Capital & Coast District Health Board

A Report by the

Health and Disability Commissioner

(Case 13HDC01651)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

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Executive summary

Background

1. Baby A, aged approximately three months, was a well baby. On 16 October 2013, he developed a fever during the day, and his parents took him to see his general practitioner (GP), Dr E, at a medical centre. Dr E assessed Baby A and recommended his parents obtain a urine sample to take to an after hours medical centre. Baby A's parents collected a urine sample and, at about 9.30pm, Baby A was assessed by GP Dr F at the after-hours medical centre. Dr F recorded his impression that Baby A had a urinary tract infection and appeared to be getting sicker. Dr F referred Baby A to a public hospital (the Hospital) for paediatric assessment.

2. Baby A's parents took him to the Emergency Department (ED) at the Hospital, where he was assessed by ED house officer Dr G, who recorded his impression that Baby A had a febrile illness and should have a midstream urine test and await paediatric review. At midnight, Baby A was seen by paediatric senior house officer Dr B. After assessing Baby A and obtaining a urine sample, Dr B diagnosed Baby A with a fever of unknown origin and probable viral illness, and discharged Baby A with instructions for his parents to take him back to his GP the following afternoon.

3. Baby A remained feverish and vomited three or four times the following day, so his parents took him back to the medical centre, where he was seen by GP Dr H. Dr H assessed Baby A and referred him back to the Hospital, noting in his referral letter that Baby A had deteriorated since his last medical review and seemed "somehow unwell". Baby A's parents took him back to the ED, where he was sent straight to the Children's Acute Assessment Unit (CAAU).

4. At about 6.30pm on 17 October 2013, Baby A was seen by paediatric senior house officer Dr C. Dr C assessed Baby A and obtained a urine sample. She diagnosed Baby A with viral gastroenteritis and planned to discharge Baby A with a rehydration plan, paracetamol and advice about when to return for review. Prior to discharging Baby A, Dr C discussed her diagnosis and treatment plan over the telephone with paediatric registrar Dr D, who agreed with the proposed course of action.

5. Accordingly, Baby A was discharged but remained feverish over the next few days. On 21 October 2013, Baby A's mother took him back to the Hospital, where he was diagnosed with *Escherichia coli* (*E. coli*) meningitis and septic shock. Baby A suffered significant neurological injury and permanent disability.

Findings

6. The Commissioner found that responsibility for the deficiencies in the care provided to Baby A (specifically, the absence of senior clinical review) rests with Capital & Coast District Health Board (CCDHB). CCDHB's Children's Acute Assessment Guideline (the CAA Guideline) did not require children re-presenting within a short time period to be assessed and discharged by a registrar. Where review by a registrar was required by the CAA Guideline (prior to transfer to the CAAU from ED), it did not occur in this instance because the process for seeking review had not been fully

implemented. Accordingly, CCDHB failed to provide services to Baby A with reasonable care and skill and breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).[1]

Complaint and investigation

7. The Commissioner received a complaint from Mr A regarding the care provided to his son, Baby A, at the Hospital. The following issue was identified for investigation:

   - *Whether Capital & Coast District Health Board provided Baby A with an appropriate standard of care in October 2013.*

8. The parties directly involved in the investigation were:

Mr A	Consumer's father
Medical centre	Provider
After hours medical centre	Provider
Dr B	Paediatric senior house officer/provider
Dr C	Paediatric senior house officer/provider
Dr D	Paediatric registrar/provider
Capital & Coast District Health Board	Provider

Also mentioned in this report:

Mrs A	Consumer's mother
Dr E	General practitioner
Dr F	General practitioner
Dr G	ED house officer
Dr H	General practitioner

9. Information was also reviewed from the Accident Compensation Corporation.

10. Independent expert advice was obtained from paediatric emergency specialist Dr Richard Aickin (**Appendix A**).

Information gathered during investigation

Introduction

11. Baby A was generally a well baby and was being breastfed. On 16 October 2013, when he was approximately three months old, Baby A developed a fever and, on 21

[1] Right 4(1) of the Code states: "Every consumer has the right to have services provided with reasonable care and skill."

October 2013, he was diagnosed with *E. coli* meningitis.[2] The facts relevant to the care he received during that period are set out below.

GP review on 16 October 2013

The medical centre

12. On the evening of 16 October 2013, Baby A's parents, Mr and Mrs A, took him to the medical centre because he had had a fever during the day. Baby A was seen by general practitioner (GP) Dr E.[3] Dr E recorded in the clinical notes that Baby A had been unsettled overnight, did not feed in the morning, and had had a temperature, which initially had settled with paracetamol,[4] but had then returned. Dr E noted that Baby A had fed well in the evening, but that Mrs A had noticed a red patch in the front of his nappy when changing him.

13. Dr E recorded that, on examination, Baby A was alert, crying, well perfused,[5] and had no rash. Dr E noted that Baby A's temperature was 38.3°C,[6] his nose was clear, his ears and throat were normal, his chest was clear, and his abdomen was soft. A urine bag was attached to collect a sample but, by 7.30pm, Baby A had not passed urine, so Dr E recorded: "[T]o go home and once urine bag full to take it to the [after-hours medical centre] to have it dipsticked … if positive for blood and whites [leucocytes or nitrites] to see a Dr for further advice and treatment."[7]

The after-hours medical centre

14. Mr A advised HDC that the urine sample was duly collected, and the family went to the after-hours medical centre. At approximately 9.30pm, Baby A was seen by GP Dr F. Dr F noted: "Assessed [Baby A]: sleeping on dad. Easily roused. Extremely pale. Temp 38.2. Weight 7kg. [Heart rate] 140 [beats per minute].[8]" Dr F examined Baby A's abdomen, following which Baby A had a "very large vomit". Dr F recorded that Baby A appeared drowsy, and that a dipstick urine test was positive for leucocytes and protein. Dr F recorded his impression as: "UTI [urinary tract infection] — appears to be getting sicker." Dr F referred Baby A to a public hospital (the Hospital) for paediatric assessment.

The Hospital

15. Baby A's parents took him to the Hospital. At 10.15pm, a registered nurse (RN) triaged Baby A as triage code 2.[9] According to the triage record, Baby A's temperature was 38.9°C, his heart rate 150 beats per minute, his respiratory rate 60,[10]

[2] Meningitis is the inflammation of the meninges, the membrane lining of the brain and spinal cord. *E. coli* meningitis is caused by certain strains of *E. coli* bacteria.
[3] The clinical records do not record what time Dr E reviewed Baby A.
[4] Widely used pain relief medication that is also used to reduce fever.
[5] Good blood supply.
[6] The normal body temperature for a healthy baby is between 36–38°C.
[7] Dipstick analysis of a urine sample is used to test for blood, leucocytes, nitrites and protein, as a diagnostic or screening tool for metabolic or kidney disorders (eg, a urinary tract infection).
[8] The normal heart rate for infants 1–11 months old is 80–160 beats per minute.
[9] The Emergency Department triages patients by assigning a code on a scale from 1 (life-threatening) to 5 (non-urgent).
[10] Breaths per minute — the normal rate in babies 0 to 6 months is 30–60.

and his oxygen saturation 96%.[11] At 10.55pm, Baby A was reviewed by Emergency Department (ED) house officer Dr G. Dr G recorded that he examined Baby A, who was pale with mottled skin[12] but had no rash. Dr G noted that Baby A's fontanelle was not bulging,[13] and that his impression was: "Febrile illness — SIRS [Systemic Inflammatory Response Syndrome].[14]" Dr G recorded that Baby A should have a midstream urine test (MSU), paracetamol, quarter-hourly review,[15] and await paediatric review.

Paediatric assessment on 16 October 2013

16. At midnight, Baby A was seen by paediatric senior house officer Dr B.

17. Dr B recorded that she examined Baby A, and that his temperature was 39°C, his heart rate 180 beats per minute, his respiration rate 60, and his oxygen saturation 96%. Dr B recorded that Baby A did not have a rash, and had warm peripheries and a central capillary refill time[16] of two to three seconds.[17] According to the clinical records, Dr B obtained a catheter urine sample, which tested negative for blood, leucocytes and nitrites. Dr B sent the urine sample to the laboratory for further testing,[18] and discharged Baby A. She noted that there were no clinical signs to identify a "focus of infection". Dr B recorded her impression that Baby A had a viral illness and should be given paracetamol and Brufen[19] as required, and have GP review the following afternoon. Dr B recorded on Baby A's Discharge Summary that his primary diagnosis was "Fever of Unknown Origin — Probable Viral Illness".

18. Dr B told HDC that her management of Baby A was based on the "[Children's Hospital] Children's Health Clinical Guidelines — Fever Investigation and Management" (the Children's Hospital Guidelines), and that she focused on the advice within the section "Children three months to two years of age, fever > 38.9°C" and the subsection "The child who has a fever without clinical focus, who is not severely unwell".

[11] The level of oxygen in the blood. The normal rate in humans should be between 95% and 100%.
[12] Blood vessel changes in the skin that cause a patchy appearance.
[13] The fontanelle, colloquially known as the "soft spot", is the membranous gap between the bones in an infant's skull. The posterior fontanelle is at the back of the head, and the anterior fontanelle at the front. Fontanelles allow for growth of an infant's brain and skull over the first year of life, and harden over time to become closed, solid bony areas. A bulging fontanelle occurs when fluid builds up in the brain or when the brain swells, causing increased pressure inside the skull.
[14] An inflammatory state affecting the whole body, related to sepsis.
[15] The clinical notes record that an RN took Baby A's vital signs at 11.47pm, but there is no further record that he was reviewed quarter-hourly.
[16] The time taken for colour to return to an external capillary bed after pressure is applied to cause blanching. This can be measured by holding a hand higher than heart-level, pressing the soft pad of a finger or fingernail until it turns white, and taking note of the time needed for the colour to return once pressure is released. In newborn infants, capillary refill time can be measured by pressing on the sternum for five seconds with a finger or thumb, and noting the time needed for the colour to return once the pressure is released.
[17] For paediatric patients, a capillary refill time of two seconds is considered normal.
[18] Results from the urine culture were reported on 19 October 2013 and showed no growth.
[19] A non-steroidal anti-inflammatory used for pain relief and to reduce fever and inflammation.

19. Dr B stated that, when she examined Baby A, she considered that his tachycardia[20] and tachypnoea[21] were due to, and consistent with, his fever.[22] She stated that she did not identify any clear clinical focus of infection during her examination, and she did not think that Baby A had any cardiovascular compromise. She disagreed with Dr G's assessment that Baby A's skin was mottled, and said that she did not record the colour of Baby A's skin because she assessed his skin colour as likely to be normal for him as a Eurasian infant. Dr B acknowledged to HDC that she did not record that she had assessed Baby A's fontanelle, but stated: "I believe that I would have as it was routine for me to do so … I did not assess [Baby A] as looking irritable or unduly unwell, or as having a bulging fontanelle."

20. Dr B told HDC that, in assessing Baby A, she considered whether meningitis might be the cause of his fever, whether she should take a blood test, and whether she should admit Baby A for observation overnight. Dr B stated that she decided, based on the advice in the Children's Hospital Guidelines and in discussion with Mr A, that "on balance the best approach … was for discharge with a medical review in 12–18 hours". Regarding her recommendation that Baby A be reviewed by his GP, Dr B told HDC:

> "Identifying [Baby A] as a child with 'Fever of Unknown Origin' was in my opinion protective as it indicated to the [GP] that while I thought that [Baby A's] illness was probably viral … a bacterial cause was still possible. Review was required to ensure that signs revealing a serious bacterial infection had not subsequently developed."

21. Dr B also said that social circumstances are a key consideration in such cases and that, in Baby A's case, she assessed him as having a caring, intelligent and reliable family, who she "could guarantee would take him for a review with his [GP] the following day".

22. Dr B stated:

> "The consultant paediatrician was not contacted by myself at any stage during my shift and was not aware of [Baby A's] presentation to [the Hospital]. I did not contact the consultant on call as I did not feel that [Baby A's] case met [any of the] criteria for contacting the consultant … From my perspective, I felt certain of the diagnosis of fever of unknown origin and that the management recommended in the [Children's Hospital] Guidelines … gave clear appropriate advice."

23. Dr B told HDC: "I would … like to extend my sincerest apology for the part that I may have played in providing [Baby A] care that failed to alter the course of what became a very serious bacterial illness …"

[20] Faster than normal heart rate at rest.
[21] Rapid breathing.
[22] Dr B noted to HDC that, according to the "NICE Guideline: feverish illness in children — assessment and initial management in children younger than 5 years" (discussed further below), which she had not seen at the time she treated Baby A, Baby A's heart rate would have been characterised as an intermediate risk sign for serious illness.

GP review on 17 October 2013

24. Mr A stated to HDC that, during the following day, Baby A remained feverish and vomited three or four times, so that evening he and Mrs A took Baby A back to the medical centre, where Baby A was seen by GP Dr H.[23]

25. Dr H faxed a referral letter to the Hospital, which states that Baby A had been unwell for 48 hours and his parents had reported that he was getting worse. Dr H noted that Baby A had had a fever intermittently all day, had blood in his urine, had not fed well that day, and had vomited after almost every feed. The referral letter notes that, on examination, Baby A appeared irritable and "somehow unwell". Dr H recorded: "[Baby A] settles when on [mother's] arm but his cry is that of an unwell child when on the examination couch." Dr H noted that Baby A did not have a skin rash, but concluded: "[I]n essence he is worse and in my opinion he needs further ongoing observation and maybe further studies."

26. Dr H recorded in the clinical notes: "I have discussed this with the on call [paediatric registrar] and with the parents who are taking [Baby A] to ED for further attention."

Paediatric assessment on 17 October 2013

27. At around 6.30pm that evening, Mr and Mrs A took Baby A back to the ED at the Hospital. Baby A was assessed as triage code 3 and sent to the Children's Acute Assessment Unit (CAAU), contrary to the CCDHB's Children's Acute Assessment Guideline (the CAA Guideline), which required review by a registrar prior to transfer to the CAAU from ED (discussed further below).

28. According to the clinical notes, Baby A was irritable and pale on arrival in the CAAU. His temperature was 36.4°C, his heart rate 157 beats per minute, his respiration rate 44 breaths per minute, and his oxygen saturation 100%.

29. Shortly after arrival in the CAAU, Baby A was seen by paediatric senior house officer Dr C. Dr C documented her assessment of Baby A on the electronic Discharge Summary. She recorded that he had presented to ED previously with fever and pink discolouration in his nappy and that, since then, he had vomited and had diarrhoea, as well as further episodes of pink discolouration in his nappy. She recorded: "[On examination]: Pale baby sleeping in Mum's arms, [anterior fontanelle] — soft, flat, non-bulging. [Capillary refill time] 2 secs." Dr C recorded that her impression was of "viral gastroenteritis" and "? Pink substance/blood in nappy". She prescribed Pedialyte[24] and requested urine and stool specimens. According to the clinical record, no stool sample was obtained,[25] and the dipstick urine sample showed protein[26] but no blood or leucocytes. Dr C sent the urine sample for further testing. She recorded that Baby A was "[t]olerating pedialyte well with one small spill".

[23] The clinical records do not record what time Dr H reviewed Baby A.
[24] An oral electrolyte solution used to rehydrate children who have had diarrhea and/or vomiting.
[25] Dr C told HDC that this was because Baby A "had soiled earlier and the nappy was thrown in the bin before review, and [Baby A] did not provide another dirty nappy while in CAAU".
[26] Protein in the urine can indicate kidney problems.

30. At 10.03pm, Dr C discharged Baby A, recording on the electronic Discharge Summary:

> "Given pedialyte and rehydration plan.
> Paracetamol for fevers/[grizziness].
> Advised to return if unable to keep fluids down with ongoing vomiting and diarrhoea.
> Chase urine culture."

31. Dr C also made a retrospective handwritten record[27] of this consultation, where she noted that, prior to discharging Baby A, she discussed his case with paediatric registrar Dr D over the telephone. Dr C recorded: "[Dr D's] impression was that blood/discolouration in nappy was secondary to concentrated urine."

32. Regarding what she discussed with Baby A's parents when discharging him, Dr C documented in the retrospective record:

> "I advised [Baby A's] parent that if ongoing fevers, [diarrhoea and vomiting] & decreased oral intake to return to ED/seek medical advice. I was encouraging of parents to return in spite of being seen twice with me & the previous night in ED."

33. Dr C told HDC:

> "I explained that my diagnosis at that time was of viral gastroenteritis … I explained that we needed to rule out a urine infection and that the urine dipstick was clear and we would send it to the laboratory for further testing and if anything grew that I or another member of the Paediatric team would contact them. I explained that a viral illness may take a few days to get over but to return if ongoing vomiting and fevers and seek medical advice."

34. Mr A told HDC that, at this consultation:

> "I asked [the doctor] about a blood test, and she dismissed this as being unnecessary because it would be uninformative. She also said, with certainty, that with this gastro bug [Baby A's] fever was likely to continue for five days. She made the diagnosis, gave us a sugar and salt drink for dehydration and made no suggestion to return if things continued."

35. In response to the provisional decision, Mr A told HDC: "At no time did we indicate that [Baby A] had diarrhoea." He also stated: "We were definitely not encouraged by [Dr C] to return to our GPs or the Emergency Department (for a third time) if [Baby A's] fever continued."

Further information from Dr D

36. Dr D told HDC that she cannot recall specific details of her discussion with Dr C about Baby A, but stated:

[27] Dr C dated the record 22 October 2013, and noted that it was retrospective.

> "From memory … [Baby A] did not appear unwell to [Dr C] … [Dr C] presented the history to me and reported that the urine dipstick showed no blood, leucocytes or nitrite. The urine culture of sample from the night before was negative. [Baby A] had tolerated pedialyte with one small vomit. Our joint conclusion was probable viral gastroenteritis (based on the recorded history of fever, vomiting and diarrhoea and the absence of any significant examination findings), with red discolouration probably being urates due to concentrated urine. The main focus was to prevent dehydration. I was happy with discharge if baby was able to tolerate oral fluids, advice to be given on frequent intake of fluids and low threshold for review if vomits and/or diarrhoea would increase or if baby was unable to adequately feed/take pedialyte. No specific advice was given about continuing fevers, as I would expect fevers to continue for some days with this viral illness."

37. Dr D stated that she was aware that Baby A had returned to the ED after being reviewed the previous night, but was not alarmed by that because she "understood the main reason for re-presentation was concern about blood in the nappy and a UTI had been ruled out, now twice". Dr D further stated that, knowing that a UTI had been ruled out, all the information she had been given about Baby A from Dr C "fitted in [her] mind with the probable diagnosis".

38. Dr D told HDC: "On this night it was not busy at all and I would have been able to review [Baby A] promptly if there was any concern or doubt about his condition … I considered [Dr C] competent to assess whether the patient needed review and I didn't feel the need to review [Baby A] if [Dr C] felt it wasn't necessary."

Diagnosis of *E. coli* meningitis

39. Mr A told HDC that, for the next three days (from Friday to Sunday), Baby A was feverish but did not vomit and, on the morning of Monday 21 October 2013, Mrs A took him back to the ED.

40. At 9.08am, an RN assessed Baby A as triage code 2 and noted that he was very pale with "grunting breathing", and his neck appeared stiff. The clinical notes record that Baby A was tachycardic, with a "sluggish" capillary refill time of three to four seconds, and a bulging fontanelle. Baby A was diagnosed with *E. coli* meningitis and septic shock.[28] He was admitted to the Paediatric Ward, then to the Intensive Care Unit. Baby A was later transferred to a children's hospital with *E. coli* cerebral empyema,[29] which required drainage and resulted in multiple cerebral infarctions,[30] hydrocephalus,[31] significant neurological injury, and permanent disability.

[28] A patient becomes septic when he or she is suffering from sepsis. Sepsis is a complication from infection, when chemicals released into the bloodstream to fight an infection trigger an inflammatory response throughout the body. The response can trigger a cascade of changes in the body that can damage multiple organs, causing them to fail. When a patient goes into septic shock, his or her blood pressure drops dramatically, which may lead to death.
[29] A cerebral empyema is a collection or gathering of pus within the brain.

41. Mr A stated:

> "If they had have diagnosed meningitis, or kept [Baby A] in for observation, or not have misdiagnosed him, or even simply not have made a diagnosis (we would have brought him in again the next day) then [his] outcome would have been far far different to the terrible prognosis he now has. Time is of the essence in meningitis … It is very difficult to accept that in the first instance, a specialist paediatrician and then secondly, another doctor responsible for assessing sick children presenting to the children's ward did not pick up on these symptoms."

Adverse Event Review Report

42. CCDHB conducted an Adverse Event Review (the Review) into the care provided to Baby A. The Review was conducted by a Review Team comprised of senior paediatric and ED clinicians and a Quality Manager. The Review involved reviewing Baby A's clinical records and conducting interviews with staff and Baby A's parents.

43. Regarding Baby A's first paediatric assessment on the night of 16 October 2013, the Review found that Dr B acted appropriately and in accordance with the Children's Hospital Guidelines, which state that a full blood count (FBC)[32] and C-reactive protein (CRP)[33] (ie, blood tests) are not useful in determining the risk of bacterial sepsis in a child of three months to two years presenting acutely with fever. However, the Review noted that there is a low threshold for septic work-up[34] in infants under three months,[35] and that, at approximately three months of age, Baby A was "at the cusp of the age at which some more senior clinical discretion should have been applied regarding further investigations".

44. The Review Team noted that, at the time of these events, paediatric house officers were not required to discuss their clinical assessments or plans of care with a more senior doctor (ie, a registrar or consultant) prior to discharging a patient. In addition, the Review Team noted that the Children's Hospital Guidelines that Dr B followed do not include any specific recommendations with reference to tachycardia in assessing a child of three months to two years. The Review noted that the "NICE [National Institute for Health and Care Excellence] Guideline: feverish illness in children —

[30] A cerebral infarction is a type of ischaemic stroke resulting from a blockage in the blood vessels supplying blood to the brain. A cerebral infarction occurs when a blood vessel that supplies a part of the brain becomes blocked or leakage occurs outside the vessel walls. This loss of blood supply results in the death of that area of tissue.

[31] Hydrocephalus is a condition that occurs when fluid builds up in the skull and causes the brain to swell. Brain damage can occur as a result of the fluid build-up. This can lead to impaired developmental, physical, and intellectual functions.

[32] A blood test that is used to obtain information about the cells in a patient's blood.

[33] A protein found in blood plasma, the levels of which rise in response to inflammation. CRP levels are measured by doing a blood test.

[34] A range of tests to determine whether a patient has sepsis (whole body inflammation as the result of an infection), including a chest X-ray, FBC, blood and urine cultures, and cerebrospinal fluid studies.

[35] The Children's Hospital Guidelines state that children from six weeks to three months of age presenting with a fever should have a full sepsis screen if the child "looks unwell". If the child looks well and feeding is satisfactory, he or she should have a blood culture, a urine test, and a chest X-ray if indicated by respiratory signs.

assessment and initial management in children younger than 5 years" (the NICE Guideline) recommends a "more comprehensive clinical management process" that factors in tachycardia. The NICE Guideline was released on 17 September 2013 and, according to the Review, had not been distributed amongst the paediatric medical staff at the time Baby A was treated.

45. Overall, the Review concluded that the lack of explicit recommendations in the Children's Hospital Guidelines with reference to tachycardia, and the lack of policy requiring confirmation of the proposed clinical management and plan with a more senior clinician, meant that "an opportunity was lost to consider or implement a septic work up or consider a longer period of observation".

46. The Review Team noted that, according to the clinical records, on the second occasion Baby A's parents took him to the ED he was triaged as code 3 and sent straight to the CAAU, whereas he should have been assessed by a paediatric registrar or senior ED registrar prior to transfer to CAAU, in accordance with the most recent version of the CAA Guideline introduced in September 2013. The Review stated:

> "The Review Team have ascertained that while [the CAA Guideline] was introduced in September, the ED staff had concerns regarding this, staffing and process, and subsequently it had not been fully implemented. However it is the Review Team's opinion that it is unlikely a brief review in ED for the purposes of assessing fitness to be transferred to CAAU would have had any impact on the subsequent clinical assessment."

47. Regarding Baby A's second paediatric assessment on 17 October 2013, the Review found:

> "[T]he impression formed by [Dr C] that this was viral gastroenteritis was a possible diagnosis in the circumstances, but … the possibility of sepsis was not given due weight and consideration. The concern from the GP that the child had deteriorated and was irritable and unwell, the persisting tachycardia, irritability and fever, and the vomiting in the absence of diarrhoea all pointed to sepsis as a diagnosis that needed excluding prior to the alternative diagnosis of viral gastroenteritis being made. The Review Team notes the diagnosis of gastroenteritis and the plan was discussed and agreed with the Registrar.
>
> The Review Team consider that given this child had represented for a second time, had elevated temperature for more than 48 hours, appeared unwell and was referred to the Hospital for further studies, an opportunity for further investigations and potentially earlier interventions was missed [at this presentation]."

48. Overall, the Review concluded the following:

> "[A]s a consequence of more senior clinical discretion not being engaged in this sequence of events the opportunity for earlier intensive diagnostics, diagnosis and treatment was missed. …

> The Review Team do not consider individual clinicians directly responsible for the lack of more senior clinical engagement. Rather the Review Team consider the main contributing factor to this incident is a lack of formal processes regarding more senior paediatric medical staff oversight of paediatric junior medical staff clinical assessments and discharge planning. The Review Team consider a requirement for children representing within 72 hours to be assessed by senior medical staff (Registrar or Consultant) is indicated."

49. The Review also identified "incidental findings" regarding information incorrectly recorded on some of the relevant clinical documentation.[36]

50. The Review Team recommended that:

- CCDHB and the Department of Paediatrics offer a sincere apology to Baby A's family.

- CCDHB notify the Children's Hospital of this adverse event and recommend that the Children's Hospital review the Children's Hospital Guidelines, specifically the statement regarding the usefulness of FBC and CRP in determining the risk of bacterial sepsis in a child of three months to two years presenting acutely with fever, and consider emphasising the importance of tachycardia as per the NICE Guideline.

- CCDHB's Paediatric Service develop a guideline clearly formalising the role and responsibilities of the house officers and registrars regarding assessment and discharge responsibilities.

- CCDHB's Paediatric Service adopt the NICE Guideline as a medical staff reference document.

- CCDHB's Paediatric Clinical Leader require all paediatric medical staff to read and sign off or complete a test on the NICE Guideline.

- CCDHB's CAA Guideline is modified to state that:

  a) discharge and admission decisions are to be made by a registrar;

  b) any child who re-presents within 72 hours must be assessed by the paediatric registrar or senior ED registrar/consultant prior to discharge from either ED or CAAU; and

  c) all children who re-present within 72 hours who have previously been reviewed by the Paediatric Service are reviewed by a paediatric registrar.

- CCDHB ED fully implement the CAA Guideline following further review.

[36] Specifically, Dr B's electronic signature recorded that she was a registrar rather than a house officer, and Baby A's Discharge Summary following his first paediatric assessment recorded the incorrect GP and medical centre.

- The information incorrectly recorded on the relevant clinical documentation is corrected.

51. CCDHB advised HDC that all of the Review Team's recommendations have now been implemented.

Response to provisional decision

52. Mr A commented on the "Information gathered during investigation" section of the provisional decision, and his comments have been considered during the course of my investigation and incorporated above where appropriate.

53. CCDHB was given the opportunity to comment on the proposed findings and courses of action. It accepted the proposed findings and recommendations. It stated:

> "[Baby A] received care that was not of the standard we expect to provide children and their families requiring our Child Health Service. CCDHB remain saddened by the significant neurological injury and permanent disability that resulted following [Baby A] accessing our care."

54. CCDHB provided a statement from Dr C,[37] who said:

> "It is difficult to convey in writing the distress and regret felt after hearing of [Baby A's] neurological injury. I have been deeply affected by the outcome of [Baby A's] health and cannot begin to imagine how affected [the family] must be. I wish to pass onto [the family] my sincere and unreserved apology as I remain saddened by the permanent disability [Baby A] has sustained."

Opinion: Capital & Coast District Health Board — Breach

Introduction

55. Baby A's parents took him to the ED at the Hospital on referral from a GP on two occasions within a 24-hour period. On both occasions, Baby A was triaged and assessed by a paediatric senior house officer and, on the second occasion, a registrar was consulted over the telephone about Baby A's case. On both occasions, Baby A was discharged but continued to be unwell and, subsequently, he was diagnosed with *E. coli* meningitis and septic shock.

56. As a result, Baby A has suffered significant neurological injury and permanent disability. This is a tragic outcome that has deeply affected Baby A and his family. However, in assessing the care provided to Baby A, my focus must be on the standard of care provided at the time the events occurred, based on the information available to clinicians at that time.

[37] Dr C has now moved overseas.

57. During the course of my investigation I obtained independent expert advice about the care provided to Baby A from paediatric emergency specialist Dr Richard Aickin. I note that, in advising me about the care provided to Baby A, Dr Aickin observed that it is unclear whether Baby A actually had meningitis at either his first or his second presentation at the Hospital. Dr Aickin also advised that bacterial meningitis[38] is difficult to diagnose, and is "missed" in sophisticated healthcare settings around the world.

58. Dr Aickin considered that the care provided to Baby A at his first paediatric assessment on the night of 16 October 2013 was adequate, but expressed concern that, at Baby A's second paediatric assessment on the evening of 17 October 2013, he was seen again by a junior doctor without direct supervision by a senior doctor. These issues are dealt with in turn below.

Paediatric assessment on 16 October 2013

59. On 16 October 2013, Baby A's parents took him to the ED at the Hospital on referral from Dr F at the after-hours medical centre. Baby A was assessed by ED clinicians and then, at about midnight on 16 October 2013, by a paediatric senior house officer, Dr B. Dr B assessed Baby A and diagnosed him as having a "Fever of Unknown Origin — Probable Viral Illness". Dr B discharged Baby A with instructions for him to be given paracetamol and Brufen as required, and have GP review the following afternoon.

60. Dr Aickin advised me that Dr B's assessment of Baby A was thorough, and her advice for GP review was correct, given the uncertainty in Baby A's diagnosis, and the possibility that Baby A's illness would progress over time. I accept Dr Aickin's advice.

61. In respect of whether Dr B should have undertaken further tests, Dr Aickin stated:

> "Meningitis is a disease which develops over time and is often preceded by other non-specific illness. … A blood test [at this presentation] may have shown a raised white cell count but that would have been the case for both a common viral infection [and] the early stages of bacterial sepsis. A lumbar puncture would have been the specific test required to diagnose early bacterial meningitis, but I do not think that there were sufficient signs present to indicate the need for this investigation [at this time]."

62. In addition, I note that, although CCDHB's Adverse Event Review found that the lack of involvement by a more senior clinician at this presentation was a lost opportunity for Baby A to be investigated and/or observed further, Dr Aickin was of the view that it is "unlikely" that a more senior doctor would have recommended a different course of action on the basis of a telephone consultation and the available information.

63. I accept that, as stated in the Review, Baby A was "on the cusp" of the age where more senior clinical discretion should have been applied. Dr B told HDC that her

[38] *E. coli* meningitis is a form of bacterial meningitis.

management of Baby A was based on the Children's Hospital Guidelines advice for treating children aged three months to two years. However, the Children's Hospital Guidelines contained different advice about the usefulness of various investigations (including blood tests/blood cultures) in diagnosing children less than three months of age, and between three months and two years of age.[39] Given that Baby A was approximately three months old, I agree with CCDHB's conclusion that more senior clinical discretion may have resulted in further investigations/observations at this stage. As stated by Dr Aickin, "guidelines are no substitute for clinical supervision of less experienced junior medical staff in making difficult and high risk clinical decisions".

64. I note that the Children's Hospital Guidelines did not contain specific guidance about the relevance of tachycardia in managing children presenting with fever, but that the NICE Guideline did. Baby A was tachycardic at this presentation, and adherence to the NICE Guideline, which has since been implemented at CCDHB, may have led to different management of Baby A. However, I accept that the NICE Guideline was released a month before Baby A's presentation, and had not been distributed amongst CCDHB staff at the time.

Paediatric assessment on 17 October 2013

65. Baby A remained unwell throughout the day, and his parents took him to see GP Dr H at the medical centre in the evening on 17 October 2013. Dr H referred Baby A back to the Hospital, noting in his referral letter that Baby A seemed "somehow unwell". Baby A's parents took him to the ED at the Hospital, where he was triaged but not assessed, and was instead sent straight to the CAAU.

66. The Review noted that sending Baby A to the CAAU without prior assessment in the ED by a paediatric registrar or senior ED registrar was contrary to the recently introduced CAA Guideline, which had not been fully implemented owing to staff concerns about the staffing and process associated with it. The Review Team considered it "unlikely that a brief review in ED for the purposes of assessing fitness to transfer to CAAU" would have affected the care provided to Baby A. In my view, however, the failure to have Baby A assessed by a registrar at this time represented another missed opportunity for review by a more senior clinician. In addition, I consider it suboptimal for a policy to have been introduced but not fully implemented owing to staff concerns. As a health and disability service provider, CCDHB has a responsibility to ensure that it has robust policies in place that are effectively implemented to support and guide staff in providing good care. In my view, lack of adherence to the CAA Guideline in this instance is an example of ineffectual policy.

67. Baby A was seen in the CAAU by paediatric senior house officer Dr C. Dr C recorded that she assessed Baby A and obtained a dipstick urine sample. She diagnosed Baby A with viral gastroenteritis and planned to discharge him with a rehydration plan, paracetamol, and advice about when to return for further review. Prior to discharging Baby A, Dr C discussed his case over the telephone with Dr D.

[39] See footnote 35, above.

68. I note that there is disagreement between the parties concerning what discharge advice, if any, Baby A's parents were given about whether and in what circumstances to return for review. Mr A recalls that there was no suggestion to return, and that he and Mrs A were told that Baby A's fever was likely to continue for some time. Dr C documented on the Discharge Summary that Baby A should return if he was unable to keep fluids down with ongoing diarrhoea and/or vomiting, and that he should be given paracetamol for fever. Dr C did not document any further instructions about ongoing fevers on the Discharge Summary, but recorded in her retrospective note of the consultation that she also told Baby A's parents to return if Baby A's fever continued. Dr C also told HDC that she explained that it may take a few days to recover from a viral illness. Having considered these factors, I am of the view that Mr and Mrs A were not given clear instructions about what to do if Baby A's fever continued.

69. Dr Aickin advised that Dr C performed her assessment of Baby A with the expected degree of knowledge and skill for her level of experience and seniority. However, Dr Aickin stated:

> "I believe that [Dr C] failed to take sufficient account of a number of factors that a more experienced paediatrician may have recognised. The history of vomiting most feeds and the concerns of the GP about deterioration and an abnormal cry were discordant with her assessment … A repeat presentation of a young child within the same illness is a risk factor that would lead experienced practitioners to carefully consider alternate diagnoses … I believe that there were good reasons to consider admitting [Baby A] to hospital [at this time] given his deterioration and poor fluid intake."

70. I accept Dr Aickin's advice that Dr C treated Baby A with the expected degree of skill for her level of experience, and note that she discussed her assessment and treatment plan over the telephone with a more senior doctor, who agreed with her proposed course of action, before discharging Baby A.

71. Dr D told HDC that the information she had been given about Baby A by Dr C "fitted in [her] mind" with viral gastroenteritis. Dr D stated that she did not review Baby A in person because she considered Dr C competent to assess whether Baby A needed senior review, and did not feel the need to review Baby A if Dr C did not feel it was necessary.

72. I consider that, in the circumstances (including Baby A's repeat presentation following GP referral), it would have been prudent for Dr D to take additional steps, such as reviewing Baby A in person, to assure herself (as the more senior doctor) that Dr C's assessment of Baby A had taken into account all relevant factors and that differential diagnoses had been considered sufficiently. However, I accept that, as stated by Dr Aickin, registrars need to make judgement calls as to whether to accept the assessment of more junior staff as described to them, or whether to assess the patient in person, and that, in this case, Dr D made a reasonable judgement call based on her consideration of Dr C's competence.

73. The Review found that the "lack of more senior clinical engagement" in this case was due to an absence of formal processes regarding more senior paediatric medical staff oversight of paediatric junior medical staff clinical assessments and discharge planning. Dr Aickin agreed with the Review Team's findings, and stated that a guideline requiring a senior doctor to review unplanned repeat presentations of acutely unwell children would enhance safety, particularly for small infants.

74. I consider that Baby A should have been reviewed by a registrar or consultant before he was discharged for a second time from the Hospital on 17 October 2013. Instead, Baby A was sent from ED to CAAU without review by a registrar, contrary to a newly introduced policy that had not been fully implemented. He was then seen by a senior house officer in CAAU, who assessed him in accordance with her skill and experience and discussed her treatment plan with a registrar, who agreed with the proposed course of action on the basis of the information given to her. As stated above, I have accepted that Dr C assessed Baby A with the expected level of skill for her level of experience and seniority, and that Dr D, as a registrar, needed to make a judgement call as to whether to accept Dr C's assessment or assess Baby A herself. While Dr D could have made a different judgement call, she made a reasonable decision to accept Dr C's assessment and not to review Baby A herself.

Conclusion

75. In my view, responsibility for the deficiencies in the care provided to Baby A (specifically, the absence of senior clinical review) rests with CCDHB. CCDHB's CAA Guideline did not require children re-presenting within a short time period to be assessed and discharged by a registrar. Where review by a registrar was required by the CAA Guideline (prior to transfer to the CAAU from ED), it did not occur because the process set out in the CAA Guideline had not been fully implemented, despite being introduced the previous month, owing to staff concerns. Accordingly, I consider that CCDHB failed to provide services to Baby A with reasonable care and skill and breached Right 4(1) of the Code.

76. Since the time of these events, CCDHB has changed its CAA Guideline to state that discharge and admission decisions are to be made by a registrar, and that any child who re-presents within 72 hours of discharge must be assessed by a paediatric registrar. I note Dr Aickin's advice that the changes to CCDHB's policies and procedures will enhance patient safety significantly.

Recommendations

77. I recommend that CCDHB provide a written apology to Mr and Mrs A for its breach of the Code. The apology is to be sent to HDC within three weeks of the date of issue of this report, for forwarding.

78. I also recommend that, within six months of the date of this report, CCDHB:

a) Audit the implementation of, and ED/CAAU staff compliance with, the CAA Guideline currently in place (including the requirement for senior review prior to transfer from ED to CAAU), and report the results of the audit to HDC.

b) Use an anonymised version of this report for staff training at the Hospital, focusing particularly on the deficiencies in care identified, and provide evidence of that training to HDC.

Follow-up action

79. A copy of this report with details identifying the parties removed, except the expert who advised on this case and CCDHB, will be sent to ACC, the Medical Council of New Zealand, the Paediatric Society of New Zealand, DHBNZ, and the Children's Hospital, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A — Independent expert advice to the Commissioner

The following expert advice was obtained from Paediatric Emergency Specialist Dr Richard Aickin:

"My full name is Dr Richard Paul Aickin. I am employed as a Paediatric Emergency Specialist at Starship Hospital (from 1993 to the present). My qualifications are BMedSc (Otago 1981), MBChB (Otago 1984), DCH (Otago 1989), FRACP (1993) and FACEM (1995).

I have been asked to provide an opinion regarding the complaint made by [Mr A] about the care provided to his son [Baby A] at [the Hospital] on the 16th, 17th and 21st of October 2013.

I have been provided with copies of [Baby A's] complaint, [Baby A's] clinical notes, an internal review performed by the Capital and Coast District Health Board, and statements from the doctors involved in [Baby A's] care on those dates. I have no professional or financial conflicts of interest in providing this opinion. I have an intellectual conflict as one of the original authors of the [Children's Hospital] Febrile Child guideline referred to in the CCDHB internal review although I was not the author of the most recent revisions of this guideline. I do not believe that this presents any substantial issue with respect to this opinion. The expert advice specifically asked of me by [the] Legal Investigator, HDC, is regarding the following points:

1. The adequacy of care provided by CCDHB paediatric clinicians on each occasion when [Baby A] was taken to [the Hospital], i.e. on 16, 17 and 21 October 2013.
2. The adequacy of the relevant policies and procedures in place at CCDHB at the time of the events complained of.
3. The adequacy of the relevant policies and procedures currently in place at CCDHB, including further changes which may be appropriate.
4. Any other relevant issues.

[Baby A] (aged three months) was seen initially at [the Hospital] on 16th October 2013 at 10:15pm on referral from [an after-hours medical centre]. [Baby A] had been seen earlier that day by [Dr E], GP, [the medical centre]. [Dr E's] referral indicated that he was concerned that [Baby A] was febrile, without obvious focus, and that a urinary tract infection should be excluded. [Dr E's] clinical records describe [Baby A] as being 'alert, crying, well perfused, no rashes, T=38.3, nose clear, ears nad, throat normal, chest clear, abdo soft'.

This description indicates to me a child who was reasonably well despite the fever and who did not have signs of serious sepsis at that time. [Dr E] attempted to obtain a bag urine sample but since [Baby A] had not passed urine by 7:30pm he advised the family to go home and to take a urine specimen to the [after-hours medical centre] when this was available. [Baby A's] parents subsequently took

him to the [after-hours medical centre] with his urine specimen where he was reviewed by Dr F. At that time [Baby A] was described as 'sleeping on Dad. Easily roused. Extremely pale. Temp 38.2C Weight 7Kg, HR 140/mm. Skin warm and CRT (capillary refill time) <2 secs. Abdo soft, no mass. Very large vomit after abdo exam. Appears drowsy. Urine dipstick: +leucs, +prot. Impression: UTI — appears to be getting sicker'.

[Dr F] discussed [Baby A] with the Paediatric Registrar at [the Hospital] and sent the family to the [Emergency Department] for further assessment. At that time, most of [Baby A's] examination findings were reassuring. He was easily roused, had a heart rate consistent within his age and fever, and was well perfused as evidenced by the normal CRT. [Dr F] was correct to flag his concern regarding drowsiness and pallor, and this would need to be considered in the overall context of time of day, usual sleep patterns and how [Baby A] behaved after he was roused from sleep. In any case the bag urine suggested a possible UTI which required a definitive clean specimen (catheter or clean catch) to confirm a diagnosis and guide subsequent treatment. [The Hospital] referral was necessary, but I do not think that there was any indication for starting antibiotics/fluids prior to transfer, nor for arranging ambulance transfer to hospital. This sequence of care, decisions and communication with [Hospital] staff by [Drs E and F] appears entirely appropriate and quite routine for this clinical situation.

On arrival at [the Emergency Department] at 10:15pm, [Baby A] was triaged as 'Category 2' indicating an urgent case. This triage would have taken into account [Baby A's] young age and presentation with fever, which placed him at a higher risk of serious infection than older children. However his initial set of vital signs were not greatly concerning with respect to the likelihood of serious sepsis or shock (temp 38.9C, HR 150/mm, R.R 60/mm, Oxygen saturation 96%).

[Baby A] was assessed first by an Emergency Department junior doctor (House Officer) at 22:55. The house officer found that [Baby A's] heart rate had increased to 181/min and his respiratory rate to 80/min. Both of these measurements are in the range indicating a need for caution/concern and the house officer requested that [Baby A] be reviewed at 15min intervals while awaiting the paediatric assessment. [He] also provided symptomatic treatment with paracetamol and an in/out catheter to c1arify whether a urine infection was present.

At midnight [Baby A] was reviewed by a junior doctor (house officer, 5 months) from the paediatric team, [Dr B].

[Dr B's] assessment was thorough and included spending a good period of time observing [Baby A's] general alertness and behavior. Her initial expectation was that [Baby A] had a urine infection based on the bag urine screen from [the after-hours medical centre]. However the catheter urine specimen was negative for leucocytes and nitrites indicating that infection was unlikely. This commonly occurs when screening for urine infections in infants with bag specimens since the sample is easily contaminated during collection. [Dr B] assessed [Baby A] as

responsive, interactive and well perfused. She noted that there was no clinical focus of infection and that it was most likely that [Baby A] had a viral infection. She correctly advised for follow up with [Baby A's] GP within 24 hours given the uncertainty in diagnosis and the possibility of progression over time.

This type of non-specific clinical presentation with fever is extremely common in young children aged 3 months to 2 years. Around 3% of these children will have a bacterial infection such as pneumonia, or urine infection. Bacterial meningitis is much more uncommon but has severe consequences. Bacterial meningitis is usually considered when infants appear more unwell than expected for simple viral illnesses in non-specific ways such as reduced feeding, interactivity or unusual irritability. In putting all of the various doctors' assessments performed throughout the evening of 16th October together I believe it is unlikely that [Baby A] had developed bacterial meningitis at that stage of his illness. [Baby A] had been seen by two GPs, a triage nurse and two house officers over the course of that night and their assessments are generally in agreement in describing an infant without clear signs of serious illness. His signs varied at times throughout but I do not detect a steady pattern of deterioration on the 16th October.

Meningitis is a disease which develops over time and is often preceded by other non specific illness. The bacteria which infect the meninges and spinal fluid are thought to reach those locations by spreading via the blood stream from other sites such as an inflamed throat for Strep pneumoniae meningitis or the bowel for E coli meningitis. A blood test on the evening of 16th October may have shown a raised white cell count but that would have been the case for both a common viral infection or the early stages of bacterial sepsis. A lumbar puncture would have been the specific test required to diagnose early bacterial meningitis, but I do not think that there were sufficient signs present to indicate the need for this investigation at the time of [Baby A's] first attendance at [the Hospital].

Although [Dr B] had the opportunity to seek advice from the more experienced Paediatric Registrar on call that night, she did not elect to do so having made a clinical judgment that [Baby A] was well enough to go home. I believe that it is unlikely that the Registrar would have suggested a different course of action on the basis of a telephone consultation and the available information.[40]

On the 17th October [Baby A's] parents took him back to [the medical centre] for review. The GP who saw him on that occasion was worried about his overall appearance and thought that he looked 'somehow unwell'. He had been vomiting after feeds, was persistently feverish and had the 'cry of an unwell child'. The GP could again find no signs of focal infection, but felt that he had deteriorated since the previous day and required 'further ongoing observation and maybe further studies'. On arrival at [the] ED at 18:13 on the 17th October [Baby A] had a Triage Nurse assessment and was transferred to the Children's Acute Assessment

[40] [In response to HDC's provisional decision, CCDHB noted that there were no paediatric registrars on night shifts at the time of these events, and that, since December 2013, a paediatric registrar has been added to the night shift staffing in the Child Health Service.]

Unit (CAAU) at 18:42 prior to having any medical assessment. I note that this transfer prior to medical assessment was contrary to the guidelines in place for paediatric junior medical staff at that time and that there was a lack of agreement about the process to be used for high risk acute paediatric cases between the Emergency Department and the Paediatric Service.

[Baby A] was seen by [Dr C] in the CAAU (3rd year House Officer with [limited] paediatric experience at that time). [Dr C] described [Baby A] in her notes as 'Pale baby, sleeping in Mum's arms'. There were again no focal signs of infection, good capillary return good volume femoral pulses. Over the next 3 hours [Baby A] was offered paedialyte but took only a small volume (40–50mls). He remained irritable when put down by his mother. He had only one small vomit. [Dr C] assessed [Baby A] as having an ongoing viral illness/gastroenteritis. Her plan was to discharge [Baby A] home and for him to return if not keeping fluids down or 'ongoing vomiting and diarrhoea'. [Dr C] discussed her plan with the on call Paediatric Registrar, [Dr D] who agreed with the plan, but did not review [Baby A] in person. I believe that [Dr C] performed her assessment with the expected degree level of knowledge and skill for her level of experience and seniority. However I believe that she failed to take sufficient account of a number of factors that a more experienced paediatrician may have recognised. The history of vomiting most feeds and the concerns of the GP about deterioration and an abnormal cry were discordant with her assessment of a well child. A repeat presentation of a young child within the same illness is a risk factor that would lead experienced practitioners to carefully consider alternate diagnoses. [Baby A] took an inadequate volume of oral fluids during the period of observation for a child with a history of vomiting after most feeds during the day. [Baby A's] ongoing irritability and the GP's comment on the different cry might lead to consideration of central nervous system disease such as meningitis or encephalitis.

These are subjective assessments and I cannot state with any certainty whether the Paediatric registrar would have given different advice had she seen [Baby A] in person. I also cannot state with certainty whether [Baby A] actually had meningitis at that point since the diagnosis was only made 4 days later on the 21st October. However I believe that a more experienced person's assessment would have given a greater chance of early recognition of [Baby A's] condition. At the least I believe that there were good reasons to consider admitting [Baby A] to hospital on the 17th October given his deterioration and poor fluid intake. Hospital medical staff are commonly under significant workload and time pressure after-hours. A Registrar needs to make frequent judgment calls regarding whether to accept the assessment of more junior staff as described to them or whether to validate key history and examination findings in person. [Dr D] stated that she believed that [Dr C] was competent to manage [Baby A's] care without her direct review. A guideline for junior medical staff requiring a more experienced doctor to review unplanned repeat presentations of acutely unwell children would enhance safety, particularly for small infants. Subsequently [Baby A's] parents brought him back to [the Hospital] on Monday 21st October with ongoing concerns about fever, diarrhoea and poor oral intake. By this time [Baby A] had

signs of poor circulation and a bulging fontanelle. Intravenous fluids were given expeditiously and antibiotics were started after a lumbar puncture confirmed bacterial meningitis. [Baby A] was managed in the [Hospital's] intensive care followed by retrieval to [a children's hospital] … when a CT scan of the head indicated the likely need for neurosurgical intervention. In summary:

1. I believe that the initial care provided by CCDHB paediatric clinicians on the 16th October was adequate and that it was highly unlikely that bacterial meningitis would have been diagnosed on that occasion by other competent clinicians. A lumbar puncture performed at that stage of [Baby A's] illness may well have been normal and I do not believe that [there] were compelling reasons to perform this investigation at that time. On the 17th of October I am concerned that [Baby A] was seen again by a junior doctor without direct Registrar supervision despite the clear concerns of the referring GP, [Baby A's] parents and the early unplanned repeat referral to hospital. At the time the CCDHB Paediatric Service did not have explicit guidance for junior medical staff regarding responsibility for admission/discharge decisions after-hours, nor for the assessment of unplanned acute re-presentations to the service. This was a deficiency at that time.

2. On 21 October 2013 [Baby A's] serious illness was rapidly recognised and appropriately managed. His subsequent difficult clinical course is to a large extent the result of a severe disease which can have poor outcomes even when recognised early and treated aggressively.

3. The internal review of these events performed by senior CCDHB staff is thorough, and I agree with the findings and recommendations. There is some discussion of guidelines which is appropriate but I would emphasise that guidelines are no substitute for clinical supervision of less experienced junior medical staff in making difficult and high risk clinical decisions. The review has made clear and focused recommendations regarding supervision and consultation expectations with which I am fully in agreement.

4. Provided that the recommendations of the CCDHB internal review have been fully implemented then I agree that the current policies and guidelines in place would be sufficient. I have noted the previous lack of agreement on some aspects of the transfer process between the Emergency Department and the Paediatric Service CAAU. It is clearly important that these two services resolve those issues and sign off an agreed shared approach to provide the best safety for more seriously unwell children.

I note that the staff involved have expressed their true regret and reflected in depth on the part they played in [Baby A's] initial assessments and treatment decisions. These individuals have clearly learned a great deal from [Baby A]. Bacterial meningitis in infants is fairly rare and difficult to diagnose. It is not possible to guarantee that another case will never be missed since this sadly occurs in sophisticated health care settings all around the world. However I am confident that the changes to policies and procedures recommended in the CCDHB review of these events will provide significantly enhanced safety.

Dr Richard Aickin FRACP FACEM"