CORONERS ACT, 2003

SOUTH  *AUSTRALIA*

FINDING OF INQUEST

An Inquest taken on behalf of our Sovereign Lady the Queen at Adelaide in the State of South Australia, on the 26th, 28th and 29th days of November 2013, the 2nd day of December 2013 and the 5th day of September 2014, by the Coroner's Court of the said State, constituted of Anthony Ernest Schapel, Deputy State Coroner, into the death of Noah Alexander Edward Harrison.

The said Court finds that Noah Alexander Edward Harrison aged 12 weeks, late of 32 Richardson Road, Elizabeth South, South Australia died at Elizabeth South, South Australia on the 9th day of October 2010 as a result of an unascertained cause. The said Court finds that the circumstances of his death were as follows:

1. Introduction and cause of death

1.1. Noah Alexander Edward Harrison was born on 14 July 2010. He died of an unascertained cause on Saturday, 9 October 2010. He was nearly three months of age.

1.2. Noah had been put to sleep in his pram at around 2am to 2:30am. The following morning he was found by his parents face down in the pram. He was deceased. It is necessary to describe Noah's sleeping arrangements as they existed on the night in question. When he was put to bed he was wearing a baby's grow suit and a body suit under that. He was wrapped in a blanket and placed on his side on top of a pillow within the pram. The pram was situated in the lounge room of the premises. That night Noah's parents slept on a futon in the same room. Noah did not wake up during the night for his usual feed. His father checked on him shortly after 9:45am. He

pulled the blanket off Noah and found that Noah was laying face down into the pillow. Police were called to the scene and made observations of the sleeping arrangements. Although by that time the pram had been moved out of the lounge room, it was indicated to police as being the object in which Noah had been put to bed. Police made the following observations of the pram; a small yellow blanket was placed neatly on the bottom of the pram, a soft pillow with a Spiderman motif pillowcase was on its side towards the left side of the pram, a plastic dummy was on the yellow blanket, a small white blanket which was said to have been used to cover the deceased when he had been put to bed was on the floor in front of the right wheels of the pram.

1.3. A baby's bassinet was located within the master bedroom of the house. The bassinet was photographed by police and it too appears to have had a pillow in it. There was also a cot within the premises. Noah was the only child of his parents and was the only child living within this household. There is no doubt that on the night of his death Noah had been put to sleep in the pram and not in the bassinet nor the cot. The sleeping arrangements of Noah and his parents on that particular evening may be explained by the fact that there was a heater within the room in which they slept.

1.4. A post mortem examination in respect of Noah was conducted by Dr Karen Heath, a forensic pathologist at Forensic Science South Australia. Dr Heath's post mortem report was tendered to the Inquest[1]. Dr Heath reports that having taken all matters into consideration, the cause of Noah's death cannot be ascertained. She reports that there was no natural disease identified at autopsy that could have caused or contributed to Noah's death. Toxicology demonstrated no substances within his peripheral blood. Of particular note, however, is that fact that multiple healing bone fractures were identified both radiologically and anatomically. According to Dr Heath's report, healing fractures were seen at the left 7th rib, proximal left humerus, proximal left tibia and proximal right ulna. Dr Heath states that the overall findings of the fractures bore characteristics of inflicted, that is to say non-accidental, injuries. She reports that the multiple fractures were a marker that the deceased had suffered past inflicted injury. She expressed the view that these findings may or may not be related to Noah's death and that this cannot be determined with any certainty, although the fractures were not fresh fractures and had not been inflicted at the time

[1] Exhibit C2a

of death. Also noted at autopsy were reactive changes within Noah's brain that were consistent with an old subdural haemorrhage. Dr Heath reports that the cause of this old subdural haemorrhage is uncertain.

1.5. However, there can be no doubt that Noah's sleeping arrangements on the occasion in question were inherently dangerous in terms of the possible sudden death of an infant. The intrinsic dangers associated with sleeping arrangements such as Noah's are very well known and understood. In Noah's case they included the fact that he had been placed on his side and not on his back. In addition, he was wrapped in a blanket and was placed on a soft pillow. The fact that Noah was found face down into the pillow within the pram is clearly one relevant matter when one considers the possibility that Noah suffocated. Numerous widely publicised coronial recommendations in the past have referred to all of these elements as giving rise to situations of danger, both in terms of possible death by way of Sudden Infant Death Syndrome (SIDS) or by way of suffocation or asphyxiation. In her report Dr Heath states as follows:

> 'Given the circumstances, it is possible that the death was due to asphyxia related to sleeping position in the pram. In that situation, there may have been obstruction of the external air passages preventing adequate respiration.' [2]

1.6. The circumstances of Noah's death have been examined by a number of independent experts. One of these is Dr Terence Donald who is a paediatric forensic physician at the Women's and Children's Hospital (WCH). Dr Donald's report was tendered to the Inquest[3]. Dr Donald noted the circumstances in which Noah was found deceased. He has also had access to Dr Heath's post mortem report. Specifically, he notes that the autopsy did not reveal any specific cause of death. Dr Donald observes that babies of Noah's age may be able to roll from their side to their front, but not roll back, particularly if wrapped and covered. He states that the propensity to asphyxia may have been heightened by Noah lying face down on a 5cm pillow which was reportedly soft. A registered nurse employed by the Child and Family Health Service (CaHFS), Ms Claire Dowdall, told the Court that sleeping a baby in a pram is not safe practice because of the risk it presents for SIDS, overheating and the baby's head becoming stuck at the top of the pram[4].

[2] Exhibit C2a, page 2
[3] Exhibit C10
[4] Transcript, page 106

1.7. The Court's interpretation of Dr Heath's report is that there is no identifiable cause of death that can be established on a balance of probabilities, that is to say a cause that is more probable than not. Hence the cause of death has been reported as unascertained. Dr Heath refers to a number of possibilities that cannot be excluded, including a non-accidental cause of death, or death due to asphyxia. However, if one were to view the matter completely dispassionately it is difficult to escape the conclusion that out of all the possible competing causes of death, suffocation or asphyxiation due the child's sleeping position is the most likely. That is not to say, however, that it is a cause of death that has been established as being more likely than not. In all of the circumstances the Court is unable to arrive at a cause of death that has been established as being more probable than not. For those reasons the Court finds, in accordance with Dr Heath's findings, that the cause of Noah's death is unascertained.

1.8. I would add here that the inability to establish a cause of death in respect of sudden infant death while sleeping, often referred to as 'cot death', is not an unusual occurrence. There are many reported cases in this jurisdiction in which causes of death in circumstances such as these cannot be ascertained or determined with the necessary degree of certainty.

1.9. In the course of these findings I will deal with certain aspects of Noah's medical history during his short life. However, it should be stated at the outset that neither the bony injuries that have been described nor the existence of a subdural brain haemorrhage were identified during Noah's life. Thus the source of these injuries cannot be determined, other than by saying that the bony injuries are said to have been inflicted by way of trauma that was non-accidental. At the time this Inquest was heard the Court was informed that Noah's parents could not be located. However, Noah's parents did provide witness statements to the police and it is largely on the basis of Noah's father's statement that the immediate circumstances surrounding Noah's death and his sleeping arrangements have been determined.

1.10. The only explanation proffered for any of Noah's bony injuries was provided by his parents. Noah's mother told police[5] that on an occasion when his father was dressing Noah they had heard a clicking sound in his left upper arm area. They stated that Noah had cried at the time, but that they had then thought nothing further of the matter after he stopped crying; and Noah was seen to be able to move his arm freely.

[5] Exhibit C5a

Naturally this explanation could not have accounted for bony injuries other than the one to Noah's left arm.

1.11. However, it was not part of the function of this Inquest to establish the precise means by which Noah's injuries had been sustained, nor to identify any person or persons responsible for those injuries. In the event it has not been necessary for this Court to make any specific findings in relation to the circumstances of the infliction of the bony injuries. Nor does the Court make any finding in relation to the origin of the old subdural haemorrhage that was identified at autopsy. However, the fact of the bony injuries in particular, had they been discovered during Noah's life, would have had other relevance. If they had been identified prior to Noah's death it is possible that Noah would have been placed by the authorities in an environment that would have included sleeping arrangements safer than those that existed on the occasion of his death. It is at least conceivable that greater scrutiny of his home environment including his sleeping arrangements would have taken place at the hands of the appropriate authority. One of the issues that the Court examined during the Inquest is whether there had been reasonable opportunities for the authorities to have discovered Noah's bony injuries and by that means, or by reference to other relevant circumstances that raised issues as to whether Noah was being properly cared for by his parents, to have identified him as a child at risk such that his death might have been prevented.

2. Background

2.1. Noah was the first born of his parents who were both aged 21 at the time of his death.

2.2. The family resided at a house situated at 32 Richardson Road, Elizabeth South. Noah was born at 37 weeks gestation on 14 July 2010 at the Lyell McEwin Hospital (LMHS). Noah's was a natural delivery the sole complication of which was his mother becoming febrile and having to be commenced on antibiotics. On the day after Noah was born his mother discharged both herself and Noah against the advice of the hospital. Noah's neonatal assessment before discharge was normal. His birth weight was 3130gm. In the antenatal period Noah's mother had asked for a referral to a social worker in relation to housing issues. However, several unsuccessful attempts were made to contact her by a LMHS social worker. After Noah's mother left the hospital the family was visited by a CaHFS nurse on the morning of Wednesday,

4 August 2010 at which time Noah was three weeks of age. CaHFS is an arm of the Children, Youth and Women's Health Service which in turn is an arm of SA Health. It is a separate entity from any of those under the umbrella of Families SA. The 4 August 2010 visit by CaHFS was described as a universal contact visit. On this occasion Noah was recorded as weighing 3240gm. A follow-up visit was agreed upon to further assess the child's weight and well being. However, attempts to make a follow-up appointment were not successful. A phone call to arrange a follow-up visit was made to Noah's parents on 11 August 2010 and a message was left. On 13 August 2010 a further phone attempt was made. In this call Noah's mother stated that Noah and his parents were in Geelong in Victoria to attend a funeral. It is recorded in CaHFS notes that Noah's mother agreed to access clinical services to review growth when convenient.

2.3. Thereafter there does not appear to have been any recorded communication between CaHFS and Noah's parents until after Noah's discharge from a four day inpatient admission to the LMHS in September 2010, the details of which I will come to in a moment. A CaHFS worker would see Noah and his parents on two occasions following that hospital admission.

2.4. Noah was also seen at the Elizabeth Medical and Dental Centre on 1 September 2010 and 16 September 2010. The attendance on 1 September 2010 was in respect of a routine 6-8 week check. Nothing of concern was noted at this examination, although his weight was measured as only 3040gm on that occasion[6]. The notes in respect of the attendance on 16 September 2010 record that Noah had been unsettled for a few days and had vomited a few times after his feeds. His temperature was recorded as 36.3ºC. His abdomen was soft with nil tenderness nor organomegaly. The doctor's assessment was that Noah was experiencing cramps and reflux. His parents were advised to arrange for his two month immunisations once he was better.

2.5. Noah's father's statement to police[7] reveals that following the presentation to the general practitioner on 16 September 2010, Noah was taken to the LMHS Emergency Department because he had been vomiting a little bit of blood. Noah's mother's statement reveals that on this occasion Noah had not been well. He had been

[6] Exhibit C19
[7] Exhibit C13a

vomiting up blood, '*a little now and then*'[8]. She states that they took him to the LMHS, although he did not vomit blood during his ensuing four day admission. She states that the LMHS had identified an iron deficiency and that he had been underweight. Aside from what I have described above, little else is known about Noah's progress from the time of his birth until his presentation to the LMHS Emergency Department on 17 September 2010. There was no available evidence of trauma, or of the infliction of traumatic injury, discovered in that timeframe.

3. Noah's presentation to the Lvell McEwin Hospital Emergency Department

3.1. On 17 September 2010, the day after he was last seen by the general practitioner, Noah was brought to the Emergency Department of the LMHS. Noah was described by his parents as having been unwell for four days. He had been vomiting every day after his feeds. That day he had experienced a large vomit with dark blood throughout. At triage it was also noted that Noah was said to have experienced '*a couple of days with dribbling with specks of bright red blood in it*'. The same triage document, timed at 5:32pm, described that the vomit which had contained the dark red blood had occurred an hour previously.

3.2. One matter of concern at presentation was that Noah was perceived as not having thrived since his birth on 14 July 2010. His birth weight had been recorded as 3130gm. His weight on admission to LMHS on 17 September 2010 was 3930gm, which represents a gain of only 800gm since his birth. Noah's mother is recorded as having indicated that she would feed Noah only 125ml of formula every three to four hours. Noah had a temperature of 37.9ºC which is slightly elevated. Lab results revealed a low haemoglobin of 87.

3.3. Noah was seen in the Emergency Department by an emergency consultant, Dr Alistair Murray. Dr Murray prepared an affidavit for the purposes of the Inquest[9] and he also gave oral evidence. Dr Murray was a staff specialist in emergency medicine at LMHS. His initial medical degree was obtained in the College of Surgeons in Ireland. His subsequent specialist degrees were later conferred. He is a Fellow of the Royal College of the Australian College of Emergency Medicine.

[8] Exhibit C5a, page 2
[9] Exhibit C22

3.4. Dr Murray explained to the Court that a person as young as two months can exhibit subtle clinical findings such that Dr Murray would have a very low threshold for admitting the child to hospital. In the event he did admit Noah. Dr Murray told the Court that Noah presented with a raised temperature, heart rate and respiratory rate. The raised temperature of 37.9ºC was an unusual clinical circumstance for a two month old child. A normal temperature would be gauged from 36.5ºC to 37.5ºC. Dr Murray explained that he would pay attention to any temperature that was approaching and exceeding 37.5ºC. The respiratory rate of 40 was at the upper limit of normal. His heart rate was 162 which exceeds the upper limit of normality of 140 beats per minute. Dr Murray noted what had been described as dribbling with specks of bright red blood and the recent vomiting episode involving dark red blood, but he saw no evidence of either. He also noted that the child had been irritable.

3.5. Dr Murray explained that initial strategies would be directed to finding the source of the bleeding and gauging its consequences. The vomiting of blood was an unusual feature in infants and was something that would particularly concern Dr Murray, especially in the context of a raised heart rate and pallor, both of which Noah exhibited.

3.6. Dr Murray could not find any source of bleeding, either by way of examination of Noah's mouth or in respect of any abdominal abnormality.

3.7. Dr Murray's conclusion was that Noah was experiencing an early infective problem. He felt that because of this infection there had been a stress response causing the child to have an irritation of the stomach which had resulted in the vomiting of blood. He did not have an explanation for blood in the child's saliva. He said:

> 'I fully accepted that I did not have a clear explanation of this, however it was - sometimes we try and ascertain the underlying cause for bleeding, but cannot find it. As a result I accepted that that was unexplained and handed over the case to the inpatient team to see if there was anything else that became more apparent as time progressed.' [10]

3.8. As to the possibility of bacterial infection, Dr Murray testified that he had thought it prudent to perform an immediate full blood examination as well as a chest X-ray to look for an infective source within the chest. Dr Murray could not recall whether he reviewed the results in this particular case as once Noah was admitted to the hospital, where he would remain until 21 September 2010, he was placed into the care of other clinicians.

[10] Transcript, page 181

3.9. Although the chest X-ray was undertaken to address a clinical presentation that does not of itself carry implications of trauma, it is said that the X-ray reveals a visible fracture line in the proximal shaft of the left humerus as well as evidence of a fracture to the 7th rib, being two of the bony injuries that would be identified at Noah's post mortem examination. I return to this matter in a moment.

3.10. Dr Murray gave evidence that he did not believe that any radiological investigation would be clinically beneficial in respect of identifying the source of the vomiting of blood. He said:

> 'I have performed a clinical examination and further observation of the child at which point I felt that if there were obvious sources of bleeding that weren't apparent on my initial examination that they can then be further directed from that point of view. An abdominal film has an extraordinarily poor yield in terms of finding the source of bleeding and is a reasonably large dose of radiation for a small child and unless I have clear justifications or reasons for doing it I wouldn't perform a test that I feel is more harmful than helpful.' [11]

In essence, Dr Murray's attitude in respect of the haematemesis was that this would be monitored and if necessary investigated during the course of Noah's admission.

3.11. The only clinical information that Dr Murray provided to the radiologist was that Noah was a '*febrile infant*', meaning that the infant had presented with an elevated temperature. The underlying reasoning behind the provision of that sole piece of information was the need for the X-ray to address and search for underlying infection. Dr Murray would not have regarded it as pertinent to have provided further information about the presenting complaint, including the history of haematemesis, that is vomiting blood. In particular, Dr Murray gave evidence that he would not routinely perform an abdominal X-ray in relation to people with such a history. He did acknowledge that he would take the advice of a radiologist as to the type of images that would be best suited to look for a cause of haematemesis. He did not speak to the radiologist when he ordered the chest X-ray as he would not commonly have direct verbal communication with the radiologist unless advanced diagnostic imaging such as CT scan or ultrasound was indicated.

3.12. In cross-examination, Dr Murray agreed that providing more information to a radiologist would be of assistance, but said that at the time he did not feel that the

[11] Transcript, pages 192-193

information regarding haematemesis was relevant to the radiological task to be undertaken[12].

3.13. When Noah presented to the Emergency Department and was seen by Dr Murray there was no suggestion, nor evidence of, the infliction of any trauma or of any traumatic injury. In addition, Dr Murray did not see any evidence of neglect. No history of trauma, nor of neglect, had been given to him. The chest X-ray that Dr Murray ordered was not ordered with a view to establishing whether there had been any traumatic injury present. Thus any traumatic injury that may have been identified by way of a chest X-ray, or by a wider suite of X-rays, would have been a purely fortuitous revelation.

3.14. In Dr Murray's affidavit[13] he states that if he had reason to suspect that a child had suffered a non-accidental injury he may have ordered a skeletal survey. He said that before so ordering, he would have needed a reasonable indication of such an injury because a skeletal survey exposes children to ionising radiation and ought not be undertaken if not indicated. He added that identified fractures in a child under the age of one year would always raise a concern of non-accidental injury. He states that rib fractures in children are strongly suggestive of non-accidental injury. If Dr Murray had been aware of a fracture in this case he would have made a mandatory notification to the Child Abuse Report Line (CARL). He would then have ensured that the child was admitted to the ward so the facts could be properly established. He would expect the ward inpatient teams to employ a multi-disciplinary approach to investigations and to consult with the WCH where appropriate.

3.15. Dr Claudio Coscia was the radiologist who reported on Noah's chest X-ray. Dr Coscia is a senior visiting radiologist at the LMHS. His original medical qualifications were conferred in Adelaide. His Fellowship of the Royal Australian and New Zealand College of Radiologist was conferred in January 2004. His affidavit was tendered to the Inquest[14]. He indicates in that affidavit that he is not a specialist paediatric radiologist.

3.16. Dr Coscia states that the chest X-ray that had been ordered by the requesting emergency physician, whom we know to be Dr Murray, was ordered in respect of the

[12] Transcript, page 194
[13] Exhibit C22
[14] Exhibit C14

investigation of a 'Febrile neonate'. That was the only piece of information regarding the nature of Noah's presentation that Dr Coscia was provided with. Noah Harrison's presentation involving complaints of haematemesis were not conveyed to Dr Coscia. I accept that evidence. Dr Coscia states that if he had been furnished with that information he would have requested a different suite of images to facilitate better visualisation of potential trauma.

3.17. Dr Coscia explains that the positive findings on his radiological examination were early consolidation in the right upper lobe of one lung which constituted a possible explanation for the child's fever. There was also gaseous distension of the stomach which is often seen in infants due to crying and air swallowing. Since these events Dr Coscia has had occasion to revisit his chest X-ray examination. He is satisfied that his original report is correct. As far as fractures are concerned, including of the left humerus and left 7th rib fracture, Dr Coscia points out that although some skeletal structures are visible on the X-ray, it was not a study tailored for the assessment of fractures. As to the image that is said to demonstrate the left 7th rib fracture, he states as follows:

> 'The left seventh rib on the chest x-ray is obscured. From my experience, I believe the obstruction is by an overlying radio-opaque button clothing on the infant. The rib has not been adequately visualised, but of the visualised portion of the rib, I cannot identify any evidence of a fracture.'[15]

3.18. As to the left humerus he asserts as follows:

> 'The proximal portion of the left humerus is visible but also obscured by the "L" marker on the x-ray. The entire length of the bone is not visible on this x-ray. There is a linear lucency through the medullary cavity of the humerus which is also obscured by the "L" marker . There is no cortical disruption of the humerus and no convincing bony callus formation. Not only is the left humerus obscured and incompletely visualised, it has only been seen in one plane and not two planes to help confirm a fracture. I accept that there may be a humeral fracture visible on this x-ray, however, in the circumstances, including the purpose of the imaging and the quality of the image I could not state with any degree of certainty that there is a humeral fracture visible.' [16]

3.19. Regardless of the purpose of the X-ray, Dr Coscia reports that it is his normal practice to look for any signs of trauma or underlying bone condition. He believes that he would have followed that practice in this case. He adds that if he had detected any fractures on the imagery that he did take, he would have immediately telephoned

[15] Exhibit C14, Paragraph 9
[16] Exhibit C14, Paragraph 10

Noah's treating clinician to discuss his findings. He would have also reported the fact, consistent with the LMHS mandatory reporting protocols.

3.20. The issue concerning Noah's bony injuries has been reviewed by an independent radiologist, Dr Rebecca Linke, who is Clinical Head of Medical Imaging at the WCH. Dr Linke has been a Fellow of the Royal Australasian College of Radiologists since 1997. Dr Linke's curriculum vitae reveals that she has a particular expertise in respect of paediatric radiological imagery. Dr Linke has had at her disposal materials including the post mortem report, the chest X-ray of 17 September 2010 taken on Noah's admission to the LMHS and a plain post mortem X-ray skeletal survey which was performed on 11 October 2010 some three weeks after the LMHS chest X-ray. Dr Linke furnished a report to the Inquest[17].

3.21. Dr Linke confirms that there is radiological evidence within the 17 September 2010 LMHS chest X-ray of the fracture in the proximal shaft of the left humerus as well as that to the left 7th rib, that is to say the X-ray that was examined and reported on by Dr Coscia. She states that these fractures are the same fractures that were identified both during the autopsy performed by the pathologist and within the X-ray skeletal survey also performed post mortem. The other two bony injuries that were discovered post mortem were not depicted within the anatomy shown in the chest X-ray taken at the LMHS.

3.22. In respect of the post mortem X-ray skeletal survey, Dr Linke states that the age of all of the fractures is similar, although the healing fracture to the 7th rib is difficult to age. She reports that none of the fractures would have occurred on the day of death because there is evidence of fracture healing in the form of periosteal new bone formation and sclerosis as demonstrated by the skeletal survey taken post mortem. Dr Linke indicates also that these X-ray changes indicate the fractures to be older than 10 to 14 days of age. She also reports it unlikely that the fractures were a result of birth trauma as the infant was three months of age at the time of death. The pattern of bone injury would be consistent with inflicted injury in her opinion. Dr Linke agrees with the pathologist who performed the autopsy that the fractures should not be considered to be the cause of death, but were a marker that the deceased had suffered past inflicted injury.

[17] Exhibit C11a

3.23. Dr Linke was asked specifically to comment upon the evidence that was revealed by the chest X-ray performed upon Noah's admission on 17 September 2010 at the LMHS. In her opinion the chest X-ray shows a visible fracture line in the proximal shaft of the left humerus and that there is evidence of new bone formation indicative of healing. She refers to the fact that the 'left' chest marker overlies a portion of the proximal left humerus. She also states that the X-ray demonstrates callus formation on the lateral margin of the anterior end of the left 7th rib and also new bone formation in keeping with a healing fracture. She opines that the left humeral fracture demonstrates new bone formation suggesting that this fracture was at least 7 to 10 days of age but not older than 6 to 8 weeks of age at the time the X-ray was taken. Such a fracture, she states, is most likely as having been caused by lifting the infant up by the arm with a twisting or rotational force. As far as the rib injury is concerned she states that the fracture line is not visible on the X-ray but that new bone consistent with healing is visible. She states that this fracture is difficult to age but is greater than 10 to 14 days old at the time the X-ray was taken. She states that a fracture of this kind is a common finding in inflicted injury, usually due to digital pressure during compression of the chest. The finding of only one rib fracture raises the possibility of a direct blow either by hand or blunt object or by being slammed or thrown against a solid surface.

3.24. Dr Linke does not specifically deal with the issue as to whether, in the context of a chest X-ray taken for the purpose of investigating a febrile infant, it was reasonable or not reasonable for a reporting radiologist not to identify, and report in respect of, the two bony abnormalities that in her opinion the chest X-ray revealed. However, she states that if she had been the radiologist and if she had identified the fractures on 17 September 2010, she would have notified a clinician responsible for the infant of her concerns regarding non-accidental or inflicted injury. She would have enquired whether the medical officer was aware of any explanation for those injuries. She would have recommended formal views of the affected areas to confirm the chest X-ray finding as well as a full skeletal survey to examine for other fractures. This would include a CT or MRI examination of the head and a bone scintigraphy scan to examine for subtle bone injury. She would also have notified the child protection officers at the LMHS.

3.25. Dr Linke was also asked to comment upon the existence of evidence consistent with an old subdural haemorrhage as revealed at autopsy. As well as the plain X-ray post mortem skeletal survey, which included X-rays of the skull, a post mortem CT brain examination was performed with 3D reconstruction of the skull vault to assess for intracerebral and cranial injury. Dr Linke reports that there were no skull fractures identified and that density changes within the brain due to cell death precluded subtle abnormalities of the brain parenchyma from being detected. No acute haemorrhage from trauma or skull fracture was identified. There was nothing inconsistent between the pathological findings and the CT findings of no acute haemorrhage. Thus it is that there is no evidence as to the circumstances in which an old subdural haemorrhage in Noah had occurred. There is no suggestion that Noah was demonstrating any clinical impression consistent with an internal head injury at the time he presented on 17 September 2010. Nor is there any suggestion that any imagery of Noah's skull or of its contents should have been obtained on that occasion. There is also no evidence as to what any such investigation might have revealed.

3.26. The report of Dr Terence Donald to whom I have already referred also discusses the chest X-rays undertaken at the LMHS on 17 September 2010. It is apparent from his report that he has conferred with Dr Linke in relation to this aspect of the case. He refers to the opinion that the LMHS X-ray demonstrates a fracture to the anterior part of the 7th rib and the proximal fracture to the left humerus. Dr Donald does not signify any disagreement with the opinions expressed by Dr Linke. He does comment in his own right about the possible origins of these fractures and of the other fractures not revealed by the LMHS radiology. He states that although there are no specific characteristics of any fracture which indicate that they must have resulted from assault, fractures in an infant of Noah's age cannot be caused by the infant to him or herself and that they therefore must raise a suspicion that they have been inflicted. If fractures in infancy remain unexplained then an inflicted cause cannot be dismissed. In his report Dr Donald raises the theoretical possibility that a low serum calcium count might be associated with fragile bones, particularly if low vitamin D was also present. He states that there was no radiological sign of fragile bones. If Noah's bones were fragile then the possibility that the fractures occurred through normal handling rather than assault would need to be considered. However, I understand Dr Donald to be saying that if the fractures had been identified on the chest X-ray in the first instance they would have raised the suspicion of an inflicted injury and that this

would have resulted in a comprehensive history being taken and most likely a skeletal survey and/or transfer to the WCH for a comprehensive forensic assessment of suspicious injury. Dr Jane Edwards, an independent paediatric forensic physician, told the Court that the child's calcium level would be extremely unlikely to have been a relevant factor in respect of the fractures seen in this case. I repeat that the only explanation ever provided by the parents after Noah's death was the clicking injury that could not account for all of the injuries in any event. Such an explanation would not negate the need for notification to the appropriate authority and further investigation.

3.27. Dr Donald does not comment upon whether a failure to identify the two fractures that are said to be demonstrated by the LMHS X-rays should have been picked up by the radiologist and reported on at that time.

3.28. The case was also reviewed by another independent expert, Dr Jane Edwards, who is a paediatric forensic physician. Dr Edwards is a Fellow of the Royal College of Physicians with a specialty in paediatrics. She has been working in the Child Protection Unit of the WCH since 2003 as a consultant paediatrician. Dr Edwards provided a report to the Inquest[18] and gave oral evidence. She told the Court that her work includes assessments of children who have been referred to her Unit with suspicion of maltreatment. In her report Dr Edwards refers to the review by Dr Linke, together with Dr Donald, of the LMHS chest X-ray of 17 September 2010 and the fact that they determined that the fractures to the left proximal humerus and left 7th rib with associated bone healing were visible on that X-ray.

3.29. Dr Edwards' report and her evidence deal with a number of different aspects of Noah's medical management and the circumstances of his death generally. In that report Dr Edwards does not purport to offer any opinion as to whether or not the X-rays do visibly demonstrate the asserted bony injuries, or that if they do, whether it was reasonable or unreasonable for them not to have been detected at the time of the X-ray. However, in her oral evidence before the Court Dr Edwards testified that she herself had reviewed the X-ray images taken at the LMHS on 17 September 2010. Dr Edwards explained that within the Child Protection Unit in which she works it is standard practice always to look directly at relevant X-rays themselves and to personally review and discuss all X-rays with the radiologist. By doing this she and

[18] Exhibit C16

the other paediatricians within the Unit have developed expertise in examining X-rays, particularly those involving injury in young children. She also went on to explain that it was their responsibility to provide a forensic report with all relevant information and to ensure that they are adequately skilled to identify subtle abnormalities and not simply to rely on another clinician to inform as to what X-rays show.

3.30. Dr Edwards was asked to comment upon the X-ray imagery that was taken in respect of Noah on 17 September 2010. Dr Edwards made the relevant point, which I accept, that when she examined the X-rays for the first time she had limited information as to what they were said to depict. She explained that when she was asked to review the case she understood that there had been a rib fracture and bony injuries generally, but had no information that there had been a fracture to the humerus. However, when Dr Edwards examined the X-ray she could see that the left humerus appeared to be abnormal. She could see a fracture line and periosteal new bone formation that was partially obscured by an artificially placed marker. Dr Edwards suggested that although one could not make a definite diagnosis from the imagery, the appearance of this feature would raise concern in relation to a fracture. Dr Edwards suggested that one would regard the appearance of this feature as unusual and that one would therefore request further X-rays.

3.31. As to the 7th rib fracture, Dr Edwards told the Court that when she examined the X-ray she could not confidently identify it. She was aware that such a rib fracture was ultimately identified on the post mortem skeletal survey, but readily acknowledged that she would not have been able to identify the rib fracture from the imagery of 17 September 2010. When asked by me as to whether she could now, in Court, detect any such abnormality within that imagery, she said that she could see what was being referred to, but added that this feature of the child's imagery was partly obscured. She also added that in her experience rib fractures are difficult to identify even for radiologists. Dr Edwards did not go so far as to say that the imagery of 17 September 2010 did not depict a rib injury and she accepted that it was present. To my mind the evidence is clear from other evidentiary sources which I have already described that the imagery does in fact depict an abnormality of the 7th rib.

3.32. I again refer to the affidavit of Dr Coscia, the radiologist who was responsible for obtaining, and who reported on, the imagery on 17 September 2010. Dr Coscia

accepts that there may be a humeral fracture visible on the X-ray but stated that in the circumstances, including the purpose of the imaging and the quality of the image, '*I could not state with any degree of certainty that there is a humeral fracture visible*'. He says in relation to the rib injury that the rib has not been adequately visualised, but of the visualised portion of the rib he could not identify any evidence of a fracture. This is in keeping with Dr Edwards' evidence.

3.33. I have unhesitatingly preferred and accepted the evidence of Dr Linke, a radiologist who has special expertise in paediatric radiological imagery, that the X-ray of 17 September 2010 does demonstrate evidence of injuries to the left humerus and to the 7th rib, but to my mind the evidence has not demonstrated that there was anything unreasonable or lacking in due rigour about Dr Coscia's assessment of the X-ray. It is difficult to be critical of Dr Coscia. He was not asked to examine the bony structures that were visible in the X-ray. It will be remembered that his investigation was limited to an inquiry into infant febrility and nothing else. As well, in relation to the rib injury specifically, depending upon one's expertise and experience, clearly reasonable minds might differ as to whether anything of significance is revealed by the X-ray, especially when one is not looking for any abnormality. As to the humeral injury, I also take into account the fact that the abnormality was partially obscured by an artificially placed marker, and in any case, in the context of Dr Coscia's specific radiological investigation, the infant's left arm could have had no relevance whatsoever. Nevertheless, in light of the course of events that probably would have been taken if either or both of the factures had been identified, the fact that the fractures were not identified when they could have been represents something of a missed opportunity for Noah to have received a level of care that might have seen his circumstances change and the course of his life materially alter. The lesson to be taken from this is that radiologists should routinely take the opportunity to check radiological and other imagery of infants to identify evidence of trauma. This is not to say that in all cases they would need to perform extraordinary examinations that are not clinically indicated, but it seems to the Court that if the opportunity to identify possible injury presents itself in the normal course of events, it should be taken.

3.34. As to the question whether further imagery should have been obtained on 17 September 2010 based upon Noah's overall presentation, including an episode of vomiting blood, Dr Edwards suggested in her evidence that aside from observation of

the patient and palpation of the stomach for tenderness, X-rays can be undertaken in respect of the abdomen to ascertain whether there is any free air in the event that there had been a perforation of the stomach. As indicated earlier, Dr Coscia himself suggested that if he had been informed of haematemesis he would have requested a different suite of images to facilitate better visualisation of potential trauma. The point here is that if further X-ray imagery had been ordered, the other bony injuries may incidentally have been identified.

3.35. Specifically, Dr Edwards suggested that given the history of vomiting blood as well as of blood in the saliva, Dr Murray could have considered requesting a lateral neck X-ray and also an abdominal X-ray in order to address concern as to the possible existence of an injury to the upper airway or as to gastritis or a perforation of the stomach. However, she added this:

> 'Often with an emergency department though, they will do what seems to be the most urgent investigations and then refer on to the - if the child is being admitted which this child would be, given that they were considered to be febrile, they would have - there is some expectation that further investigations will happen then and it may be that he decided that it would be important to wait to see if those symptoms persisted before organising further investigations with regards to them.' [19]

This in fact summarises the approach that Dr Murray says he adopted. In the Court's view it is difficult to suggest that this approach had been unreasonable.

3.36. It is as well to record the Court's view that whenever infants are presented to an Emergency Department for evaluation, that in any radiological study that is undertaken the radiographers and radiologists should be fully informed as to all facets of the child's presentation.

3.37. Finally on the subject on Noah's LMHS admission, I have already referred to the fact that on examination and admission he weighed 3930gm which was underweight. He was described as '*scrawny*' and pale. During the course of this admission a number of issues surrounding Noah's parenting were identified that included the nursing staff noting that Noah's feeding bottles, as provided by his mother, were not adequately cleaned. In addition, nursing staff reported to medical staff that Noah had not been bathed for a week. On 21 September 2010 a note was made that Noah's mother had refused to see a social worker. There was also the question of Noah's inadequate

[19] Transcript, page 36

feeding frequency that had been described by his mother as 125ml of formula every 4 hours which is a daily total of 750ml. Noah's formula intake and feeding frequency during the course of his admission at LMHS was significantly greater. While in hospital he was generally taking three-hourly feeds at volumes of at least 150ml. At his discharge he weighed 4250gm which is a significant increase in weight as well as representing a significant increase in his rate of putting on weight. There did not appear to have been any difficulty in getting Noah to feed during the course of his admission. All this tended to suggest that prior to Noah's admission to the LMHS he had not been adequately fed but that the inadequacy had little to do with Noah's own ability to feed. Noah was considered to possibly have gastro-oesophageal reflux and was commenced on formula with added rice cereal as a thickener. Noah was also commenced on iron supplements with regards to his anaemia.

3.38. During Noah's admission, no evidence of vomiting blood nor blood in his spittle was detected.

3.39. Noah was discharged on 21 September 2010. On that day staff at LMHS contacted CaHFS about their concerns in respect of Noah's modest weight gains prior to his admission and also in addition to his parents' parenting abilities. Thereafter, as indicated earlier, staff of CaHFS made two home visits.

3.40. Before leaving the subject of Noah's admission to the LMHS I should describe the detailed evidence that was provided to the Court as to the appropriate courses of action when a hospital identifies a child with suspicious injury. The report of Dr Jane Edwards deals with this subject. Dr Edwards described the functions of Child Protection Services (CPS) situated at the WCH. CPS accepts direct referrals from Families SA or police after the person who first developed the suspicion with regards to a child's injury has made a notification to Families SA via CARL. According to Dr Edwards, consultation with CPS with regards to incidental findings of fractures in infants undergoing X-rays for other reasons would occur a number of times each year. In the type of circumstance described here a CPS paediatrician would endeavour to view the X-rays themselves. If unable to do so, attempts would have been made for a paediatric radiologist to review the X-rays to ensure that the incidental finding was in fact a fracture before proceeding to recommend notification. The consulting doctor would have been asked if they had informed the parent of the injury and had sought an explanation from them. Dr Edwards states that in this situation if CPS had been

informed that an eight week old infant had a healing fracture of an arm and a rib, CPS would undoubtedly have supported the referring doctor's suspicion and have recommended that a notification be made to CARL. Additional information regarding the child's inadequate growth and his presentation to LMHS with blood in the saliva, suggesting a possible oral injury, would also have been of concern and would have been taken into consideration. According to Dr Edwards it would then be expected that Families SA would have rated the notification as a Tier 1 urgent response due to the young age of the infant and the seriousness of the injuries. Thereafter Families SA would speak to the parents and advise them that the child needed to be transferred to WCH for forensic medical assessment. The child would have been admitted. A forensic medical assessment would then have occurred as soon as reasonably practicable. This would have included a whole body bone scan, a skeletal survey, blood screening for metabolic bone conditions and cranial imaging. At the conclusion of the assessment it is very likely that the four healing fractures would have been identified as the advanced degree of healing present at pos-mortem suggested that they would all have been visible on X-ray after 17 September 2010 when the forensic medical investigations would have been conducted. The dramatic improvement in weight gain in hospital when fed with normal infant formula would have confirmed the cause of Noah's poor growth since birth had been due to inadequate caloric intake.

3.41. The child is generally not removed from the parents' care during the investigation process unless serious safety concerns are identified, but the parents usually undertake not to remove the child from the hospital during the forensic assessment process. Throughout this assessment Families SA and SAPOL are informed of progress and results. If the final forensic medical opinion was such that Noah's fractures were likely to have been inflicted and there was no underlying predisposition to bone fracturing from lesser force, Families SA would then have had the responsibility to ensure Noah's safety on discharge and inform CPS into whose care he should be discharged.

3.42. In her oral evidence Dr Edwards expanded upon the processes that were and are in place that may have been triggered by an investigation into Noah's injuries. Dr Edwards firstly opined that the explanation that had been provided by Noah's parents in terms of hearing a clicking sound when the baby was handled would not be an explanation that would negate the need for notification. Normal handling of a baby

does not cause fractures. Dr Edwards stated that where explanations that could not have accounted for injuries are proffered, the investigations that she described in her report would have been undertaken. In Noah's case a skeletal survey would have revealed all of the fractures and a conclusion would have been available that all of them would have required separate applications of force and have not originated from a single mechanism of injury[20]. Counsel assisting the Court asked Dr Edwards whether in all of the circumstances Noah would have been removed from his parents' care had the investigations that she described been carried out. She stated that if in their opinion the child had been assaulted, it is most likely the child would have been '*placed elsewhere*' and that could either be done voluntarily or, if not, the child would be the subject of an order and would be removed for a period of time firstly to investigate the case and then to make a decision about whether the child is safe to return to the parents' care. If that determination could not be made then a guardianship order for a period of 12 months or longer could be sought. She said:

> 'But I think I would have expected in having had similar children that a child like this if we'd come to the conclusion of our medical and thought that his child had inflicted injuries that they wouldn't return to the parents' care on discharge.' [21]

Dr Edwards also explained that if a child was ultimately placed other than with his or her parents, her belief was that the Families SA workers have to ensure that the child's sleeping arrangements are safe, wherever they are placed[22].

3.43. I received into evidence the statement of Mr Tim Baker[23]. Mr Baker is a Manager of the Families SA call centre. His statement deals with Families SA procedures following a notification. Mr Baker asserts that if Families SA were to have received information from the LMHS that X-rays demonstrated fractures of the left humerus and 7th left rib in an infant, the information would have been screened in as either '*unexplained injury*' or '*alleged serious inflicted injury*'. Mr Baker confirms that this would have enlivened a Tier 1 response. A Strategy Discussion would then have ensued between Families SA, SAPOL and WCH CPS to determine how to proceed with the Child Protection Investigation. Mr Baker described an investigation that was similar to that described by Dr Edwards. Safety measures while the baby was in the WCH would have depended upon the outcomes of the interviews with parents and the

[20] Transcript, page 54
[21] Transcript, page 56
[22] Transcript, page 58
[23] Exhibit C15

credibility of their accounts. Mr Baker asserts that given the severity of the reported injuries, the parents most likely would have been refused access to the child whilst this was taking place. He asserts that the Families SA role would be to ensure the ongoing safety of the child and that this may involve alternative accommodation and care until all investigations were concluded and outcomes known.

4. The involvement of CaHFS

4.1. As stated earlier, CaHFS had conducted a universal home visit on 4 August 2010. The visit was conducted by a nurse. It was a three week check which was essentially normal. A follow-up appointment did not take place as his parents went interstate.

4.2. On the day after Noah's discharge from the LMHS on 21 September 2010, his family was visited by a CaHFS nurse. The visit took place at their home. This visit was conducted by Ms Catherine Hewett who is a registered clinical nurse employed by CaHFS at their Elizabeth and Munno Para offices. Ms Hewett gave evidence in the Inquest. She described the service that is provided by CaHFS in these circumstances. Ms Hewett explained that all families are offered this service. One of the purposes of a home visit is to assess the living environment that the newborn child is in, the social circumstances of the mother and whether the baby is a well settled and well nourished baby. The baby is weighed. Also included in an assessment are observations of the behaviour of the mother, of the parenting style and the mother's 'attribution' to the baby which is a reference to an assessment of the mother's relationship to the baby in terms of whether it is a nurturing relationship, whether the mother appears to enjoy new motherhood and whether the mother has a positive attachment to the baby. This is assessed by asking questions of the mother and by observing the quality of the interaction between mother and baby.

4.3. As to the home environment, observations are made as to the cleanliness of the house, the presence of animals and feeding habits including cleanliness of bottles. Also included are observations of the baby's sleeping arrangements, including whether the baby sleeps in a bassinet, the room it sleeps in and whether there are general safe sleeping practices employed within the house. Unless a baby is asleep at the time of arrival, the assessing nurses need to rely heavily on the parents' verbal description of the sleeping arrangements. If the arrangement raises a concern, discussion with the mother is entered into, including an enquiry as to whether the parents have been given

information as to safe sleeping practices and whether or not they have had access to the various items of literature in relation to safe sleeping. In fact Ms Hewett stated to the Court that she would explain to the parent that she has an obligation to ensure that the parents has an understanding of safe sleep environments and that this is an imperative for the safety of the baby. If she entertained any concerns as to the baby's safety, she would report her concerns to Families SA using CARL.

4.4. Other triggers that might also give rise to a CARL report would include obvious trauma to the baby, vomiting of blood, large reductions in weight and a failure to adequately feed the child.

4.5. It was the practice of Ms Hewett to make notes in relation to her visits and of the observations made.

4.6. Before dealing with the home visits following Noah's discharge from the LMHS, it is as well to say something more of the original universal contact visit that had occurred on 4 August 2010 when Noah was three weeks of age. On that occasion a proforma questionnaire had been completed by the visiting registered nurse which had covered various aspects of the lifestyle of the parents and of their respective backgrounds. As well, notations were made within the CaHFS progress notes that were started in relation to Noah by the same nurse. A third document that is a '1-4 week health check' was also completed by the registered nurse. In the questionnaire it is recorded that Noah's mother gave affirmative responses to questions as to whether she had experienced anxiety and depression in the past. In addition, a question couched in terms of whether Noah's mother had felt cared for as a child elicited the response *'not really'*. The same document, however, indicated negative responses to whether anything in the nature of anxiety or depression had been experienced for at least 2 weeks in the past 12 months. Negative responses were also furnished in respect of questions related to drug and alcohol use. Within the '1-4 week health check' there is a notation that at this time the baby was being fed 120ml on four occasions within 24 hours without further comment as to whether this was an appropriate rate of sustenance at that time. There is no specific reference in this document to the baby's sleeping arrangements other than that the boxes under 'Topics discussed: '*SIDS*' and '*Safe Sleep Environment*'' have been ticked. It would be far more preferable if discussion on topics such as SIDS and a newborn's sleeping environment, and the details of the actual sleeping environment as it exists at the time of the visit, are

described in detail, at least within the progress notes. In Noah's case there is no reference within the progress notes to any sleeping issues except in respect of a vague plan to discuss strategies to promote day-night pattern.

4.7. As indicated earlier, further attempts by CaHFS in August 2010 to engage the family were unsuccessful. It appears that CaHFS further involvement with the family only arose as a result of concerns entertained by LMHS staff during Noah's admission there between 17 and 21 September 2010.

4.8. As to the home visit of 22 September 2010, Ms Hewett had originally attempted to arrange a home or clinic visit in the week after that date, but then decided that matters concerning Noah needed to be addressed sooner so as to enable her to identify and set in place strategies for what needed to be done in relation to the child, particularly in respect of the baby's weight with a view to monitoring improvement over the ensuing week. Accordingly, she attended Noah's parents' home on the afternoon of 22 September 2010. The salient features of this visit are that Noah's mother indicated that Noah was hard to settle and that she herself was feeling stressed and at times not enjoying having Noah. Ms Hewett noted in the progress notes that the mother indicated that she was not sure that she wanted Noah. Ms Hewett would later record in a case review record[24] that Noah's mother had a '*poor maternal attribute*', in addition to which she recorded that the baby cried a lot and that this distressed the mother.

4.9. As to Noah's physical condition on 22 September 2010, it was noted by Ms Hewett that Noah's weight gain was slow and that Noah's mother explained that Noah would only take 120ml of formula every three to four hours. Ms Hewett recognised that two to three month old babies should consume about 180ml three to four-hourly. Ms Hewett told the Court that during this visit she herself had no apparent difficulty feeding the baby 175ml of formula. Ms Hewett did not have access to any material from the LMHS that had suggested that there had been no difficulty feeding Noah at an acceptable rate during his four day admission there. If that information had been at hand, a strong inference may have been available that as of 22 September 2010 the mother's parenting skills were still questionable and that little had been learnt by her since the last CaHFS visit, and indeed during Noah's hospital admission, about what he truly required by way of sustenance and what quantities he could tolerate.

[24] Exhibit C20, page 32

4.10. As to the question of Noah's sleeping environment, Ms Hewett made no note of this either in the progress notes nor in her case review record. Therefore there are no independent means to enable this Court to evaluate what Noah's sleeping environment was at the time other than from what Ms Hewett told the Court from her unaided recollection. She told the Court that she saw a bassinet within the house, but did not see a cot or the pram. I do not believe that Ms Hewett actually witnessed the child sleeping within the bassinet on that occasion. It will be remembered that when the police attended on the morning of Noah's death there was a pillow in the bassinet, although the child had reportedly been sleeping in the pram when he died. Ms Hewett told the Court that if a pillow had been in the bassinet on the occasion when she visited this home, she would have noticed this and it would have concerned her having regard to the fact that a soft pillow would be an unsuitable surface for an infant of this age to sleep on. Ms Hewett told the Court that in her assessment there had been nothing frightening or unsettling about the sleeping environment within the bassinet. If there had been any such concern she would have documented that. In light of the fact that no record was kept of any of this, I am uncertain as to the absolute reliability of Ms Hewett's evidence about Noah's sleeping environment.

4.11. Ms Hewett told the Court that the statement made by the mother that she was not sure that she wanted the baby raised concerns only to the extent that it identified a need on Ms Hewett's part to invite the mother to engage with other available services. The statement did not of itself raise the same alarm bells, as it were, that a mother speaking aggressively about or towards a baby might have raised. Had any concerns about the mother's attitude towards the baby been significantly raised in her mind, Ms Hewett said that she would have reported the matter to Families SA.

4.12. At the 22 September 2010 visit Ms Hewett did raise with Noah's mother the question of engaging other services including the Family Home Visiting program and the Kids 'N' You program. The Family Home Visiting program involved a two year program in which a nurse is allocated to the family and where home visits are set at various intervals depending upon the age of the baby. The Kids 'N' You program involved families that were not suitable for the Family Home Visiting program but catered for cases where the family's difficulties were much more profound and complex and which required more intensive follow-up. Ms Hewett told the Court that the concerns that she did entertain about this family caused her to lean in the direction of

recommending the Family Home Visiting program. Those concerns were the mother's general difficulties with parenting, the baby not feeding well, the baby not settling well, the need for the baby to have been admitted to the LMHS, the nutrition practices reflecting parenting that was not ideal and the fact his mother was not enjoying having her baby. Ms Hewett noted that Noah's mother wanted to think about engaging those programs before providing any definite response.

4.13. The subsequent case review conducted by Ms Hewett, which as I understood would have involved interaction with other staff members of CaHFS, required the compilation of the case review record to which I have already referred. It is evident from this document that Ms Hewett did give some consideration even at this stage to the possible intervention of Families SA. But she recorded:

> 'FSA: no intervention at this stage.'

The case review also recorded that Noah's mother felt that she needed support to manage Noah and that she was aware of the Family Home Visiting and Kids 'N' You programs. Ms Hewett specifically noted that the family was currently receiving home visits '*due to history of not attending clinic when given an appointment*'. I am not certain what this notation specifically refers to except that it is a possible reference to the difficulties encountered by CaHFS in engaging the family in the period immediately following the universal contact visit on 4 August 2010. In any event the note appears to be a reference to a demonstrated general reluctance on the part of this family to engage with CaHFS. The plan formulated within the case review was to follow-up the family with the preferred option of the Family Home Visiting program which the mother wanted time to think about and to obtain an answer from her at the next visit on 28 September 2010.

4.14. Ms Hewett conducted that further home visit six days later on 28 September 2010. The salient feature of this visit was that Noah had gained 290gm in weight in that six day period. It was also noted that the baby would take approximately 180ml at most feeds. Naturally the weight gain was a welcome development.

4.15. When asked in her evidence about any observations made of the sleeping arrangements for Noah on this occasion, Ms Hewett said that she could see that the baby was sleeping in the bassinet and that there was nothing to indicate any concern about those arrangements. Again, if she had identified any such concern she would

have made a note of it. There is no notation in the progress notes relative to this home visit about the baby's sleeping environment at the time of the visit. At this visit there was nothing else about the baby that alarmed Ms Hewett.

4.16. In her evidence Ms Hewett acknowledged that on this occasion she did not ask any questions of Noah's mother about her attitude towards Noah and whether she wanted him[25]. However, Noah's mother indicated that she was not prepared to participate in either of the parenting support programs that had been discussed on the last occasion, namely Family Home Visiting and Kids 'N' You programs. She did indicate that she would be prepared to attend at the clinic as required. Somewhat surprisingly Ms Hewett told the Court that she herself was satisfied with that choice for a number of reasons. She argued that CaHFS was not a mandatory service that could compel participation in any of these programs, and there was the indication that Noah's mother would attend the clinic when required which meant that CaHFS still would have some contact thereby enabling them to monitor the safety of the baby as well as the mother's health. Ms Hewett was also reassured by the fact that the baby had gained nearly 300gm in one week. In short, to Ms Hewett there was nothing '*alarming about the mother's presentation to me*'[26]. Ms Hewett did not believe that the child was at risk and that the mother's situation was a '*fair way short*' of the need to make any notification to Families SA. She said:

> '… so there was no indicators, there was no physical indications, there was no mother's behavioural indications, there's no environment indications, the sleeping arrangements looked all right, as I said the weight was fine and there was an indicator to me that the mother was actually doing a lot better because this baby had put on quite a bit of weight in the week … ' [27]

4.17. In the event this visit would be the final interaction between CaHFS and Noah and his mother. There is one matter that troubled the Court about this. Although Noah's mother indicated that she would be prepared to attend the CaFHS clinic, no appointment was scheduled for this to occur until 12 October 2010. It will be remembered that Noah died on 9 October 2010.

4.18. Ms Hewett told the Court that Noah's mother's refusal to participate in the programs to which I have referred did not cause her to believe that this meant the end of CaHFS involvement with that family. She regarded the further contact that would be

[25] Transcript, page 154
[26] Transcript, page 143
[27] Transcript, pages 143-144

provided by attendance at the clinic as a kind of bridge to possible further involvement in the Family Home Visiting program. However, Ms Hewett acknowledged that she did not take Noah back to a case review. Her reason for not doing that was her belief that Noah's mother would follow up with a service. She acknowledged that this was based on an assumption that Noah's mother would attend at the clinic. From an objective point of view reliance on Noah's mother to do that may have been somewhat naïvely misplaced, having regard to a history of reluctance to engage with the service. When asked by me as to why she did not make an appointment earlier than 12 October 2010, Ms Hewett said:

> 'Because the weight gain was really good and for a baby of that age it's understandable, it's appropriate practice to just give them a week to get the nice weight gain at least 150 round about 200, 230 to watch those weight gains and the weight gains had been good. So I felt that there was not a great deal to be achieved by seeing that mother on any more regular - plus, also I wanted the mother to feel confident that we weren't standing over her or that she was being given an opportunity to do the best for the baby, take on board what was said to her and to be able to do things so that we didn't have to report to Families SA.' [28]

Ms Hewett did say that if the mother had not attended the clinic her practice would have been to report the family to Families SA[29]. That being the case, the wisdom of hindsight would suggest that it would have been better if Noah's mother stated resolve to engage with the service had been tested sooner rather than later so that the necessary steps to involve Families SA could have been taken sooner than later.

4.19. In her report Dr Edwards comments upon the response of CaHFS. Dr Edwards firstly commented upon Noah's mother's statement that she was not sure that she wanted Noah. Dr Edwards suggests that further exploration of this issue should have been undertaken and documented. Dr Edwards regarded such a comment as highly concerning, especially having regard also to the existing concerns about Noah not being fed adequately. Dr Edwards also comments in her report about the apparent lack of detailed psychosocial assessment, meaning that a full appreciation of the issues for Noah's family was not gained, a necessary issue to be considered when meaningful decisions about the appropriateness and urgency of referrals needed to be taken. Dr Edwards also commented adversely upon a lack of any indication that Noah's mother's concerning comments about not wanting Noah as made on 22

[28] Transcript, page 168
[29] Transcript, page 165

September 2010 were not revisited in the course of the further visit on 28 September 2010.

4.20. In her oral evidence before the Court Dr Edwards expanded upon her views. She repeated that Noah's mother's statement about not enjoying having Noah and not being sure that she wanted him was, in her view, highly concerning and rendered it self-evident that the mother was feeling overwhelmed by the situation, establishing a '*significant need for fairly urgent intervention I would have thought*'[30]. As to the offer of the Family Home Visiting and the Kids 'N' You programs participation, Dr Edwards was of the view that these services were not going to address the immediate concern and she believed that a more detailed psychosocial assessment ought to have directed the urgency of the appropriate response. Dr Edwards stated that if the mother's comments had been genuine and were not flippantly made '*off the cuff*'[31], an assessment of Noah's mother's mental health was a priority and should have taken place before referral to any other services. This was because none of those services were going to be specific enough to address that issue and would not have occurred for a few weeks in any event. More immediate and urgent intervention was in her view required and this could, in those circumstances, have consisted of arranging an appointment with the mother's general practitioner and having a healthcare plan established.

4.21. As to the second visit of 28 September 2010, Dr Edwards acknowledged that Noah's weight gain had been a positive sign. However, it was of concern that Noah's mother had declined to participate in either of the services that had been offered. While acknowledging that if a mother refused services that there was little that CaHFS might be able to do to enforce engagement, Dr Edwards believed that there were many other things that could be undertaken to improve engagement.

4.22. In his report Dr Donald also commented upon the CaHFS involvement. He also regarded the mother's statements about not enjoying having Noah and not being sure that she wanted him as concerning. He went so far as to say that such expressions by mothers, evidencing as they might a failure to manage young infants adequately, are extremely serious.

4.23. I have accepted the evidence of both Dr Edwards and Dr Donald in relation to the quality of CaFHS' involvement.

[30] Transcript, page 70
[31] Transcript, page 71

5. Conclusions

5.1. Noah was nearly three months of age when he died during the morning of Saturday, 9 October 2010. It appears that Noah died in his sleep. The cause of Noah's death was unascertained. However, the circumstances of his sleeping environment carried an intrinsic risk of sudden unexplained infant death. The possibility that Noah suffocated or asphyxiated has not been excluded.

5.2. On 17 September 2010 Noah was brought to the LMHS Emergency Department with reported blood in his spittle and haematemesis. Noah was admitted to the hospital where he remained until his discharge on 21 September 2010. No evidence of blood in his saliva nor haematemesis was detected in that four day period. No evidence of previous trauma was detected during that period. When Noah presented at the Emergency Department on 17 September 2010 he was underweight and it appeared that he was not being fed sufficiently. Noah was also febrile which resulted in the emergency physician, Dr Murray, ordering a chest X-ray to identify possible infection. The chest X-ray demonstrated some evidence of an injury to the 7th rib as well as to the left humerus. These injuries were not recognised at the time the X-ray was examined and reported on by Dr Coscia. The only information Dr Coscia was given in respect of Noah's clinical presentation was that he was a febrile infant. Dr Coscia had no particular reason to examine the radiological imagery of Noah's skeleton as revealed by the chest X-ray and in particular had no specific reason to examine a limb or limbs of Noah as revealed in the X-ray. Dr Coscia did not recognise any bony injury either in the ribcage of Noah or in his limbs as revealed within the X-ray. I have found that in all of the circumstances it cannot be said that Dr Coscia's failure to recognise the bony injuries was unreasonable.

5.3. Dr Murray, the emergency physician, was the practitioner who admitted Noah to the LMHS. He did not believe that any further X-ray other than a chest X-ray was clinically indicated. He believed in effect that Noah's reported blood in his saliva and haematemesis would be monitored during the course of his admission. In all of the circumstances the Court is unable to find that this clinical approach was unreasonable.

5.4. However, it would have been better if Dr Murray, when requesting the X-ray of Noah, had informed those who would carry out the X-ray of Noah's complete clinical

presentation, including the reported blood in saliva and haematemesis. I accept Dr Coscia's evidence that he would have arranged for a different set of radiological images. Whether these further radiological suites would have revealed either of the other two bony injuries that were located post-mortem cannot be said with certainty.

5.5. However, if the injuries as revealed by the chest X-ray had been recognised at the time, it is more likely than not that Noah would, among other things, have been subjected to a skeletal survey whereby the totality of Noah's bony injuries, including that to his 7th rib, that to his humerus and the other injuries to the proximal ulna and proximal left tibia that would be revealed post-mortem, would have been discovered.

5.6. I find that if the two bony injuries revealed in the chest X-ray had been recognised, either with or without a further suite of X-rays taken in the course of a wider investigation than simply to identify the source of infant febrility, it is more probable than not that a notification would have been made to CARL. This is especially so also taking into consideration the child's inadequate growth and his presentation to the LMHS with blood in the saliva suggesting a possible earlier oral injury.

5.7. I further find that had a notification been made to CARL in respect of Noah, it is likely that Families SA would have been under a duty to rate the notification as a Tier 1 requiring an urgent response within 24 hours. This would probably have resulted in an approach by Families SA to the family and admission to WCH for a forensic medical assessment.

5.8. I find that if the final forensic medical opinion was such that Noah's fractures were likely to have been inflicted, and that there was no underlying predisposition to bone fracturing from lesser force, Families SA would have been under a duty to ensure Noah's safety on discharge. To my mind such a duty would have encompassed a proper assessment of Noah's sleeping environment.

5.9. It is difficult to determine with complete certainty whether or not Noah would have been removed from the care of his parents. This would have depended upon an investigation of the circumstances in which Noah came to receive the bony injuries and whether any culpability, or possible culpability, on the part of Noah's parents had been identified.

5.10. As to the involvement of CaHFS, I find that there is no evidence that any employee of CaHFS was aware of any suggestion of abuse of Noah by his parents. I do find that it was known in CaHFS that Noah had been provided with inadequate sustenance up to his admission to LMHS on 17 September 2010. It was also known in CaHFS that Noah's mother had expressed significant misgivings about her status of motherhood and in particular whether in reality she wanted Noah.

5.11. There is no evidence that CaHFS knew, or should have known, of any sleeping arrangements in respect of Noah that gave rise to a risk of sudden infant death whilst sleeping. I have regard to the fact that even if safe sleeping environment had been identified on any or all of the CaFHS home visits, that such an environment might change. However, it is to be observed that CaHFS workers made inadequate notations of observations made in respect of Noah's sleeping arrangements and so it is difficult to be certain as to the thoroughness of any investigation of Noah's habitual sleeping arrangements. There was also inadequate notation made of the nature of any advice that was given to Noah's parents as to safe sleeping of an infant. What I do accept is that CaHFS was of the belief that Noah was being put to bed in a bassinet. There is no evidence to suggest that it should have been specifically foreseen that Noah's parents would put Noah to sleep in a pram, an environment that had intrinsic dangers of sudden infant death while sleeping.

5.12. However, the Court finds that there could have been greater concern entertained in relation to Noah's circumstances having regard to his history of inadequate nutrition, his presentation at the LMHS and in light of his mother's statements that she was not sure whether she wanted Noah. The Court is of the view that, even in the absence of any information that Noah had suffered bodily injury, Noah's circumstances warranted particularly close scrutiny from CaFHS. The Court is of the view that undue reassurance was placed on the fact that between 22 September 2010 and 28 September 2010 Noah had gained just under 300gm in weight. In addition, an appointment to see Noah and his mother at the CaHFS' clinic scheduled for 12 October 2010 involved too long an interval between the last occasion on which Noah was seen on 28 September 2010 and the date of that appointment.

6. Recommendations

6.1. Pursuant to Section 25(2) of the Coroners Act 2003 I am empowered to make recommendations that in the opinion of the Court might prevent, or reduce the likelihood of, a recurrence of an event similar to the event that was the subject of the Inquest.

6.2. Tendered to the Court is the affidavit of Ms Kerrie Bowering who is the Director of CaFHS. Annexed to the affidavit are a number of documents that deal with CaFHS practices in respect of infant and family care. One of those documents is the CaFHS 'Universal Contact Visit Guidelines', said to have been promulgated in September 2010, the month before which Noah died. This document refers to the Edinburgh Postnatal Depression Scale as well as the Postnatal Risk Questionnaire, both of which I understand are routinely administered to the mother as part of a universal home visit. I did not understand either to have been administered in this particular case. The document also makes reference to the provision of information to parents about SIDS and a safe sleep environment, and states that "Nurses will offer to observe the sleep environment of the infant". I daresay the use of the word "offer" is in recognition of the fact that a family cannot be compelled by CaFHS to disclose the infant's sleeping environment as CaFHS is a voluntary service. I would only add that the "offer' contemplated by this document should be a strongly worded one and that if any such offer is declined it should normally generate well documented concern.

7. The Court makes the following recommendations directed to the Minister for Health and the Director of the Child and Family Health Service.

1) In respect of presentations of infants at Emergency Departments of public hospitals, and where X-rays or other imagery is indicated as part of a diagnostic exercise, that radiographers and radiologists be provided with a complete clinical picture in respect of the infant's presentation;

2) Regardless of infant's stated clinical presentation, radiologists should routinely examine imagery for the presence of bony injuries;

3) That the practices described in recommendations 1) and 2) be regarded as even more essential where, as part of the infant's presentation, there is a history of the infant failing to thrive as evidenced by poor weight gain since birth or where

there are other negative sociological factors associated with the infant's parenting;

4) That as part of any CaFHS home visit assessment of an infant's circumstances, CaFHS nurses and other workers should thoroughly investigate and document the sleeping environment of an infant within the infant's home and that such investigation and documentation should take place on each and every home visit. Where possible, photographic evidence should be obtained in relation to the sleeping environment. Refusals on the part of parents to allow the sleeping environment to be viewed should be documented and should in the normal course generate concern. Naturally, robust efforts should be made to correct any infant sleeping practice that is intrinsically dangerous and/or presents risk of sudden infant death while sleeping;

5) That as part of any CaFHS home visit assessment of an infant's circumstances, CaFHS nurses and other workers should educate and advise parents in respect of a proper and safe sleeping environment for an infant and that the nurse or other worker should document, in detail, the nature of any such education and advice;

6) That as part of any CaFHS home visit assessment of an infant's circumstances, the provision of education and advice in respect of a proper and safe sleeping environment for an infant should be regarded as a matter of primary importance;

7) That as part of any CaFHS home visit assessment of an infant's circumstances, CaFHS nurses and other workers should give appropriate consideration as to whether or not a parent or parents of an infant might require assessment or care in relation to the mental health of that parent or parents and to recommend the appropriate services that might provide the same. If such services are refused, the nurse or other worker should document such refusal and the reasons given, if any, for such refusal;

8) That CaFHS nurses and other workers be instructed that there should be a low threshold for the reporting of an infant's circumstances to Families SA via the Child Abuse Report Line taking into account the following matters:

   a) An infant's failure to thrive as might be evidenced by poor weight gain;
   b) The infant's medical history since birth;
   c) The mental and emotional wellbeing of the infant's parent or parents;

d) The parents' 'attribute' in respect of the the infant;

e) The social background of the infant's parent or parents;

f) The attitude of the infant's parent or parents towards engagement with relevant services, and the preparedness or otherwise of the parents to accept and implement advice given to them by CaFHS workers.

9) That in circumstances where a CaFHS nurse or other worker is considering reporting an infant's circumstances to Families SA via the Child Abuse Report Line, but where a decision is made to reassess the infant's circumstances at a later time either by way of a home visit or by way of an assessment within a CaFHS clinic, that the arrangements to implement such a reassessment are not unduly delayed;

10) That CaFHS, when assessing the circumstances of an infant who has been recently released from a hospital, ensure that the hospital discharge summary or separation summary in respect of that infant is routinely obtained and assessed.

Key Words: Sudden Infant Death; Infant Injury; Safe Sleeping Practices; Child Protection;

In witness whereof the said Coroner has hereunto set and subscribed his hand and Seal the 5th day of September, 2014.

Deputy State Coroner