not mandatory practice within the ED at that time. This was also the evidence of RN Murphy and RN Kelly.

128. The evidence confirmed that this was the case. In October 2015 a Business Rule was introduced in the ED at BHBH, the effect of which was to discourage staff from routinely performing vital signs observations at the triage stage. The Business Rule instructed staff that '*Observations should only be taken if vital signs will influence the assignment of the [triage] score'.*

129. This Business Rule appears to have developed in response to the numbers of patients who were leaving the ED before they could be seen by a doctor, due to delays at the triage stage. It was aptly submitted by Counsel Assisting that the ensuing concern led to:

> *' ..a well intentioned attempt to improve efficiency in terms of reducing DNW [Did Not Wait] statistics within the ED at BHBH, particularly with a view to improving Indigenous patient engagement with the health service'.*

130. The hospital's response was to redesign its ED processes, such that staff were no longer to routinely perform a full set of vital signs observations at the triage stage. I note in passing that there did not seem to be any higher level consideration of a different approach to the problem: namely to increase nursing staff.

131. The evidence as to the provenance of the Business Rule revealed a curious absence of senior oversight. It was unclear what process if any it had undergone to be assessed and ratified. Worse still, the then Director of Clinical Governance at BHBH was completely unaware of its existence, and learned of it only when she was asked to provide a statement for this inquest.

132. I adopt the submission of Counsel Assisting, that it is *'troubling and entirely unsatisfactory'* that a clinical practice with such significant implications was put into place without the awareness of the hospital's Director of Clinical Governance.

133. At the inquest RN Kelly and RN Murphy spoke of a general dislike amongst staff for the Business Rule, as they felt it compromised patient safety. Nevertheless they and other witnesses made it clear they considered they were bound to comply with it.

134. In her report and at the conclave, Dr McCarthy was strongly critical of the practice at BHBH of not routinely performing vital sign observations at triage. In her opinion a full set of vital signs observations should be recorded for all patients presenting at ED. They were:

> ' *… an essential component of the assessment of every patient, as they are an early indicator of otherwise unsuspected serious illness'*.

135. In the joint expert report she described the failure to do so as '*potentially dangerous'*, and '*entrench[ing] and contribut[ing] to unsafe triage practice.'*

136. Furthermore, in 2017 not taking a full set of vital signs observations was *not* accepted contemporary practice for any ED in 2017. Dr McCarthy cited NSW Health policies applicable at that time, which mandated that a full set of observations be conducted prior to a patient's departure from an ED. She noted that this practice was also consistent with the guidelines of the Australasian College for Emergency Medicine [the ACEM].

137. It is apparent therefore that BHBH's operation of the Business Rule was not compliant with NSW Health policy, nor in accordance with the ACEM's guidelines. It was a potentially dangerous clinical practice, and it ought not to have been introduced.

138. I accept the submission of Counsel Assisting, that the failure of staff to take Alex's vital signs observations on 20 September was '*a significant and unacceptable deficiency'* in the care provided to him by the BHBH. It clearly had the effect that a full set of Alex's vital signs observations was not measured that day.

139. In fairness to the doctors and nurses who treated Alex however, it is clear that the failure had a systemic cause: namely the imposition of the Business Rule. For this reason it is not appropriate to express criticism of the individual clinicians involved in Alex's care for their failure to perform vital signs observations.

140. The Business Rule is no longer in operation at BHBH. After Alex's death, the practice at the ED reverted to taking a full set of vital signs from all patients presenting there. This continues to be the practice. Furthermore, regular audits are conducted to ensure compliance with this practice.

Conclusion: was the clinical care provided to Alex adequate?

141. I have found that the failure to perform vital signs observations was a serious deficiency in the care provided to Alex. I find further that since these were not performed, it cannot be known whether the results may have indicated the need to carry out further tests for the possibility of infection.

142. In submissions on behalf of the Health Parties, the court was urged to accept that there was '*no indication that infection was at play'* on 20

September, and that it would therefore be unfair to conclude that the operation of the Business Rule had any deleterious effect on Alex.

143. However as submitted in reply by Counsel Assisting, it is not entirely correct that there were no indications of infection at that stage. Alex told Dr Arangala that his knee felt hot, a clinical sign that is indicative of infection although not specific to it.

144. Furthermore as noted by Dr McCarthy, since vital signs observations were not taken it remains unknown whether there was in fact a basis for suspicion of infection at that stage. Both she and Dr Rawlinson thought it likely that Alex's pulse rate would have been elevated had it been measured. They agreed that such a sign was a non specific indication for infection.

145. I have noted the opinion of Dr McCarthy, that even a single abnormal sign in an otherwise healthy young person should prompt consideration of further investigations. Other vital signs may have been abnormal as well. She concluded that *' …any opportunity to identify an underlying evolving sepsis was thus missed'.*

146. This evidence must have been deeply distressing for Alex's parents to hear.

147. Since it remains unknown what the results would have been and whether they might have prompted further medical investigation, it cannot be said that the failure to take vital signs observations was of no significance in Alex's case.

148. However, the evidence does establish that this failing did not cause or contribute to Alex's death. Whether or not infection might have been suspected by the evening of 20 September, the expert evidence was clear: there was no realistic possibility that Alex's life could have been saved by that time. I am unsure if Alex's mother and father are able to accept this heartbreaking conclusion. It would be understandable if they could not.

149. In the opinion of Dr Brown, there was simply not enough time for antibiotic treatment to overcome the infection's aggressive spread, even if this had been commenced on 20 September.

150. Dr Rawlinson concurred. By 20 September Alex was 'on an irreversible and severe pathway', and would not have survived unless there had been early antibiotic treatment together with surgery to remove the infected tissues. In his report he noted that '*if the source of the GAS cannot be removed surgically, this is associated with a particularly poor outcome.'* Tragically for Alex, the existence of infection was not known on 20 September, far less the source for it.

151. For her part, Dr McCarthy thought it likely that Alex's clinicians had missed earlier opportunities to detect infection and commence treatment, and there remained '*a possibility*' that this may have made a difference to his

survival. Even so she acknowledged that this was speculative. Noting the high mortality rate for GAS infection associated with septic shock, Dr McCarthy concluded:

> *'Due to the clinical severity and rapid progression of this condition, and its rarity, it is difficult to conclude with certainty that Alex would have survived if his assessment and treatment was different, or if there were no delays in transport for his tertiary care'.*

152. The expert medical evidence at this inquest was of a high quality, and was provided by specialists whose opinions merit strong weight due to their qualifications and experience. I find that although there were deficiencies in the care given to Alex, most notably the failure to perform vital signs observations, these did not cause or contribute to his death. There was no realistic possibility that his specific infection could have been identified and successfully treated on 20 September 2017.

153. Alex's death had a profound impact on the doctors and nurses who treated him at BHBH. It was evident at the inquest that they wanted to do all they could to provide answers for Alex's grieving parents. They expressed their sincere regret to John and Narelle that they had not been able to save Alex. Some were visibly emotional as they told the court that they thought about Alex and his family each day and felt deeply for his parents in their sorrow.

154. There could be no part of this inquest that was not heartbreaking for John and Narelle. On a personal note, the inescapable sadness of Alex's death was brought home to me at a particular point when Dr Randall Greenberg was giving his evidence. Dr Greenberg attended Alex during the afternoon of 21 September.

155. Dr Greenberg knew that Alex was critically ill. Alex was in '*a profound state of shock, with a significantly elevated heart rate and a low blood pressure'*. Yet Dr Greenberg vividly recalled that throughout the afternoon Alex was conscious and was talking to him. Dr Greenberg did not expect that Alex would die. He said he believed he would survive the transfer to Sydney for treatment there.

156. It was extraordinarily sad to hear Dr Greenberg say this, alongside the retrospective knowledge that in fact Alex's illness was by this stage irreversible, and that he could not be saved.

<u>THE RETRIEVAL</u>

157. I will now return to the events on the afternoon of 21 September, and the issues surrounding Alex's retrieval and transfer to Sydney.

158. Following Alex's resuscitation, the senior team resolved that he must be transferred as quickly as possible to a hospital with a higher level of care.

In their joint report the experts agreed that this was the only safe and appropriate pathway for Alex.

159. But the process of Alex's retrieval and transfer was very problematical. Two related issues were examined:

- the very significant delay that was involved
- the fact that Alex was not transferred to the closest hospital capable of providing the care that he needed.

160. Alex's transfer out of Broken Hill was beset by numerous delays. Dr Hooper took the first step in requesting his transfer at 12.37pm. But for reasons outside Dr Hooper's control, Alex did not arrive at Sydney's Royal Prince Alfred Hospital until 12.50am. The entire process of transfer had taken over 12 hours.

161. It follows from my findings above, that the very lengthy delays in Alex's transfer did not cause or contribute to his death. Tragically, by the evening of 20 September Alex had no realistic prospect of survival.

162. Nevertheless the delay in Alex's transfer was a key issue at the inquest, for two reasons.

163. The first reason directly concerns Alex's mother and father, for whom the effect has been personally traumatic. Since that tragic day and night they have asked themselves if their son might have survived if his transfer to a higher level of care had not taken so long. Although the evidence at inquest has shown that this was not the case, it was appropriate for the inquest to examine why this process was so very protracted.

164. Furthermore, one of the saddest consequences of the delay was that neither John nor Narelle was able to be with Alex during his last conscious hours. Having been advised that his transfer was imminent, both left his hospital bed at around 7.30pm that night. Narelle went to Broken Hill airport to await his arrival there (she was to travel to Sydney with him), while John went home to prepare for a flight to Sydney the next morning.

165. Many hours passed before Alex was actually brought to Broken Hill airport where his mother was waiting for him. But by then he was sedated and Narelle was unable to comfort him. John never saw his son again.

166. It grieves his parents deeply that they were not able to be with him during his last conscious hours.

167. Alex's transfer was examined for another key reason. He was not taken to the closest hospital suitable for his care. Broken Hill is closer to the Royal Adelaide Hospital [RAH] than to any Sydney hospital, but Alex was not transferred there.

168. The evidence revealed that a systemic issue prevented Alex's most effective transfer out of Broken Hill. Almost five years later this issue has still not been resolved.

Retrieval processes

169. It is fair to acknowledge that the aeromedical transfer of critically ill patients from remote areas is not a straightforward process. It requires coordination between the different medical teams caring for the patient prior to the flight, during the flight, and at the receiving hospital, as well as the agencies which provide the aircraft and pilot. Decisions about transfer also have to take into account air safety regulations which determine maximum duty hours for the retrieval pilots.

170. There are further complications where, as in Alex's case, the transfer needs to be made into another state.

171. This is not to suggest of course, that safe and effective transfers out of remote areas cannot be achieved. Residents of rural and remote areas rightly expect that there will be a high degree of cooperation between agencies and between states, to ensure that they receive the critical care they need.

The arrival of the retrieval team and the need to intubate Alex

172. For reasons which will be examined, Alex was not accepted at Adelaide's RAH that afternoon. Arrangements were therefore made for him to be transferred to Sydney's Royal Prince Alfred Hospital [RPAH].

173. At 2.45pm Broken Hill time, a retrieval plane took off from Sydney's Mascot Airport. It carried a team consisting of Dr Rachel Turner who is an Emergency Medicine specialist and retrieval consultant, as well as a critical care flight nurse and a student nurse. The plane arrived at Broken Hill Airport at 5.30pm, having taken the expected 2 to 2.5 hours' flying time to travel there, and factoring in that Broken Hill time is half an hour behind Sydney time.

174. On arrival at Alex's bedside shortly before 6.00pm Dr Turner received a handover from Dr Greenberg, who had been attending Alex since 3.00pm that afternoon. Both doctors were of the view that although Alex was critically ill his condition was reasonably stable. He was *'alert and oriented', 'not complaining of pain',* and *'speaking in full sentences'.*

175. However Dr Turner had expected that Alex would have been intubated before her arrival. Intubation involves anaesthetising a patient, placing a breathing tube into the trachea, and using a ventilator to mechanically breathe for the patient.

176. Dr Turner now had to decide whether she should delay Alex's transfer by intubating him. However as he was '*self-ventilating normally'* she considered on balance that his condition was stable enough not to absolutely

require it, and she wanted to get him to Sydney as quickly as possible. She therefore commenced the work needed to transfer Alex onto the retrieval team's medical equipment.

177. Most unfortunately however, not long after Dr Turner made this decision Alex's situation changed very dramatically for the worse. While he was lying on the stretcher awaiting an ambulance to the airport, he became restless and delirious. As noted his mother and father had already left him, in the belief that his departure for Sydney was imminent.

178. Alex's condition now became extremely unstable. In his report Dr Hope described Alex's sudden reversal as a '*catastrophic deterioration',* which put beyond doubt that he now had to be intubated.

179. Dr Turner now commenced the task of intubating and ventilating Alex. She was well aware that due to the severity of his sepsis this would be a high risk procedure. For very sick septic patients, intubation poses a significant risk of death due to the adverse impact of sedative drugs on blood pressure.

180. By approximately 8.30pm Dr Turner and her team had intubated Alex. As expected however, his blood pressure had fallen significantly and Dr Turner struggled to stabilise it. Alex was also having difficulty with his oxygen levels.

181. Adding to the pressure, at Broken Hill airport the allocated pilot was approaching the point where her permitted flying hours would expire. Even with the hour extension granted to her, the retrieval team would need to be at the airport for take off by 10.15pm.

182. Despite Alex's instability, by 9.10pm Dr Turner decided she had no choice but to get him out to the airport and onto the transfer flight. Alex was taken to the airport in an ambulance, and the plane left Broken Hill airport at 10.20pm, with Narelle also on board.

183. Throughout the flight Alex was sedated. His condition was perilous, with his blood pressure levels so poor that Dr Turner feared he would suffer a cardiac arrest. His heart rate reached 190bpm, and his oxygen saturations were also very poor. Narelle described alarms going off for the entire duration of the flight.

184. The retrieval team landed at Mascot at 12.20am, Sydney time. They arrived at RPAH soon afterwards and were met by the ICU team. At 1.22am Alex went into cardiac arrest. Tragically, the prolonged efforts of the ICU team to resuscitate him failed, and he was pronounced deceased at 2.03am.

Why was Alex not intubated at an earlier stage?

185. There is no doubt that the need to intubate Alex significantly delayed his transfer to Sydney. Furthermore his intubation had to be performed at a stage when the associated risks were greater due to his clinical deterioration.

186. In her initial report Dr McCarthy queried why Dr Greenberg had not arranged for Alex's intubation at an earlier stage. The inquest examined this question.

187. Retrieval specialist Dr Hope agreed that if intubation is required, it should be done early '*so the body has a better chance of coping and surviving the procedure'.* In his expert report he commented that as Alex's infection spread, the effort required to intubate him and stabilise his multiple issues would have been *'intense'*.

188. Dr Hope identified other factors which indicated the need to intubate Alex early. Once in Sydney he was very likely to need urgent surgery to control his sepsis, which would require intubation in any case. Importantly too, intubation would have reduced some of the work load of his body as it struggled to cope with increasing disease.

189. In his supplementary statement Dr Greenberg acknowledged that '*with the benefit of hindsight'*, it would have been advantageous for him to have arranged for Alex to be intubated before the retrieval team arrived. However he said that during the course of the afternoon, Alex's clinical picture had not consistently indicated the need for it. In addition, Dr Greenberg was well aware that intubation poses serious risks for a patient with sepsis.

190. Dr Hope endorsed Dr Greenberg's concern as to the associated risks, with the comment that *' …intubation may turn a sick not immediately deteriorating patient into a very unstable patient.'* He also agreed that Alex's condition throughout the afternoon had fluctuated, at times showing improvement. Overall he was not critical of Dr Greenberg for deciding not to have Alex intubated during the afternoon.

191. As to whether Dr Greenberg ought to have foreseen that Alex's condition would severely deteriorate, Dr Hope made these comments:

> *'It is well known that children and younger adults compensate for severe infections and traumatic injuries very well. However they get to a point where very suddenly they can no longer compensate and body systems suddenly collapse. Where exactly this point is, is extremely difficult to foresee ... at the time it is not a clear cut situation.'*

192. Dr Hope said that in retrospect, it could be seen that this point came when Alex was moved onto the retrieval stretcher.

193. Having considered the evidence, the expert conclave agreed that Alex's fluctuating condition throughout the afternoon meant that a decision whether to intubate him would not have been straightforward. Ultimately they concluded that although it would have been better for this procedure to have taken place prior to retrieval, this was evident only in retrospect.

194. On the evidence therefore, it would not be appropriate to express criticism of the decision not to intubate Alex during the course of the afternoon. I accept that the competing factors were finely balanced, and that the decision was a very difficult one.

195. The unfortunate result however was that after the retrieval team arrived in Broken Hill, Alex's transfer was delayed for many hours. For Alex's parents the wait must have been agonising. They had been told that he needed urgent care at a tertiary hospital. As the hours stretched on and Alex remained in Broken Hill, their anxiety and distress must have been very great.

Why was Alex not transferred to an Adelaide hospital?

196. I have mentioned that South Australia's RAH was the closest hospital suitable for Alex's care. Despite this, by around 1.15pm that afternoon it was apparent that Alex was most unlikely to be accepted there.

197. This was a perverse outcome which demanded examination at the inquest, not only for the sake of Alex's family but for future Broken Hill patients as well.

198. On 21 September Dr Sarah Coombes was on shift as Senior State Retrieval Consultant at the Aeromedical Control Centre [ACC]. The ACC manages patient retrievals throughout NSW. It is a specialist division within the Ambulance Service of NSW (now NSW Ambulance).

199. Dr Roy Fischer is a Medical Retrieval Consultant at MedSTAR, where his role includes securing beds in South Australian hospitals for retrieval patients. MedSTAR is South Australia's 24-hour emergency medical retrieval service.

200. Dr Hooper spoke with Dr Fischer at around 12.37pm, seeking Alex's urgent transfer to Adelaide. He described Alex as '*critically unwell*' and in need of *'the shortest possible transit route'.*

201. Dr Fischer advised Dr Hooper that he would need to make some calls, as he was uncertain if South Australia was accepting interstate transfers at that time. The RAH had recently moved to new premises in Adelaide. To facilitate the move, in the weeks surrounding it SA Health was apparently operating a strategy of reducing interstate admissions.

202. At about 1.00pm Dr Fischer spoke with a senior physician at Flinders Medical Centre, another tertiary hospital in Adelaide. He wanted to know if they would accept Alex if his suspected pulmonary embolus did not improve with thrombolytics. In response the physician encouraged Dr Fischer to '*ring Sydney as well'*, but stated that although it would be difficult to take Alex, *'potentially'* it could be done. Dr Fischer replied: ' *..if you can't, that's fine, I will just say that he has to go to Sydney'.*

203. Dr Fischer then rang Dr Hooper and told him '*we are not meant to be taking people from interstate*'. He asked for an update on Alex's condition. Dr Hooper replied that Alex had now been thrombolised and that although he was '*not well by a long shot'*, his '*numbers are better'*.

204. The next significant teleconference commenced at 1.17pm, this time including Dr Coombs. Dr Hooper provided a further update of Alex's condition, stating that a gram positive stain was now indicating the likelihood of necrotising fasciitis, and that Alex's '*numbers*' were going '*fairly well'*.

205. Dr Fischer advised that Adelaide did not want to take interstate patients, and that all its hospitals were on *'internal disaster'.* Dr Coombes responded: '*Okay well we'll have to look for a bed in Sydney then'.*

206. Thereafter there was no discussion about trying to get Alex to a hospital in Adelaide. Dr Coombes set about securing a bed for him at Sydney's RPAH, and making arrangements for a Sydney retrieval team to fly to Broken Hill to collect him. At 2.07pm she advised Dr Hooper that a plane with a retrieval team could be expected to land at Broken Hill at 5.15pm.

207. At 3.48pm there was another development. Dr Fischer rang Dr Coombs to advise that Alex was the nephew of an ICU consultant at RAH, and that RAH could now take him. However the retrieval team had already departed Sydney and was due to land in Broken Hill soon after 5.00pm. The offer from Adelaide therefore would not provide any time advantage, so Dr Coombs did not pursue it.

208. At paragraphs 173 to 184 I have described the events that followed. The Sydney retrieval team landed in Broken Hill more or less at the expected time, but lost significant time with the need to intubate Alex and stabilise him for transfer. Alex died less than an hour after his admission to Sydney's RPAH.

209. Since Alex's tragic death many clinicians have reflected on the decisions they made that day. It is significant that Dr Coombs, Dr Fischer and Dr Greenberg all regretted that they had not pressed for Alex to be transferred to Adelaide, despite the RAH's reported reluctance.

210. For Dr Fischer, it was a matter for regret that he had not pursued the plan of seeking a bed in Adelaide. He wished that he had directly contacted senior clinicians in Adelaide to advocate for Alex's admission.

211. Dr Coombs likewise wished that she had not been so ready to accept the reports that a bed in Adelaide was not an option. In her third statement she said that looking back, she felt she had not appreciated the severity of Alex's condition. She had been: *' … reassured from the reports from Broken Hill hospital, and particularly Dr Greenberg, that Alex was improving and stablising with treatment'.*

212. This is perhaps a little unfair to Dr Greenberg. He did not arrive at Alex's bedside until well after Dr Coombs' teleconference at 1.17pm with Dr Fischer, in which she acknowledged his comment that it would be very difficult to get Alex into an Adelaide hospital, and said that she would proceed to find a bed in Sydney.

213. In any event, like Dr Fischer Dr Coombs believed that if presented now with a similar situation, she would take steps to satisfy herself that there was no prospect of transfer to an Adelaide hospital. She said this might involve her making direct contact with senior clinicians at RAH and Flinders Medical Centre.

214. For his part, Dr Greenberg said that his '*biggest regret'* was not getting Alex to Adelaide as soon as he took over his care. In his third statement he said:

> *'I knew Alex was critically unwell, but along with other clinicians involved that day, I did not think he was going to die. My assumption at the time was that he would survive the flight to Sydney to be looked after at Royal Prince Alfred Hospital intensive care.'*

215. Dr Greenberg said that although it had been reported to him at the time that there was no ICU bed for Alex in Adelaide, in retrospect he would have insisted that Alex be transferred there. He expressed his deep personal regret that as a senior clinician he had not taken stronger action on Alex's behalf:

> *'I've got to take responsibility that I could have intervened, and that's the way I felt when I found out that he died …'*

216. This, he said, would at the least have given Alex's parents the assurance that everything was being done to try to save their son.

What is the current situation regarding interstate transfer?

217. In their reflective statements Dr Coombs, Dr Fischer and Dr Greenberg all expressed the profound wish that they had personally contacted senior Adelaide clinicians to urge them to accept Alex.

218. To many people it may seem remarkable that clinicians would have to resort to such an intervention. How was it that the closest suitable hospital for Alex, even one that was across a state border, was able to refuse to admit him in the first place?

219. And given the lapse of almost five years since Alex's tragic death, could it still be the case that an Adelaide hospital could refuse to accept a patient in his condition?

220. The answer is yes. Put plainly, it was and remains the case that a NSW clinician did not have the authority to require that a hospital in South

Australia accept a Broken Hill patient who is in urgent need of a higher level of care.

221. I outline below the policy situation, and the calls that have been made by senior clinicians for an arrangement that will better serve the needs of Broken Hill patients.

NSW Health policy: transfer of critically ill patients

222. The reality that there is no mechanism to ensure that an Adelaide hospital accept a critical Broken Hill patient appears to be at odds with the clear intention of NSW Health policy.

223. NSW has a Critical Care Tertiary Referral Networks and Transfer of Care policy [the Transfer Policy]. It enables a senior clinician to insist that, irrespective of bed capacity, a hospital accept for treatment a patient who is 'time urgent' and 'critically ill'.

224. In the Transfer Policy, RAH is referred to as the 'Receiving Tertiary Hospital' for the Far West Local Health District, which includes Broken Hill. This implies, as submitted by Counsel Assisting, that:

> *'..the [Transfer Policy] envisages that for time urgent, critically ill patients, the ACC will contact the linked tertiary hospital (relevantly RAH in South Australia) and require or mandate that the patient be accepted, irrespective of bed status.'*

225. But the evidence at inquest revealed that the application of the Transfer Policy can only be mandated *within* NSW. No South Australian tertiary hospital can be compelled to comply with it.

226. Dr Greenberg told the court that Broken Hill patients needed evacuation to Adelaide *'reasonably frequently'*. This was confirmed with evidence within a 2018 review of BHBH conducted by the Clinical Excellence Commission. The Review noted that each month, forty patients on average were transferred out of Broken Hill. Between one and four of these patients were critically ill.

227. Dr Greenberg added that in his experience, it was mostly the case that such patients *were* accepted in Adelaide. This was due to the considerable degree of cooperation and goodwill that exists between NSW and South Australian clinicians. However, Dr Greenberg confirmed that when a South Australian clinician refused the transfer, he himself had no power to insist. In these situations '*advocacy*' had an important role to play. That is, his practice was to make direct contact with an Adelaide intensivist and argue for the patient's acceptance.

228. Dr Greenberg readily agreed that this situation was far from ideal. In his opinion there needed to be:

'…a system whereby the NSW State Retrieval Consultant can 'default' a hospital in South Australia to accept a patient for time urgent, or critically ill patients'.

229. Dr Greenberg's opinion is shared by many senior clinicians who have substantial experience in rural emergency health care.

230. In his report Dr Hope was critical of the fact that at the time of Alex's crisis, there was not in place any authority to compel an Adelaide hospital to accept him. Dr McCarthy agreed that there should have been *'a negotiated default acceptance retrieval policy with the SA Health system and/or the Royal Adelaide Hospital'.*

231. Similarly, in her supplementary statement Dr Coombs urged the need for:

' … *an agreed default mechanism for time-urgent critically ill patients to be transferred to the nearest-in-time hospital that can provide definitive care'*.

232. She added that in her experience it is becoming increasingly challenging to secure Adelaide's acceptance of cross border patients, due to '*recurrent bed block issues but compounded by the ever-changing Covid-19 situation'.*

233. The absence of such an agreement and its practical impact on patient care was illustrated in a 2019 Review into the Operation and Effectiveness of the Medical Services and Medical Credentialling Functions at Broken Hill Hospital. The report's author noted the following:

'The Broken Hill Health Service is a long distance from clinical support services. The nearest major referral hospital is in Adelaide, South Australia. Many specialists and emergency service generalists reported problems they regularly encountered when trying to transfer patients to Adelaide. The most common problem is trying to get to someone in authority to 'accept' the patient. Sometimes only one call is required, but at other times it takes multiple calls and waiting for a response.'

234. It is not hard to imagine how frustrating such a process must be for the clinicians and families involved. Worse still, it is a system which puts the safety of patients at risk. The author of the report called for NSW Ministry of Health action on the problem, since despite all previous local efforts '*the problems persist'.*

What attempts have been made to develop a formal default transfer agreement?

235. I have noted that Alex's death had a profound effect on those who were involved in his treatment and his transfer.

236. After Alex died, clinical specialists immediately commenced work to try to ensure that in future, critically ill patients could not be refused transfer to Adelaide. Dr Coombs and her colleague Dr Gary Tall made contact with their South Australian counterparts, seeking an agreement that there would be no recurrence of what happened on 21 September 2017. However they were advised by the NSW Ministry of Health that the Ministry would take over this project.

237. This was confirmed at the inquest by Mr Luke Sloane. Mr Sloane is the Acting Executive Director, Systems Management Branch, Patient Experience and Systems Performance Division within the NSW Ministry of Health. He provided documents and gave evidence on 13 December 2021, to advise the court on what efforts had been made to reach a formal transfer agreement with SA Health.

238. But the evidence given by Mr Sloane presented a picture of inactivity and stagnation that was as dispiriting as it was inexplicable. For the period 2017 to 2019, there was no evidence that the NSW Ministry took any action to progress the formation of an agreement with SA Health.

239. Significantly, during this period reviews into the clinical care provided at BHBH were performed. Yet the resulting recommendations for a formal transfer agreement did not prompt any meaningful action on the issue. Although the NSW Ministry assembled a panel of experts in 2019, it was not until September 2021 that they succeeded in actually meeting at Ministry level with SA Health. The court had no evidence of how if at all the project was advanced at this meeting.

240. Mr Sloane told the court that in the period up to September 2021, NSW Health had scheduled meetings with their SA counterparts, but none had taken place because they were all cancelled by the SA representatives. Mr Sloane added that SA Health could not be compelled to engage with NSW on the issue.

241. It was dismaying to hear Mr Sloane's evidence about the lack of progress on this problem. At the close of evidence the court asked Mr Sloane to provide an updating statement, which he did. But its contents provided little basis for encouragement. Mr Soane reported that a meeting with counterparts within SA Health had been scheduled in the week of 10 January 2022, but that it too had not taken place. Mr Sloane said that he '*remained confident'* there would be a rescheduled date, but he had not been advised of any. He has now sought assistance from the NSW Health Secretary to *'reach out again to our interjurisdictional counterparts.*'

242. Thus it remains the case that almost five years after Alex's death, there is still no formal agreement that critically ill Broken Hill patients will not be refused transfer to Adelaide. The NSW Ministry has been unable to provide even a timeframe for developing such an agreement.

243. To describe this response as disappointing and perplexing is an understatement. It can be accepted that from March 2020 the health departments of both States had much to do in responding to the Covid-19 outbreak. Nevertheless this cannot sufficiently explain the extraordinary lack of progress made on this project.

244. The court heard that cooperative relationships exist between senior clinicians of Broken Hill and Adelaide, and that in most cases these are successful in obtaining a transfer to Adelaide. But these pathways were in place in 2017. They were not enough to secure Alex's transfer to the nearest hospital that could care for him.

245. What is there to ensure that a critically ill patient in Broken Hill *will* be taken to the nearest hospital that might be able to save his or her life? Is it right that because of state boundaries there is no recourse, if such a hospital refuses? These are questions that everyone who has been involved in this inquest must be asking themselves.

246. Broken Hill patients who are critically ill deserve to have the earliest possible access to full intensive care services, like patients elsewhere in NSW. They are entitled to expect that there will be full cooperation between NSW and SA to ensure that this happens.

247. The evidence outlined above provides abundant support for the need to make the two recommendations proposed by Counsel Assisting. Both recommendations are supported by the NSW Ministry of Health. I make the two recommendations, in the hope that they will prompt the action on this issue that has been so lacking.

Recommendation 1

That as a matter of urgency, the NSW Ministry of Health and the Department of Health and Wellbeing (SA) continue communication to agree and formalise cross-border arrangements for the transfer of critical care patients from Broken Hill to Adelaide tertiary care facilities, whether in the form of a 'default mechanism' or other formal agreement.

Recommendation 2

That the matter be escalated to the Secretary, NSW Health, if those discussions do not lead to the establishment of formalised arrangements, as envisaged in Recommendation 1, within 12 months from the date of these findings.

Delay in the RCA investigation

248. The final issue for examination is one of corporate governance: namely, why did it take so long for a Root Cause Analysis review to be undertaken into Alex's clinical care?

249. A Root Cause Analysis [RCA] is an external investigation of a clinical incident, which aims to identify the causes and factors which contributed to its occurrence. If deficiencies in the patient's care are identified, the RCA is expected to make recommendations designed to prevent the incident from recurring.

250. From the outset Alex's parents sought an investigation into the circumstances of their son's death. They were denied one for an inexcusable length of time.

251. The objective facts of Alex's death plainly called for a detailed review of his care. Young and otherwise healthy, Alex had died of acute sepsis after having been brought to BHBH three times within the space of less than 24 hours. Gravely ill, he had then been refused admission to the closest hospital able to meet his needs, and had instead had to endure a prolonged process of transfer to a Sydney hospital. He had died a little over an hour after being admitted there.

252. Despite these events, the adequacy of Alex's care was not considered by BHBH and the Far West Local Health District [FWLHD] to warrant detailed investigation. Within days of his death the hospital's administration had, by a process which remains unclear, downgraded the severity classification accorded to his circumstances. There was to be no Root Cause Analysis review. Rather, an external medical opinion would be sought as to the adequacy of his care and treatment.

253. The resulting medical opinion consisted of little more than a conclusion, expressed within the space of a paragraph, that the reviewer had '*no concerns*' about the treatment provided by BHBH and could see no basis for further review. As submitted by Counsel Assisting, this review '*could have provided precisely no confidence that relevant issues had been properly identified and evaluated'.* I accept the submission that it should never have been relied upon by BHBH or the FWLHD.

254. Prior to Alex's death a group of senior clinicians had expressed ongoing concerns about patient care and clinical governance within the FWLHD. These concerns only increased with the hospital administration's wholly inadequate response to the circumstances of Alex's death. Due to the group's conscientious efforts, by June/July 2018 it had succeeded in escalating these issues to the most senior levels of the NSW Ministry of Health.

255. On 19 July 2018 the Chief Executive Officer of BHBH acknowledged that Alex's death had been misclassified. It was reclassified and a RCA was directed. This was ultimately completed on 21 September 2018 – sadly, for Alex's parents, precisely twelve months after his death.

256. Since that time there have been a number of reviews of BHBH and its corporate governance. The hospital and the FWLHD have responded with positive changes, designed to ensure that clinical incidents receive

appropriate classification and investigation. Other changes have been made with a focus on improving corporate governance and workplace culture at BHBH.

257. Ultimately the circumstances of Alex's death did receive a detailed review in the form of a RCA. However the initial response rightly raised serious concerns about the quality of governance and accountability within the hospital and the FWLHD.

258. It was also the cause of deep distress and hurt for Alex's parents. By downgrading the severity of these tragic events and denying their significance for so long, the response could not appear to John and Narelle as anything but uncaring and has left them feeling '*demoralised*', as John described it at the inquest.

Resourcing issues

259. Witnesses at the inquest gave evidence of their experience of resourcing shortfalls at BHBH. Some expressed the opinion that these had compromised patient care. An example is the evidence of RN Kelly and RN Murphy that the implementation of the Business Rule was detrimental to patient safety.

260. The inquest into the circumstances of Alex's death took place against the background of a much broader inquiry into the adequacy of rural and remote healthcare. I have noted the recent tabling of the NSW Parliamentary Committee's report following its inquiry into access to health services in rural and remote NSW.

261. The Inquiry examined numerous systemic issues affecting the quality of health care for residents of NSW's rural and remote communities.

262. Alex's family and his treating clinicians will have noted the Inquiry's findings that although health professionals in rural, regional and remote areas were strongly committed to improving health outcomes for their patients, they were constrained by severe staff shortages and a critical lack of resources.

263. The report's primary recommendation was that the NSW government urgently engage with the federal government '*to establish a plan to address workforce shortages and review the funding model for regional local health districts'.*

264. Alex's family and health professionals at BHBH will also have noted the Inquiry's finding that there is a lack of transparency and accountability within NSW Health and local health districts, which silences dissent and covers up preventable deaths. This finding may well have resonated with Alex's family and with those clinicians whose efforts finally brought about the conduct of an RCA into his death. The report called for an independent review of workplace culture, as well as the appointment of a Health Administration Ombudsman to

investigate complaints about NSW Health and Local Health District bureaucracies.

265. I hope that the Inquiry's report leads to real and lasting improvements in health care for the people of Broken Hill.

Conclusion

266. On behalf of us all at the Coroners Court I express my sincere sympathy to Alex's family for the loss of their son and brother.

267. I thank the outstanding assistance given to the inquest by Counsel Assisting and the Department of Communities and Justice Legal. I also thank the legal representatives and interested parties for their goodwill and cooperation.

Findings required by s81(1)

268. As a result of considering all of the documentary evidence and the oral evidence heard at the inquest, I am able to confirm that the death occurred and make the following findings in relation to it.

Identity
The person who died is Alex Braes.

Date of death
Alex Braes died on 22 September 2017.

Place of death
Alex Braes died at Royal Prince Alfred Hospital, Camperdown NSW.

Cause of death
The cause of Alex Braes' death was multi organ failure due to sepsis from a Group A streptococcus infection.

Manner of death
Alex Braes died as a result of natural causes.

Recommendations made pursuant to s82

Recommendation 1

That as a matter of urgency, the NSW Ministry of Health and the Department of Health and Wellbeing (SA) continue communication to agree and formalise cross-border arrangements for the transfer of critical care patients from Broken Hill to Adelaide tertiary care facilities, whether in the form of a 'default mechanism' or other formal agreement.

Recommendation 2

That the matter be escalated to the Secretary, NSW Health, if the discussions referred to in Recommendation 1 do not lead to the establishment of formalised arrangements, as envisaged in Recommendation 1, within 12 months from the date of these findings.

I close this inquest.

Magistrate E Ryan
Deputy State Coroner
Lidcombe

30 May 2022**.**