Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340

Complaint

The Commissioner received the following complaint from the complainant, Ms B, about services provided to her late daughter, Miss A, at the public hospital:

On 17 July 1999 Miss A was admitted to the public hospital with an acute illness. During her time in the public hospital Miss A was not provided with care of an appropriate standard. In particular:

House Surgeon, Dr F

- *Dr F was caring for Miss A while she was in the Accident and Emergency Department. Dr F was not present with Miss A for most of that time and he offered minimal treatment and advice.*
- *Dr F did not request assistance from a more senior physician when Miss A's condition began to deteriorate rapidly.*
- *Ms B had to help the nurse to insert a tube into Miss A's airway because Dr F was not present.*

Anaesthetist, Dr E

- *Dr E left the Intensive Care Unit (ICU) without reading urgent blood test results.*
- *Dr E failed to take appropriate action following signs that Miss A may have been suffering from a viral infection rather than a head injury. Miss A had a high temperature and a raised white cell count, and a CAT scan had discounted the possibility that she had a head injury.*
- *Dr E did not take appropriate action after noting that Miss A was possibly suffering from meningitis. He only noted meningitis as a possible diagnosis in her clinical records and noted that a lumbar puncture should be performed in the morning. He did not verbally communicate this information to anyone so that action could be taken immediately.*
- *Dr E did not communicate with Ms B, Miss A's mother, about her daughter's condition and treatment options before he left the ICU. Dr E's attitude towards Miss A's care was too casual.*
- *Miss A's condition deteriorated significantly, but Dr E only returned to the ICU to reassess Miss A after distressed ICU staff had telephoned him twice.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Complaint *continued*

Hospital and Health Services Ltd

- *The Quality Assurance Review carried out by Hospital and Health Services following Miss A's death was inadequate. In particular:*
  - *Key staff involved in Miss A's care were not spoken to during the review. This included the Accident and Emergency nurses, an ICU nurse and Dr F. The report stated that these people were not available, but they had not actually been approached for comment.*
  - *The review identified several problems with systems at the public hospital, but Hospital and Health Services has taken no action to correct the problems identified.*

Investigation Process

The complaint was received by the Health and Disability Commissioner on 2 December 1999 and an investigation began on 2 February 2000.

Information was received from:

Ms B	Complainant / Miss A's mother
Mr C	Miss A's step-father
Dr D	Chief Medical Advisor, Hospital and Health Services
Dr E	Provider / Anaesthetist
Dr F	Provider / House Surgeon
Ms G	Duty Manager, Hospital and Health Services
Ms H	Emergency Department Registered Nurse
Mrs I	Registered Nurse
Mr J	Intensive Care Unit Registered Nurse
Ms K	Intensive Care Unit Registered Nurse
Dr L	Paediatrician
Dr M	Radiologist

Advice was obtained from an independent anaesthetist/intensivist and a specialist in emergency medicine. The Ministry of Health website was accessed. Relevant medical records were also reviewed.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation

On Wednesday, 14 July 1999, 14-year-old Miss A had an accident during a physical education lesson at her school when a weight bar was dropped and clipped the bridge of her nose. Miss A was not seen by her GP or the school nurse but continued to go to classes. The complainant, Ms B, said that Miss A may have had a headache on Wednesday and Thursday but she took Panadol, appeared to be okay and continued to go to school.

Miss A was concerned that she may have fractured her nose in the accident, so on Friday 16 July her mother took her to the public hospital to see an ENT (ear, nose and throat) surgeon, Dr N. Dr N examined Miss A and confirmed that there was nothing wrong with her nose. The clinical notes from the ENT Outpatient Clinic record that Ms B telephoned Dr N on Friday morning and Dr N saw Miss A at 1:45pm that day. He noted that Miss A seemed well, was in her school uniform, and her nose was swollen but not deviated (disfigured). No treatment was given at that time. Ms B was to telephone him the following week if she had any further concerns.

Ms B explained that on Friday afternoon after school Miss A complained of a headache. She went to have a sleep and felt better when she woke up. Miss A was hungry and ate a good dinner but was quite irritable that evening. She worked on the computer and watched television before going to bed.

Ms B woke up around midnight and heard Miss A vomiting. Miss A looked very unwell, was vomiting and complained of a severe headache. Ms B worked at the public hospital in the town (as an enrolled nurse and trainee anaesthetic technician), so she telephoned staff in the Emergency Department (ED) to ask for advice. Ms B spoke with a registered nurse, Ms H, and explained Miss A's condition and the head injury she had sustained at school. Ms B stated that Ms H told her that it was unlikely Miss A was suffering from concussion as the accident had been 36 hours earlier, and that ED was not busy that night.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Ms B said that she and her husband (Miss A's stepfather), Mr C, decided to take Miss A into ED at the public hospital to have her checked out. Ms B said that she was unsure what was wrong with Miss A but knew that she was definitely unwell. It is a 45 minute drive on metal roads from their home to the hospital, so their decision to take Miss A to hospital was not one that was made lightly.

Ms H was working the 11:00pm to 7:00am shift in ED on the night of 16/17 July 1999. Ms H confirmed that Ms B rang ED just after midnight, as she wanted advice about Miss A, who had woken vomiting with a headache and feeling generally unwell. Ms B asked how busy ED was that night and Ms H replied that it was a reasonably busy night with a steady workflow. Ms H consulted with house surgeon, Dr F, who advised bringing Miss A into hospital for assessment. Ms H told Ms B that she could bring Miss A into the hospital if she wanted to, or she could give Miss A some Panadol and wait and see what happened. Ms H and Dr F were aware that Ms B and Miss A lived in a remote area with no medical services nearby. Ms B phoned back 10 minutes later and said that she was bringing Miss A into hospital. Ms H said that Miss A's headache was described as mild by Ms B in the first phone call and was not emphasised as being severe. Ms B disagreed: she would not have undertaken a 45 minute journey on metal roads in the middle of winter for only a mild headache.

Ms B said they arrived at ED at about 1:30am. During the journey to the hospital Miss A vomited again and had trouble holding her head upright. Upon arriving Ms B and Mr C needed a wheelchair to take Miss A inside, as she was no longer capable of walking. Mr C had commented to Ms B that Miss A's bedding had been soaked with sweat and she was very hot to touch. Miss A was not at all talkative and complained of a terrible headache and nausea.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Ms H said that when Miss A arrived she looked completely miserable, was sitting in a wheelchair and did not want to talk to anyone. Ms H said that Miss A looked like a typical miserable teenager who had been vomiting. Ms H thought that Miss A went to the toilet on arrival at ED and may have vomited again at that time. Miss A was placed into a cubicle opposite the nurses' station.

Ms H assessed Miss A's condition and triaged her as a level 3 or 4 patient. At the public hospital ED patients are triaged by a registered nurse, who requests senior assistance from a consultant or registrar on call at home if the patient is triaged as status 1 or 2. The 'Triage Decision Protocol for Initiating Trauma Calls' provided by Hospital and Health Services defines the status of patients as follows:

- Patient Status 0 – Deceased
- Patient Status 1 – Critical
  Patient condition Very unstable
  Potential to deteriorate Extreme
- Patient Status 2 – Serious
  Patient condition Unstable
  Potential to deteriorate Highly likely
- Patient Status 3 – Moderate
  Patient condition Stable
  Potential to deteriorate Likely
- Patient Status 4 – Minor
  Patient condition Stable
  Potential to deteriorate None

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

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Information Gathered During Investigation *continued*

The protocol also states that for all status 1 and 2 patients, or if the patient's Glasgow Coma Scale Score (GCS) is less than 13, systolic blood pressure is less than 90mmHg, or if certain injuries are present, a trauma call should be made to request senior medical assistance. (The GCS is used to measure the level of consciousness. A score of 15 means the patient is fully conscious, more than nine rules out coma, and a score of less than seven indicates a coma.)

Ms H stated that at 1:45am Miss A's initial blood pressure was low (74/49), her pulse was normal (84 beats per minute), she was breathing at 14 respirations per minute and her temperature was 37 degrees Celsius. Miss A's weight was 46kg, blood glucose level was 10 and her GCS was 13/15.

Ms H stated that Miss A was talking appropriately in monosyllables but not in depth, and she had no objection to her pupils being examined with a small torch. Ms B explained to Ms H that three days earlier Miss A had had an accident at school where a weight bar fell on her nose. Ms B did not know whether Miss A had lost consciousness at any stage.

Because Ms B was concerned that the temperature reading was inaccurate (as Miss A had been hot and sweaty), she took Miss A's temperature again with a thermometer under her arm. This registered 37 degrees. Ms H said the thermometer she used initially was tympanic (used in the ear), and is normally very accurate. Ms H said that at the time she commented to Ms B that thermometers are sometimes inaccurate, but in retrospect she feels this was not the case. Ms H did not think that Miss A felt hot to touch.

Ms H advised me that when Miss A arrived in ED her condition did not require immediate attention from a doctor. Miss A then started to get restless as her level of consciousness began to drop. However, Ms H commented that when teenagers are unwell they tend to back off and communicate less than usual. She therefore took no further action at that point.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Dr F was the house surgeon on duty in ED that night. Dr F trained in England, graduating from the University of London in 1992, and came to New Zealand in May 1999. He was employed in ED at the public hospital as a senior house officer (SHO) from 24 June 1999 until 29 August 1999. Dr F advised me that when he first arrived at the public hospital one ED consultant was on holiday and the other consultant was not present. A registrar showed Dr F around ED and pointed out where things were kept. This took about 30 minutes. Dr F said that he thought that policies and manuals containing standard ED procedures existed, but he does not recall seeing these manuals or being shown them. Dr F explained that when he needed to know how to do something, he would generally ask the nursing or medical staff for advice.

Hospital and Health Services advised me that when Dr F arrived at the public hospital he had two days' orientation on 24 and 25 June 1999. He was rostered on duty in ED on those days, but was superfluous to usual staffing requirements. Hospital and Health Services explained that doctors get orientated physically into departments and are expected to familiarise themselves with the protocols, clinical guidelines and procedures manual, with input from the Clinical Director; in ED Dr F was given an orientation document detailing requirements, conduct admission policy and education. Hospital and Health Services stated that the Clinical Director discusses the document's content with each SHO during their first week of employment, but could not confirm whether this was done with Dr F. Dr F began working night shifts on 12 July 1999.

At 2:00am Dr F saw Miss A after Ms H's triage examination, which was approximately 20 minutes after she arrived in ED. Dr F stated that Miss A's history was obtained from Ms B rather than from Miss A herself and that he was told Miss A had had a blow to the head two days earlier with no loss of consciousness and an increasingly severe headache. Dr F stated that Miss A had normal observations for blood glucose, oxygen saturation, respiratory rate, heart rate and temperature, although her blood pressure was initially low. The clinical notes record that at 2:00am Miss A's pupils were equal and reacting with light, size 2, and that her GCS had deteriorated to 10/15.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Dr F examined Miss A between 2:00 and 2:15am and wrote his notes up at 2:45am. He recorded the history of Miss A's head injury two days earlier, her increasingly severe headache since then and the ENT review concluding no fracture of her nose. He noted that there was no cerebro-spinal fluid leaking from Miss A's nose, which would have indicated a definite skull fracture. Dr F also noted that Miss A's headache was now worse, she had deteriorated since arriving home from school, had vomited and was no longer speaking. He specifically noted that there was no rash present and her neck was not stiff. Ms B subsequently disagreed with Dr F's assessment, in that Miss A's condition had deteriorated since her arrival in ED and she had not vomited again. Dr F described his examination and conclusions as follows:

> "*Examination of the patient was unremarkable with no signs of respiratory problem or shock. Her BP recorded by myself was normal at 112/72. Skull examination revealed no evidence of a skull fracture and Brudzinski Sign was absent with no neck stiffness. Abdominal examination I recall was not abnormal with no evidence of peritonitis (not recorded in the notes).*
>
> *I considered the patient to have a deterioration in consciousness probably due to a space occupying lesion, most likely a haemorrhage or perhaps a brain tumour. I felt meningitis was unlikely in view of the history of mild head trauma, normal temperature and absence of haemorrhagic rash or neck stiffness. I do not recall any history of contact with meningitis from her parents but did not specifically ask for this.*
>
> *I decided the patient needed an urgent CT scan and asked the radiologist at 3:05am to come in from home. Her GCS was at this time 10 from 15. The patient continued to deteriorate with oxygen being used and her GCS was 7 at 3:45am. IV access had been obtained at 2:20am and a* [full blood count] *and* [urea and electrolytes] *sent urgently to the laboratory at around 3:30am.*"

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Dr F recorded in Miss A's notes that the blood tests had been ordered but he did not see the results. He stated that he would have expected to receive the blood test results between 4:00am and 4:30am. Ms H does not recall the blood test results coming to ED. Intravenous access was obtained, but Miss A was not happy about having the IV luer placed into her hand. Registered Nurse Mrs I helped to hold Miss A's arm still so this could happen.

Hospital and Health Services advised me that the blood sample was collected from Miss A at 3:30am, and that the sample was received and registered on the computer system at 4:19am. The specimens were then analysed and the results were released into the computer system where they were available to clinical staff at 4:33am, the hospital computer system being the principal means by which clinical information is communicated. Laboratory policy requires unusual test results to be notified to clinical staff by telephone; this includes white cell counts of less than 3.0 10^9/L or greater that 30.0 10^9/L. Miss A's white cell count was 18.9 10^9 /L so there was no requirement to telephone it through. The blood test results were first accessed at 4:51am by a terminal that had been logged onto by Mrs I, but Hospital and Health Services pointed out that it was not necessarily Mrs I who had used the terminal to access the results. The results were next accessed at 7:18pm that day.

Dr F decided that an urgent CT scan of Miss A's head was necessary in order to confirm his provisional diagnosis of a head injury. He explained that this was the first CT scan he had ordered at the public hospital and that he was not sure how to go about doing so. He asked nursing staff for assistance and was told to telephone the radiologist, Dr M, which he did at 3:05am. Dr M agreed to come to the hospital to perform the scan. At this point, Miss A's GCS score was 10/15. There is a printout in Miss A's ED record of electronic monitoring of her heart rate, blood pressure, and oxygen saturation between 3:00am and 4:20am.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Ms H stated that there were subtle changes in Miss A's level of consciousness as her GCS score deteriorated. After a while Miss A would respond to her mother but not to Ms H. When Ms H told Dr F that she was becoming concerned about Miss A's condition, Dr F replied that he had ordered a CT scan. Ms H then moved Miss A into the Resuscitation Room, as it was more private and easier to monitor her in there.

Dr F stated that he did not know if there was an official procedure or policy for requesting assistance from a senior doctor. He explained that nurses undertook a triage examination when patients arrived, and the nurse would then call for a senior doctor if the patient's condition was serious or life threatening. Miss A's condition was not life threatening or serious when she arrived, so no senior medical assistance was called at that point. Dr F said that when he was working in the United Kingdom, if senior help were needed he would call the consultant. Dr F was not aware of the public hospital's procedures or policies in this regard. He explained that there were two consultants and one registrar who covered the public hospital ED, but he was not sure of the exact arrangements concerning their availability.

Hospital and Health Services advised that senior medical assistance was available to Dr F that evening. Specifically, that registrar and specialist backup was available in ED, and that both junior and senior paediatric and surgical medical staff were available on call. Senior anaesthetic staff were available on call specifically if assistance with airway management was required. The procedure to request such assistance was by a telephone call; in emergency situations this could be relayed by nursing staff.

Registered Nurse Ms G was working as the duty manager at the public hospital that night. Ms G explained that this meant she was responsible for the safety of the whole hospital, and in this role she oversaw events in ED and the Intensive Care Unit (ICU) that night.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Ms G came to ED between 3:15 and 3:30am, and was told that Ms B's daughter was in Room 1, the Resuscitation Room, as she had had a head injury earlier in the week. Ms G went in to see Miss A and was very shocked when she saw how very unwell she was. Ms G said that Miss A felt hot but her temperature had been checked and was within normal range. Ms B advised that Miss A's temperature had been 37 degrees under her arm, which indicated that her actual temperature was 38 degrees. Ms G wondered if Miss A was "*playing possum*" but Miss A was so unwell she would not respond to Ms G. Ms G stated that Miss A did not want to be touched, her neck was arching and she was moving around in a combative way but not purposefully. Miss A would have a session of these abnormal movements then appear to sleep again; this was an ongoing pattern. Ms G lifted Miss A's top to check for a rash on her abdomen but did not see one.

Ms G then went to talk with Dr F as she was very concerned about Miss A. Ms G stated that Dr F explained to her that he had organised a CT scan with Dr M. When asked, Dr F said he had not called in an anaesthetist, so Ms G suggested this would be a good idea, as Miss A would need intubating and ventilating in order to manage the CT scan.

Ms H stated that Miss A then obviously began to deteriorate. Her level of consciousness and her oxygen saturation level dropped further, so at 3:40am Ms H and Ms B inserted an oral (Guedel) airway (a tube to keep Miss A's throat open for breathing). Dr F was not present. He stated that an oral airway does not need to be inserted by a doctor, and that this did not compromise Miss A's condition. Miss A's GCS score was approximately 9 at this stage. Ms H said that Miss A was no longer responding to commands and was tolerating the airway, which indicated a lower level of consciousness. When Ms H told Dr F about Miss A tolerating the airway he explained that an anaesthetist had been called to sedate Miss A to enable the CT scan to be carried out. Miss A was very restless and needed to be sedated, intubated and ventilated so that she would lie still enough for the scan. Ms B said that by this time she was starting to panic about her daughter's condition.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Ms H stated that Miss A then began exhibiting decerebrate extensions (abnormal flexing and extending of the body), an indication of brain injury. Her GCS score descended to 6. Ms H said that she kept Dr F informed of the changes in Miss A's condition and she assumed Dr F would have communicated these changes to the anaesthetist. Ms H commented that Miss A was difficult to examine and there was not a lot Dr F could do once the CT had been ordered. Shortly after this a GCS score of 5, and decorticate rigidity (abnormal flexor posturing of the extremities), were noted.

Dr F stated that he telephoned the anaesthetist, Dr E, at about 3:15am and asked him to come to anaesthetise Miss A so that she would lie still for the CT scan. He explained Miss A's history of a head injury 36 hours previously and a deteriorating GCS, and said that an urgent CT was needed. Dr E initially went to the CT scanner and telephoned the ED at about 3:50am to ask where the patient was. Dr F then explained to Dr E that Miss A had to be intubated and sedated in ED before she could be transferred for the CT. Dr E went to ED and sedated and ventilated Miss A. She was then transferred to the CT suite. Dr F said that Dr E inserted an endotracheal tube into Miss A when he sedated and intubated her, and Ms B (a trainee anaesthetic technician) tied it. Ms B stated that she tied the tube at 23cm at the lips.

Ms G stated that 25-30 minutes after the telephone call to Dr E he had still not arrived in ED, so she telephoned the hospital operator who told her that Dr E was waiting for them in the CT unit. Ms G asked the operator to call Dr E and ask him to go to ED instead, but he still did not arrive. Ms G stated that she and Dr F therefore went to the CT unit where they explained to Dr E that Miss A was too unwell to be transferred before she was sedated and ventilated, and he accompanied them back to ED.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

The public hospital employed Dr E as a specialist anaesthetist. Dr E advised me that he has been registered with the Medical Council of New Zealand for 29 years, and that he carries vocational registration to practise the speciality of anaesthesia and pain management. Dr E had at this time been employed by Hospital and Health Services for 14 years and was the Clinical Director of the Department of Anaesthesia. He had postgraduate qualifications in anaesthesia from the Royal College of Anaesthetists in England and the Australian and New Zealand College of Anaesthetists.

Dr E was the on-call anaesthetist that evening and was also on call for ICU. Dr E advised me that he holds no postgraduate qualifications in intensive care and is not vocationally registered as an intensivist. He described his responsibility in ICU as being primarily to assist with the care and management of airway and related problems. He is not expected to be resident in the hospital during his on-call period but is expected to be within 15 minutes' travelling time from the hospital. Once a call has been attended to it is normal practice to return home. Hospital and Health Services advised me that the responsibility of the on-call anaesthetist covering ICU at this time was the care of patients in ICU, and if surgical, medical or paediatric input was required then junior and senior medical staff were available in surgery and paediatrics to assist.

Dr E stated that he was asked by Dr F to sedate Miss A to assist with a CT scan of her head, and was given Miss A's history. Dr E went to the CT Suite and found Miss A was not there, but on inquiry found that Miss A was still in ED. He arrived there at about 4:00am.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Dr E described events as follows:

> "*When I first set my eyes on* [Miss A]*, it was about 4:00am. I was struck by the marked extensor spasm of the young girl who was in decerebrate and decorticate rigidity. I assessed her GCS to be around 4-5. My main concern was that she had a significant space-occupying lesion inside her skull either in the form of a blood clot or a continuing bleed. She was unresponsive to commands and was making incoherent noises. I intubated the child and tied the endotracheal tube at a distance of 20cms from the lip margin and I took over the control of her breathing and proceeded to ventilate. The trip to the CT Suite and the subsequent positioning would have taken about 15 minutes. The CT scan of the head was done between 4:30 and 5:00am. The Radiologist who performed the CT scan reported that there was no space occupying lesion inside the skull and suggested ventilating the patient overnight in the Intensive Care Unit. Although there was no space occupying lesion, the severity and the rapidity with which the illness had progressed without any evidence of fever, infection, no prodroma, no neck stiffness and without an obvious rash, I could not exclude the possibility of a contra-coup injury as being the cause of the deterioration and I accompanied her still intubated and mechanically ventilated to the Intensive Care Unit.*"

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Dr E, Dr F and Ms H accompanied Miss A and her parents to the CT Scan Suite. Dr F stated that the scan began at 4:00am and was completed at 4:25am when he wrote up the results in her notes. The CT scan was normal and showed no evidence of trauma. Dr F wrote in Miss A's notes that there was no fracture seen on the scan, her ventricles were of equal size, there was no midline shift and no evidence of bleeding. Miss A was to be ventilated overnight in ICU. Dr M, radiologist, countersigned the notes where Dr F had recorded this. Dr M advised me that the CT showed no evidence of intracranial head injury and no abnormality that would have accounted for Miss A's clinical state. His radiology report (dated 19 July 1999, and therefore written after Miss A's death) also noted that early encephalitis or meningitis may not show in a scan. This was not written into Miss A's notes at the time.

Dr F was surprised at the normal CT result and asked Dr E if a lumbar puncture should be performed. (As there was no head injury, Dr F considered the next option to be a possible meningitis diagnosis.) Dr F recalled Dr E's reply as "*no, not at the moment*". Dr F stated that he asked Dr E what would happen next and Dr E replied that he would take over and accompany Miss A to ICU, where she was to spend the night ventilated.

Miss A's stepfather, Mr C, recalled that during the CT scan the doctors noted that there was no bleeding in Miss A's brain and no obvious cause for her problems. He remembered that someone then said that there must be something else wrong, but he does not remember who that was. He also does not recall a response to this observation. Ms B recalled that after the CT scan was clear, somebody suggested that Miss A could have been suffering from an infection but no one seemed to pick up on this idea at the time.

There is an entry in Miss A's medical notes timed at 4:00am by Dr E. Dr F stated that he did not see this entry and it was written after he left the CT suite. Dr F stated that he believed Dr E would either contact the paediatrician or treat Miss A appropriately himself in ICU, and that as Miss A had now left his care Dr F returned to ED.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

In his entry timed at 4:00am in Miss A's notes Dr E recorded that Miss A's GCS score was 4-6 and that she had been placed under a general anaesthetic for a CT scan. The drugs he used are recorded. He then wrote that the CT showed Miss A's head was clear and that she was for ventilation overnight in ICU. He then wrote "*?head injury ?meningitis for LP* [lumbar puncture] *in am* [morning]". Medications to be administered in ICU are then listed, with the statement: "*Review in am for extubation*". No antibiotics were prescribed for Miss A at this point.

Ms B was concerned that Dr E did not take appropriate action after noting that Miss A was possibly suffering from meningitis. Ms B was also concerned that Dr E only noted meningitis as a possible diagnosis in the clinical records and that a lumbar puncture could be performed in the morning; also, that Dr E did not communicate this information to anyone so that action could be taken immediately. As meningitis was seen as a possibility Ms B believes a lumbar puncture should have been performed or other appropriate action taken as soon as possible. She advised me that the public hospital staff receive regular bulletins from the Ministry of Health about infectious diseases, especially meningitis.

In response to this, Dr E commented:

> "*With regards to not taking appropriate action to treat possible meningitis. The meningitis as the cause of her unconsciousness <u>was</u> considered by me in my differential diagnosis but in the absence of any features suggestive of meningitis, (the headache was not <u>suggestive</u> of this), I consider it unreasonable for me to be crucified for not pursuing this diagnosis further and I consider it could be dismissed due to the absence of clinical features of meningitis.*
>
> *Indication for antibiotics in a head injury is where there is compound fracture or where there is any cerebrospinal fluid leakage either through the ears or through the nostrils neither of which were present but I was certainly willing to consider meningitis as a possible cause in the morning if there was no improvement in* [Miss A's] *condition.*"

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

ICU staff were telephoned and warned of Miss A's imminent arrival. They were told about Miss A's history of a knock to the head, vomiting, headache, that her level of consciousness had deteriorated, that Dr E had sedated and intubated her, and that the CT scan had detected nothing abnormal. They were told Miss A was to be ventilated, then woken and weaned in the morning.

Dr E stated that they arrived in ICU a little after 5:00am. He settled Miss A on the ventilator and instructed the nurse caring for Miss A about controlling her blood pressure, the maintenance of ventilator settings, and drugs needed to maintain muscle paralysis and sedation. On arrival Miss A was hypertensive (blood pressure 180/110) and her pulse was 120. She was given morphine and labetalol (to lower her blood pressure), then sedated with morphine, midazolam (a hypno-sedative) and pancuronium (a muscle relaxant) by Dr E. He also inserted another intravenous line for ready access for drug administration.

Dr E stated that his plan was to maintain artificial ventilation until the morning to achieve a low end-expiratory carbon dioxide level, and to maintain a mean arterial pressure of around 80mms mercury with fluid restrictions. Dr E stated that Miss A was now well settled and the ventilator settings were satisfactory. Her blood pressure was around 140 to 150 systolic and the oxygen saturation 99 to 100%. As Miss A was well settled, and after he had ascertained that the nurse was comfortable with his instructions, Dr E returned home, about five minutes away from the hospital.

Continued on next page

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Registered Nurse Mr J was Miss A's primary ICU nurse and was working a night shift in ICU on 16/17 July. Mr J had been working in ICU for about four months. He stated that Miss A arrived between 4:30am and 5:30am with Dr E, her parents and nursing staff. She was ventilated and sedated. Mr J said that the diagnosis was not clear to him, although he knew Miss A had had a bump on the head two days earlier, a severe headache, a deteriorating GCS and that the CT scan had detected nothing abnormal. Mr J was told that Miss A was to be sedated overnight and was for "*wake and wean*" in the morning. This meant that she would be weaned off the sedation and slowly woken up. Mr J stated that the fact that Miss A was for "*wake and wean*" indicated to him that she was not seriously unwell.

Mr J stated that on arrival in ICU Miss A had one peripheral line in her arm, and the patches on her chest were connected to monitors. A non-invasive blood pressure cuff (NIBP) was attached and it soon became obvious that Miss A had a very high blood pressure. Her heart rate was tachycardic (abnormally fast) with some ectopic (abnormal) beats, which Mr J stated is a sign of concern in a 14-year-old. Miss A's arms and legs were twitching and her pupils were 3 to 4mms in size and reacted only sluggishly to light. Mr J stated that he expressed his concern about Miss A's high blood pressure to Dr E, who gave Miss A an anti-hypertensive drug and more sedating and paralysing drugs.

Ms K was another registered nurse working in ICU that night. Ms K stated that Miss A arrived between 4:30 and 4:40am and she helped transfer Miss A from the ED bed to the ICU bed. Ms K noted that Miss A did not respond to being moved, and inquired about her sedation. Ms K was told that Miss A had been given no sedation since being intubated.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation ***continued***

Ms K noted Miss A's pupils were size 4 and reacting sluggishly. Ms K then connected Miss A to ECG monitor leads and printed out one or two rhythm strips. (These printouts were not included with the medical file provided by Hospital and Health Services.) She stated that Miss A's heart rhythm was sinus tachycardia (a normal beat but a fast rate), with ventricular ectopics (every third or fourth beat was abnormal). Ms K then became concerned, as it is unusual for a previously fit and well young person to have a heart rhythm like this in the absence of any underlying congenital heart condition. The NIBP showed Miss A had a very high blood pressure. Mr J had connected Miss A to the ventilator. The oxygen saturation probe on Miss A's finger showed a saturation level of 100%.

Ms K stated that she brought the CTG (cardiotocograph) trolley to Miss A's bed, as she wanted a 12 lead ECG to obtain baseline data of Miss A's heart rhythm given that it had been abnormal. Dr E asked her to explain what she was doing. Ms K explained, and Dr E replied that Miss A's heart was now in a normal rhythm and this would not be necessary. Ms K then requested arterial and central lines be inserted into Miss A and she brought the necessary equipment trolleys to the bedside. Ms K explained that an arterial line gives a continuous and accurate blood pressure reading and also acts as a port for drawing blood. The NIBP, however, can be read only every minute. Ms K also explained that Miss A had only one peripheral line in her left arm on arrival. She thought that a central line would have been preferable as it gives a wider access to a blood vessel for giving fluids or drugs.

Ms K stated that Dr E declined to insert these extra lines, stating that Miss A was to be ventilated for a short time only, and weaned and woken in the morning. Ms K commented that Ms B was present, saw her bring the equipment trolleys to Miss A's bed, and witnessed Dr E's decision not to insert the extra lines. Ms K stated that she would have been happier had these matters been initiated, but in her opinion this would not have made any clinical difference to Miss A's condition. At about 5:00am Ms K left Miss A's bedside as she had to attend to another patient.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation ***continued***

Ms B stated that the results of blood tests that had been ordered by Dr F in ED were pinned up next to Miss A's bed in ICU. Ms B is concerned that no notice was taken of these results, as they indicated that Miss A had an infection. (A high white cell count, high band and segmented neutrophils, low lymphocytes and a high erythrocyte sedimentation rate – all laboratory indicators of bacterial infection.) Mr C also recalls seeing these results. He stated that a nurse, possibly Mr J, wrote them up on a whiteboard beside Miss A's bed, within 10 to 20 minutes of their arrival in ICU. This was before Dr E left. Hospital and Health Services advised that these results were first available on the computer system at 4:33am, and were first accessed at 4:51am from a terminal that had been logged onto by Mrs I. By this stage Mrs I was working in ICU.

Dr E advised me that he did not order these blood tests, had no way of knowing that they had been ordered, and that neither the person who ordered the investigation nor the person who took down the results passed that information on to him. ICU nursing staff, Mr J and Ms K, did not recall seeing these results either.

Ms B was also concerned that Dr E did not take appropriate action in response to signs that Miss A might have been suffering from a viral infection rather than a head injury; namely, a normal CT scan, a high temperature and the blood test results. Dr E responded that:

> "... [Miss A] *had no features suggestive of any infection either viral or bacterial. She had no fever; she was certainly not hot to touch. She had no neck rigidity or neck stiffness and she had no evidence of any rash on her body, however, she did have her belly-button pierced and there was a silver sleeper with a blue stone in it.*"

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Mr J stated that he was not aware of when Dr E left ICU. Contrary to Dr E's assertions, Mr J stated that Dr E did not check with him whether or not everything was okay, or whether Mr J had understood his instructions; Dr E did not leave any parameters or guidelines for Miss A's ongoing care before he left. There were no care parameters listed by Dr E in Miss A's medical notes either, apart from a telephone call recorded by Mr J in which Dr E had said to keep Miss A's mean arterial pressure at 80. Mr J advised me that most doctors would check that all was well and understood by nursing staff before leaving ICU. Ms K confirmed that there had been no communication from Dr E to nursing staff before he left ICU.

Ms B stated that Dr E explained to her that Miss A was fine, he would ventilate her for the night and wake her up in the morning. Ms B is certain that Dr E told her Miss A was fine, and that he did not say anything else to her about Miss A's condition. Dr E, however, stated that he communicated with Ms B on several occasions. He advised me that he was concerned for Miss A, and relieved the CT had been clear. Before leaving ICU he told Ms B that he would wake Miss A up in the morning and see how things progressed. Dr E looked at the ventilator settings and talked with Mr J. Mr C said that he was not continuously present at this point, and was not aware whether there was any communication from Dr E to Ms B before Dr E left.

Mr C said that Dr E did not discuss anything with him before leaving ICU. Mr C was not aware of any discussions that Dr E may have had with Ms B, as he was in and out of Miss A's room. The only interaction that Mr C had with Dr E was when Dr E put his hand on Mr C's shoulder the first time that Miss A went into cardiac arrest.

Ms B said that she felt safe at this stage as Miss A looked stable and there was no head injury. Her husband suggested they go home and return in the morning but Ms B wanted to stay with her daughter in case Miss A woke and wanted her in the night. Ms B said she left the room to go to the toilet, and when she returned Dr E had gone and the alarms on machines monitoring Miss A's condition were ringing.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Mr J stated that shortly after Dr E left he became concerned as Miss A's blood pressure was very high, her pulse was high, and her pupils were barely reacting to light. Another nurse checked Miss A's pupils as well and Mr J discussed the situation with other nursing staff. He then telephoned Dr E and expressed his concern about Miss A's condition. Over the phone Dr E told Mr J to give Miss A 5mg of morphine, then 10-20mg of labetalol if the morphine was not effective. Mr J gave Miss A 5mg of morphine, then 5 minutes later 10mg of labetelol. Mr J said that he did not ask Dr E to come back to ICU during this conversation, although he was hoping that Dr E might offer to return. Dr E stated that Miss A's deterioration was not communicated to him until the second telephone call, at which time he returned immediately to ICU.

Mr J said that within 10 or 20 minutes, at about 5:30am, Miss A's blood pressure became labile (extreme highs and lows), and her pupils were virtually non-reactive and appeared to be enlarging slightly. Ms K returned to Miss A at this time. Ms K advised Mr J to call Dr E back to ICU. Mr J telephoned Dr E again, explained that he was very concerned as Miss A was very sick, and asked Dr E to return to ICU. Dr E returned within 10 minutes of this request.

Dr E stated that within ten minutes of arriving at his home he was telephoned by the ICU nurse looking after Miss A to say that her blood pressure had risen and that she was bucking on the ventilator. Dr E explained events as follows:

> "*It suggested to me that perhaps the sedation was inadequate and the patient was waking up which was a good sign, however, as I had planned to artificially ventilate her until morning, it was not desirable and I instructed that she be given 5mgs of Morphine intravenously and 5mgs of Labetalol which is a drug to control the blood pressure. However, no sooner had I hung up the telephone, the Nurse telephoned me again to say that the patient was deteriorating at which time I immediately returned to the Intensive Care Unit to find that the patient was cyanotic with the endotracheal tube which was securely tied at 20cms in the Emergency Department now well down into the 28cms mark.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

It was quite obvious that the tube, which was initially endotracheal [in the throat to assist breathing], *had been pushed into an endobronchial* [in the passage from the throat to the lung] *situation and possibly was the cause of the change in the patient's condition. I immediately repositioned the tube, bought it back to an endotracheal position and ordered a chest x-ray to confirm the position of the tube. Soon after that, in spite of increase in the Oxygen concentration to 100%, the patient initially went in to a period of ventricular tachycardia and then progressed on to cardiac arrest at which time I started cardiac massage and also went on to telephone the paediatrician on call.*"

Ms B stated that when Dr E inserted the endotracheal into Miss A in the ED she was the one who tied and secured the tube. Ms B is certain that she tied this tube securely at 23cms at Miss A's lips, and that Dr E may have checked this measurement at the time. Dr F confirmed that Dr E inserted the endotracheal tube and that Ms B tied it. Dr E stated, however, that he tied the tube 20cms from Miss A's lip margin. Ms B and medical and nursing staff involved in Miss A's care were not aware when or how the endotracheal tube could have shifted position.

Ms G stated that about 5:15am she went to ICU to see how things were. On arriving she found that Miss A had very obviously deteriorated. She stated that the nursing staff were very worried about Miss A and expressed to her their frustration at the difficulty of obtaining medical assistance. There was no doctor present. The nurses explained to Ms G that they felt unsupported and they had rung Dr E to return. Ms G explained that there is no doctor present in ICU at night but there is always someone on call.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

During the 10 minutes that Dr E took to return to ICU Ms K said that she catheterised Miss A and took a urine specimen. She also collected blood culture bottles, as she wanted to collect baseline data. Ms K then noticed Miss A's oxygen saturation level dropping and that there was white frothy liquid in her endotracheal tube. Ms K suctioned Miss A immediately and obtained a large amount of white frothy liquid that quickly dissolved into dirty brown liquid. Ms K stated that this liquid is usually a sign of pulmonary oedema (fluid in the lungs). Ms K took a sputum specimen. Miss A's oxygen saturation levels then briefly rose before dropping dramatically down to 88%.

When Dr E arrived he began to manually ventilate Miss A in order to clear the secretions from her lungs. As more liquid was noted in the endotracheal tube Miss A was suctioned again. Her oxygen saturation level rose to 99% and stayed up. Ms K stated that at this point she suggested a chest x-ray be done, as Miss A had no known chest infection. A radiographer was called. The charge nurse suggested calling the paediatrician to assist, and Dr E agreed.

Mr J recorded in the nursing notes Miss A's time in ICU under his care as follows:

> "*Acute admission to unit via A&E.*
> *On arrival pt already ventilated. Transferred to ICU bed and ventilator. Accompanied by* [Dr E]. *Hypertensive BP = 180/110 P 120. Given morphine and labetalol by* [Dr E]. *BP ↓ = 140/80.* [Dr E] *charted meds and fluids and left sometime after this. Pt had been given further sedation – morphine, midazolam and pancuronium, and appeared reasonably comfortable at this stage. Shortly after this pts pulse ↑ 160 and pupils noted to be dilating to 4 and only very sluggish reaction. BP ↑ again.* [Dr E] *phoned and gave orders to give further morphine 5mg and if that did not work 10-20mg labetalol. Given the morphine as ordered and 5 mins later 10mg labetalol.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Pts condition continued to deteriorate – labile BP pupils dilated and unresponsive. Dr phoned again and agreed to come in and reassess pt. At this stage other senior staff assisted in care of pt. Pt became bradycardic at 0600 approx and suffered a cardiac arrest. Defibrillated several times before a heart rhythm was re-established. At this point the paediatrician was also present. Pt continued to be intensively provided for by a large group of staff at time of end of shift."

Paediatrician Dr L was telephoned by nursing staff to come to assist. Her home was five minutes away by car and she arrived promptly, shortly before Miss A's first cardiac arrest at 6:20am. When Dr L arrived in ICU Miss A was already intubated and ventilated, and continuous cardiac and saturation monitoring were in place. Dr E was attending to Miss A's airway and ventilating her with a bag. There were also nursing staff attending to her. She had an electrical trace on her cardiac monitor but her pulses were difficult to palpate and Dr L requested a blood pressure reading. Miss A then quickly deteriorated into cardiac arrest and Dr L began external chest compressions.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Dr L stated that between the several episodes of full cardio-respiratory resuscitation and intensive management of Miss A's condition she obtained Miss A's medical history. Dr L stated that Miss A's ED notes, the CT report, and full blood test results (including the full blood count) were all available to her. She described Miss A's condition as extremely unstable, critically ill, and stated that there were no obvious explanations for her condition. Dr L stated that after Miss A's first cardiac arrest and resuscitation she began to consider the many possible causes of Miss A's condition and ordered an empiric broad spectrum antibiotic, which was given at 6:45am. These antibiotics were given without a specific diagnosis having been made. Dr L stated that after taking time to consider the situation her clinical impression was that Miss A's diagnosis was not known. However, the most likely explanation would be overwhelming *Neisseria meningitidis septicaemia*, including a significant myocarditis (inflammation of the muscular walls of the heart) and possible meningitis (a serious infectious disease, with inflammation of the brain and spinal cord membranes, or blood poisoning). Two purpura (purplish-brown skin spots which indicate haemorrhage into the tissues) were noticed on Miss A's left leg, leading to a diagnosis of acute septicaemia (blood poisoning). Antibiotics were commenced and blood cultures and throat swabs were taken.

Mr J said that after Dr L arrived he had more of a support role rather than being Miss A's primary nurse, and that Miss A's care turned into a team effort. Mr J wrote up Miss A's clinical notes at about 8:45am and left between 9:00-9:30am. No contemporaneous record of Miss A's care was kept as staff were very busy. Mr J has no recollection of the blood test results that had been ordered in ED, and is not aware of these results having arrived in ICU.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

In spite of numerous aggressive resuscitation attempts, including treatment with adrenaline and defibrillation, Miss A's condition did not improve. Many medical and nursing staff were involved with Miss A's care and resuscitation. Resuscitative attempts were terminated at around 10:00am after discussion with her family, and Miss A died shortly before 11:00am. A paediatric intensive care specialist from a hospital in a city was coming to the town by helicopter to help with her care, but Miss A died before he arrived.

An autopsy was carried out on 17 July 1999. The autopsy report dated 3 August 1999 recorded that Miss A had been pronounced critically unstable and required multiple resuscitations, but was unconscious and unresponsive throughout. The report stated that CPR was initiated on eight occasions between 6:00am and 10:50am, and death was pronounced at 10:55am. The pathologist concluded that Miss A's death was due to extensive acute meningitis due to *Neisseria meningitidis*. The *Neisseria meningitidis* was identified by DNA amplification.

Registered Nurse Mrs I was working as a casual nurse on the night Miss A was in hospital. She began her shift in ED and was present when Miss A was admitted, then later shifted to ICU and was present while Miss A was being resuscitated. Mrs I happened to be working in the Ear, Nose and Throat (ENT) Department at the public hospital in November or December 1999 when she saw in the "*to be filed*" pile Miss A's outpatient notes from 16 July 1999. Mrs I was aware of Miss A's death and she sent her records to the Medical Records Department to be filed with Miss A's notes. When Mrs I was reading Miss A's medical file to prepare for her interview during this investigation she noticed that the ENT notes were not in Miss A's file and notified the Chief Medical Advisor's administration assistant who collected the ENT notes from Medical Records to complete Miss A's file.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

As well as internal reviews and discussions about Miss A's care, and meetings with her family, Hospital and Health Services commissioned an independent Quality Assurance Review of the circumstances surrounding Miss A's death. Dr O, a specialist in anaesthesia and intensive care medicine, carried out this review on 19 August 1999. Dr O stated that the purpose was a review of case management and a comment on hospital process, with a view to making some recommendations to assist the quality assurance process. The inquiry did not seek to apportion blame. Dr O reviewed Miss A's medical records, analysed the disease process, and interviewed some of the medical and nursing staff who had been involved in Miss A's care.

Interviews were held with Ms B and Mr C, medical and nursing heads of the ED, the nursing head of ICU, Ms G, Ms K, Dr L, the Acting Head of Department of Anaesthesia and Dr E. Ms H, Mr J and Dr F were said to be unavailable for interview. However, Mr J advised me that he was available but not called to interview, and Ms H stated that she was not even aware the review was taking place. Dr F was said to be unavailable as he had moved to another country. However, he advised me that he had not left New Zealand and that Hospital and Health Services had his forwarding address.

The review made eight recommendations, as follows:

1. To counteract delays in ED, consideration to be given to developing joint medical and nursing protocols for triage and rapid referral of concerning cases to senior staff.
2. ED senior staff have training visits to other hospitals to observe triage, communication line and referral protocols.
3. A transparent protocol be developed to permit the prompt referral of critically ill patients to appropriate senior specialist staff.
4. Further development at the ICU, with an emphasis on improving staffing levels and expertise.
5. Dr E undertake a professional standards maintenance programme.

6 & 7. Critical incident debriefing be implemented to assist staff to deal with distressing incidents like this one, with consideration given to appointing a clinical psychologist.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

8. A copy of the report to be sent to Miss A's family.

Hospital and Health Services responded to the report and the recommendations as follows:

1. Triage score was appropriate and Miss A was seen within 40 minutes, which is an acceptable time. However, she was not referred to senior staff upon deterioration, which was not in accordance with protocols. Protocols were all reviewed and a universal protocol developed for ambulance arrivals.
2. There was already regular contact between senior ED staff and other hospitals, which would be developed. Triage communication and referral protocols were already in place.
3. Protocol reviewed and re-emphasised to staff.
4. New ICU director appointed who had updated procedures and protocols.
5. All anaesthetic staff working in ICU to be encouraged to spend time in the city ICU as part of maintaining professional standards.

6 & 7. Critical incident debriefing being developed.

8. Report sent to family.

Ms B was not happy with this outcome, as she believed the scope of the inquiry was inadequate, not all staff involved in Miss A's care were interviewed, and no corrective action was instituted as a result.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Dr D, Chief Medical Advisor at Hospital and Health Services, responded to her concerns as follows:

> "*... I do not agree that the external review carried out was inadequate:*
> *Because* [Hospital and Health Services] *is a 24 hour, seven day a week organisation it is often impossible to get all staff together on one particular occasion, in this case the visit of* [Dr O]. *However, the nursing staff was certainly talked to in detail by the Clinical Director and the Charge Nurse for comments and input into their Quality Improvement meetings. The Clinical Director and Charge Nurse used this information with their discussions with* [Dr O]. *The review made eight recommendations and I would like to refer to attachment number IV which shows that all the recommendations were either actioned or were proven not to be either factually correct or relevant.*
>
> *Many meetings took place to review the tragic death of* [Miss A]*:*
>
> *09.8.99* [Dr D] *with* [Ms B]
>
> *16.8.99* [Dr D], [Dr E] *(Anaesthetist),* [Dr F] *(ED Senior House Officer) and* [Dr L] *(Paediatrician)*
>
> *17.8.99* [Dr D] *with* [Ms B]
>
> *18.8.99* [Dr D] *and* […], *Clinical Director, ICU*
>
> *19.8.99* [Dr O] *(external review)*
>
> *01.9.99* [Dr D], […] *(ED Clinical Director),* [Dr L] *and* [Dr E].

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Information Gathered During Investigation *continued*

Morbidity and Mortality meetings took place in the Emergency Department, Anaesthetics Department and Paediatric Department and also combined Emergency, Anaesthetic and Paediatric Department meetings. Policies in the Emergency Department and ICU have been reviewed as a result.

..."

Meningitis is a disease that under the Health Act 1956 must be notified to the Medical Officer of Health when it is diagnosed. Statistics kept by the Ministry of Health show that New Zealand has been experiencing an increased rate of meningococcal disease since mid-1991, an epidemic that could continue for up to 15 years. Over 75% of cases of meningococcal disease occur in winter and spring months. Between 1995 and 1997 there was an increasing incidence of meningococcal disease in the area. Medical practitioners were encouraged by the Ministry of Health and the Health Funding Authority to be aware of meningitis, its signs and symptoms, and the need for prompt treatment.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner

Emergency Medicine Specialist

The following advice was obtained from an independent specialist in emergency medicine:

"...

MENINGOCOCCAL INFECTION

An Emergency Medicine Report: October 30, 1995 Vol 16, Number 22 entitled Meningit Update: 'Pearls, Pitfalls, Guidelines, and Controversies' By Graham, TP et al notes in the introduction: 'The management of meningitis not only presents formidable clinical challenges but also has important medicolegal implications. Add to this the caveat that in meningitis, 'timing is everything' and the potential pitfalls of managing this condition become quite clear. In fact, among infectious diseases, bacterial meningitis is one of the few true emergencies encountered in the acute care environment. In an otherwise healthy person, meningitis can progress from what initially appears to be a mild illness to death within hours. Accordingly, rapid diagnosis and initiation of effective, targeted antimicrobial therapy are essential to reduce mortality and avoid serious injury.'

The Importance of Early Management:

Meningococcal disease develops rapidly and most deaths occur early in the illness, some before the patient has arrived in the hospital.

Why do patients die?

- *Delay*

1. *In recognising significance of symptoms*

2. *Through incorrect diagnosis*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

3. *In prehospital management*

4. *In inpatient management*

- *Unrecognised deterioration in hospital*

- *Coning following lumbar puncture.*

Clinical Presentation:

Bacterial meningitis typically presents with fever, headache, meningeal signs such as neck and back stiffness and altered mental status. Anorexia, irritability, nausea, vomiting, photophobia and lethargy are nonspecific but frequently associated symptoms. Kernig's sign (back and leg pain on hip flexion/knee extension) and Brudzinski's sign (back and leg pain on neck flexion) are often present in older children and adults. Seizures are not uncommon in the first 24-72 hours of illness.

It should be noted that clinical signs of meningeal irritation are frequently absent despite the presence of severe infection. Generally 72% of patients who were 12 months old or younger and 93% of the group older than 12 months have these signs.

Diagnosis

In patients suspected of having bacterial meningitis, an LP (lumbar puncture) and CSF (cerebro spinal fluid) analysis should be performed without delay in order to establish the diagnosis. If a CT is indicated (? Potential for cerebral herniation), empirical antibiotics should be given prior to CT in order to avoid unacceptable delays in administering therapy. Blood cultures should be drawn to improve the likelihood of identifying an organism (positive in 50% of cases).

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

Contraindications for Lumbar Puncture

- *Confident clinical diagnosis of meningococcal infection – drowsiness or impairment of consciousness*
- *Glasgow Coma Scale score of 13 or deteriorating scores*
- *Other signs of raised intracranial pressure – marked instability of blood pressure or heart rate.*
- *Focal neurological signs*
- *Impending or established septic shock*
- *Infection at the planned lumbar puncture site*
- *Bleeding disorder.*

Currently, many people are of the opinion that empirical treatment for suspected meningococcal meningitis is appropriate and LP need not be performed in many of the cases.

Generally, Early Management of Meningococcal Disease in the Hospital includes the following recommendations:

- *Doctors (including junior doctors) should be familiar with the symptoms and signs of meningitis.*
- *Be alert for sudden clinical deterioration.*
- *Do not delay in starting antibiotics*
- *If the presentation is meningitis, start dexamethasone as well.*
- *Record critical clinical information to allow prognostic scoring and audit.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

- *Notify Medical Officer of Health*
- *Work hard to confirm the diagnosis*
- *Monitor intensively until all vital signs are stable.*

CARE MANAGEMENT PROBLEMS AND CONTRIBUTORY FACTORS FORM

Clinical Incident
Death from Meningococcal Meningitis/encephalitis

Care Management Problem
1. Misdiagnosis as Head Injury

Clinical Context and Patient Factors

History of having a heavy weighted bar land over nose on supra orbital ridge prior to presentation. Complained of low grade headache.

On day of admission, headache increased, became irritable, developed nausea and vomiting. Brought to ED early hours of morning 17/7/99.

Triaged as level 3 / 4 even though noted to have a deterioration in her level of consciousness.

Following admission, Patient noted to have rapid deterioration in level of consciousness.

[Miss A] *was 14 years of age and looked floppy and ill but not significant enough to initially worry nursing staff.*

[Miss A's] *low BP on admission was thought to be due to nausea and vomiting.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

No consideration given by staff to her raised finger stick blood glucose.

Contributory Factors

Specific	*General*
Work Environment Factors	• *Nightshift* • *ED busy at beginning of shift* • *Single house officer on duty* • *SHO unfamiliar with meningococcal risk in* [the region] *during winter* • *Laboratory staff do not draw attention to elevated WBC with left shift* • *Anaesthetist goes to CT Room rather than ED initially → found by duty Manager and redirected*
Team Factors	• *New house officer* • *More senior doctors on-call but not contacted regarding diagnosis – paediatrician not contacted.* • *Nursing staff unfamiliar with doctor's expertise* • *Nursing staff do not draw attention to elevated serum glucose level* • *Nursing staff do not draw attention to the elevated WBC with left shift* • *Rising blood pressure assumed to be due to 'patient waking' rather than to rising intracerebral pressure*

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Independent Advice to Commissioner *continued*

Individual Factors	• *SHO unaware of protocols for ED* • *ED nursing staff do not graph deterioration in GCS* • *Radiologist agrees to CT without more senior involvement* • *Anaesthetist does not examine patient and make his own diagnosis* • *SHO not confident enough to pursue ?meningitis when anaesthetist indicates will wait until morning for LP – anaesthetist suggests that triage score 3/4 indicative of low risk of patient.* • *Anaesthetist did not review full blood count results*
Task Factors	• *Triage level incorrect at 3/4* • *Rapid deterioration in GCS – no trauma/medical alert call* • *Blood cultures not drawn* • *No further 'temperature' record* • *Full blood count not followed up.* • *Full neurological assessment not undertaken – no fundal exam, no mention of Kernig's or Brudzinski's test outcome* • *Nursing staff insert Guedel Airway without medical oversight*

Organisational Management & Institutional Context Factors:

- *Orientation programme not available to new Junior Doctor arriving mid-year*
- *New doctor placed on night duty prior to ensuring familiarisation with hospital, environment and procedures*

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Independent Advice to Commissioner *continued*

- *Normal CT scan → no further explanation sought for marked deterioration in patient's condition.*
- *Radiologist dictated the CT report – did not record the full interpretation in the notes: he indicated that 'early encephalitis meningitis may not show up on a CT scan'.*
- *ED chart does not demonstrate graphic deterioration in GCS – no further temperature recordings.*
- *Blood pressure print-out by Protocol Machine not entered onto vital signs sheet with GCS findings and temperature recordings for trend analysis.*
- *Mother of child is an enrolled nurse/anaesthetic technician trainee in the hospital*
- *Nursing staff in ICU unaware of possible causes of* [Miss A's] *deteriorating condition and are not provided with parameters for monitoring her care by the anaesthetist*
- *Anaesthetist leaves the ICU without informing nursing staff.*
- *No senior medical ED staff [recognition of the significance of* [Miss A's] *problem may have been improved with the availability of more senior ED specialists or ED-trained MOSS under specialist supervision].*
- *No Intensivist: It is likely that a specialist intensivist would have been more able to recognise the significance of* [Miss A's] *condition, particularly around the time of the CT and would have pursued a diagnosis of meningitis/used empirical antibiotics when the CT scan showed no demonstrable abnormalities.*

EXPERT ADVICE

Responses to the issues raised by the Office of the Health and Disability Commissioner regarding the care provided to [Miss A] *by* [Dr F]*, the Emergency Department SHO.*

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Independent Advice to Commissioner *continued*

In particular, the Health and Disability Commissioner wishes expert advice on the following:

- *Was* [Dr F's] *assessment of* [Miss A's] *condition adequate and thorough?*

  Patients in whom there is a suspicion of acute meningitis should have tests for 'meningeal signs' performed and documented. [Dr F] *asked* [Ms B] *about 'neck stiffness'.* [Dr F] *noted in his examination that there was no neck stiffness and no rash. He also noted that* [Miss A's] *pupils were equal and reacting to light but did not note viewing her optic fundi or recording the condition of her optic discs.* [Dr F] *did not note whether Kernig's and Brudzinski's signs were positive or negative.*

  In assessing [Miss A], *in particular when her GCS was noted to be deteriorating, he outlined this deterioration but did not record any further physical signs other than restlessness – nursing staff noted that her posture was decerebrate then decorticate.*

- *Were* [Dr F's] *diagnosis and the course of action he consequently undertook reasonable in the circumstances?*

  [Dr F] *recognised that* [Miss A] *had a decreasing level of consciousness, and due to a lack of meningeal signs and fever, assumed the possibility of an intracranial space-occupying haemorrhage related to the minor head injury. He correctly determined that a CT scan was required to confirm or not, his impression. However, he would have been prudent not to discount the possibility of meningitis at this stage although, even more senior doctors may have made the same error given the absence of signs and given the history of a recent head injury.*

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Independent Advice to Commissioner *continued*

It would have been prudent for [Dr F] *to have contacted the paediatrician or surgeon / surgical resident when he became aware of* [Miss A's] *rapidly deteriorating level of consciousness.*

On the advice of the nursing staff, [Dr F] *did contact the on-call anaesthetist,* [Dr E], *to assist with anaesthetising* [Miss A] *so that a CT could be performed.*

- *Would it have been appropriate for* [Dr F] *to request assistance from a senior staff member at an earlier stage? If so, who? When? Why?*

Protocols in Emergency Medicine generally require back-up more senior staff for Trauma and Medical emergencies. Given the initial working diagnosis of a serious head injury and possible space-occupying haemorrhage resulting in a deterioration in level of consciousness, [Dr F] *would have been prudent to call the surgical registrar.*

According to the protocols of [the hospital], *in order to request an after hours CT scan, consultant agreement is necessary – this would have involved the consultant surgeon.*

As [Miss A] *was in the Paediatric age group and exhibiting signs of a deterioration in level of consciousness [13 on admission to 9 within an hour], the paediatrician on-call would have been appropriate to call.*

- *Were there any unreasonable delays in* [Miss A's] *assessment and treatment?*

If [Miss A] *had been triaged as a level 2 rather than level 3/4, she would have had a senior consultant call out. …*

There was a delay in [Miss A] *being anaesthetised for her CT due to* [Dr E] *going to the CT Room rather than the ED.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

- *Was* [Dr F's] *response to concerns expressed by nursing staff appropriate?*

  On the request of nursing staff, [Dr F] *provided intravenous access and sent blood off for laboratory analysis. He did not perform blood cultures as he had ruled out the possibility of meningitis – nursing staff also indicated that they did not feel* [Miss A] *had meningitis as her temperature was normal.*

  [Dr F] *reviewed* [Miss A] *when nursing staff expressed concerns. Due to his junior status he was not in a position to undertake rapid sequence induction and intubation. He called in a more experienced doctor – notably the anaesthetist on-call to assist in performing this manoeuvre.*

- *In view of* [Miss A's] *deteriorating condition, were* [Dr F's] *actions appropriate?*

  As mentioned, [Dr F] *would not have been accredited to perform rapid sequence induction and intubation. He did appropriately review* [Miss A] *and monitor her condition. It was appropriate to obtain the CT and this was imminent.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

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Independent Advice to Commissioner *continued*

- *Was it reasonable for* [Dr F] *not to be present when the Guedel airway was inserted?*

  As discussed, [Dr F] *was reviewing other patients in the ED at the time. The nurse monitoring* [Miss A] *noted that her level of consciousness had decreased and inserted the Guedel airway to prevent* [Miss A] *from 'swallowing her tongue'. The Guedel airway creates a reasonable passage to ensure oxygen flow through the airway. However, the fact that* [Miss A] *was stuporous to the point where she was tolerating this airway indicated that her level of consciousness was severely impaired. At this point a more senior doctor should have been notified by either the nursing staff, the duty manager or* [Dr F] *to come to immediate assistance. At the time, the anaesthetist was expected and this is likely the reason for not requesting another doctor.*

- *Can you comment on the factual dispute over whether* [Miss A] *had a raised temperature on admission to the ED?*

  [Miss A] *had an infra-red 'ear-drum' temperature taken that was in error and an axillary temperature was performed. It is likely that her core temperature was indeed higher due to the fact that her mother stated she was 'hot to touch' in the car on the way to the ED. It is possible that her lowish blood pressure could have been due to peripheral vasodilation followed very quickly by vasoconstriction [would have increased her BP as was subsequently noted]. There were no further temperature analyses taken so no further information resulted. It is likely that* [Miss A] *had meningococcemia and septic shock – in these circumstances patients may have sub-normal temperatures.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

- *Was there anything else* [Dr F] *should reasonably have done while* [Miss A] *was under his care?*

  The main issues have been documented above. It is likely that the fact that [Dr F] *was new to New Zealand, was a junior doctor and therefore lacking in expertise and was unfamiliar with the hospital protocols and staff were factors in his decisions.*

- *Was it appropriate for* [Dr F]*, a house surgeon new to the hospital, to be the only doctor present in the Emergency Department overnight?*

  It should be a policy, that doctors newly arrived in New Zealand have a minimum orientation of at least 2 to 3 days and at least two weeks on day shifts prior to being on the ED overnight run. There should have been another doctor on ward call, a paediatric house officer and a medical registrar available on nights in a hospital the size of [the public hospital].

- *Can you comment on the adequacy of* [Dr F's] *orientation to the ED at* [the hospital]*, as he recollected it at interview?*

  This has been commented upon above.

- *Can you comment on the adequacy of* [Hospital and Health Services'] *policies for calling on senior medical staff, and the ED Paediatric Emergency Guidelines? Were these two policies followed appropriately in this instance?*

  The fact that the triage coding was not accurate for the problem impacted significantly on the decision not to activate the call-in protocols available.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

- *Can you comment on* [Dr O's] *recommendations and* [Hospital and Health Services'] *implementation of them?*

  [Dr O] *indicates the need for a senior intensivist to lead the ICU* [at the hospital]. *There are two FACEM at* [the hospital] *who are demonstrating excellent leadership in the development of ED processes, guidelines and protocols.* [The doctor] *indicates the need for more senior ED doctors to be available around the clock in EDs in provincial areas. This would be the ideal and is a development that should be considered for the near future for all of New Zealand's EDs. ED-MOSS with FACEM oversight are capable of undertaking this level of care. In the meantime, it is prudent for the threshold for senior consultant call out to be lowered, particularly when patients are in the Paediatric range or are unstable.*

- *When, in your opinion, could a diagnosis of meningitis have first reasonably been made? Could an earlier diagnosis have affected the outcome?*

  This was a very difficult diagnosis – the presence of the head injury that could have been related to [Miss A's] *deterioration in consciousness and the headache was a significant distraction. In all likelihood, the earliest the diagnosis could reasonably have been made was post the CT scan with the undertaking of a diagnostic Lumbar Puncture.*

  In my opinion, by the time [Miss A] *was exhibiting both neurological and cardiovascular instability (ie, about the time of her rapid sequence induction), the probability of rescue was remote even if antibiotics had been provided and steroids added.* [Miss A's] *pathology report demonstrates that she had significant meningoencephalitis and the immediate cause of her demise in the ICU was related to probable neurogenic pulmonary oedema secondary to severe brain pathology.*

  …

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

CONCLUSION

It is my conclusion that [Dr F] *performed to the standard required of a junior doctor with his level of experience given the position in which he was placed as a newly registered practitioner in the New Zealand context.*

To prevent similar events such as this in the future, besides infra-structural changes (protocols, guidelines, orientation, time to orientate) that are indicated, the move towards more senior medical staff being available and working within EDs in New Zealand is essential. It is the training and expertise of the medial staff that will improve the ability to diagnose difficult patients.

[Miss A's] *problem was a very difficult diagnosis and required more senior and expert medical professionals – ED and Intensivist, to reach the appropriate conclusions.*"

Anaesthetist/Intensivist
The following advice was obtained from an independent anaesthetist/intensivist:

"*1. When the CT results were normal, should* [Dr E] *have considered alternative causes for* [Miss A's] *condition?*

The indication for the CT scan was to exclude a late intra-cranial bleed or other space-occupying lesion as the cause for the decreasing level of consciousness. These having been excluded, urgent attention should have been placed upon excluding (or treating) other reversible causes of decreasing level of consciousness.

Causes of decreasing consciousness that need to be considered are:

1. Metabolic cause, including hypoxia, hyperglycaemia, hypothermia.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

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Independent Advice to Commissioner *continued*

2. *Drug intoxication including sedatives, narcotics, ethanol, psychotropic drugs and other poisons.*

3. *Infections. Meningitis, encephalitis, or brain abscess.*

4. *Systemic events such as severe sepsis, hepatic encephalopathy.*

Some other lesions not detected on early CT Scan, such as early infarction, early embolism, small tumours and behavioural causes would remain in the differential diagnosis, but with no immediate further treatment indicated.

Many of the above diagnoses required Intensive Care support as well as ongoing investigation. The CT reasonably excluded the mass effect of an intra-cranial bleed, abscess or tumour. It was important in that it excluded a surgically treatable cause for the decrease in consciousness, and demonstrated the absence of (severe) raised intra cranial pressure.

Not all head injuries demonstrate initial CT changes, eg diffuse axonal injury. However, a child with a 'head injury' followed by a two day lucid interval, presenting with rapid and progressive decreasing consciousness associated with a normal CT scan, is not typical and requires immediate further investigation.

The report that the ventricles are normal and no midline shift does not support the diagnosis of cerebral oedema. In his report to the Health and Disability Commissioner, [Dr M] *confirms that there is 'no evidence of intra-cranial head injury and no abnormality shown to account for the patient's clinical state'. Progressive decrease in consciousness, after a reasonable lucid interval could not be caused by diffuse axonal injury in the absence of cerebral oedema. The absence of intra-cerebral bleeding or cerebral oedema should have raised the possibility of an alternative diagnosis.*

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Independent Advice to Commissioner *continued*

[Dr E] *as the senior medical officer had an obligation to consider the causes for her condition, investigate the cause and/or treat those reversible causes. If* [Dr E] *felt that this was beyond his clinical ability he should have consulted with a suitable colleague.*"

2. *Was* [Dr E's] *decision to sedate and intubate* [Miss A] *overnight a reasonable one in the circumstances?*

[Dr E] *assessed* [Miss A] *in the Emergency Department following a request for a general anaesthetic for CT. This was performed at sometime about 4:00am. By this time,* [Miss A] *was unconscious with a Glasgow coma score of 4-5/15, on assessment by* [Dr E]. *Most clinicians would agree that as such* [Miss A] *required endo-tracheal intubation to protect her airway, whether or not a CT was to be performed. The decision to intubate and ventilate to do the CT was correct. Once intubated and ventilated on sedation ventilation should have been maintained until the level of consciousness had improved so that airway protection and ventilation was no longer required. Thus, maintenance of ventilation overnight in intensive care was not only reasonable but a necessary part of her management.*

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Independent Advice to Commissioner *continued*

3. When [Dr E] *noted in* [Miss A's] *record at 4:00am that meningitis was a possible cause of her symptoms, was it reasonable for him to leave a lumbar puncture until morning?*

The CT scan had reasonably excluded raised intra-cranial pressure (which would be a relative contraindication to lumbar puncture). Therefore there was no clinical reason not to proceed with a lumbar puncture at that point. However it was not absolutely necessary to perform the Lumbar Puncture at that time. If no CT is available immediately it is not uncommon practice to delay LP until a CT or other investigation is obtained. The LP procedure SHOULD NOT delay the administration of urgent antibiotic cover for bacterial meningitis. The ability to give antibiotics prior to the LP being performed is made possible because the presence of live bacteria is no longer needed to establish a diagnosis. CSF can be sent for DNA amplification (Polymerase Chain reaction) identification, or antibody presence, as was done in the post-mortem examination.

It should be noted that meningococcal disease with severe sepsis in the absence of meningitis may carry a worse prognosis than menincogoccal meningitis. Thus a 'negative' LP result should not alter management in severe sepsis or septic shock.

If the LP was to be delayed, and meningitis was a potential diagnosis, then [Miss A] *should have been administered some intravenous antibiotic at the time that the diagnosis was first considered. Most texts suggest blood cultures then a third generation cephalosporin to cover likely organisms (including meningococcus).*

In summary, if blood cultures were obtained and antibiotic therapy were commenced, it was possible to leave the LP until later in the morning without altering good care. Ideal practice would have had the LP performed immediately following the CT.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner ***continued***

4. *Was this case within* [Dr E's] *expertise? Should a paediatrician or another appropriate specialist have been called?*

Was this case within [Dr E's] *expertise? It is necessary to deal with this in two ways.* [Dr E] *states that he carries no post-graduate qualification in intensive care nor is he vocationally registered as an Intensive Care Medicine* [specialist]. *He states also that he is rostered to cover anaesthesia and during that cover is on call for the intensive care unit, and states '... my responsibility in the intensive care unit is primarily to assist with the care and management of airway and related problems'.*

I take from [Dr E's] *statement that he considers himself as a consultant anaesthetist, providing technical expertise to patients in the intensive care unit.* [Dr E] *was called initially to provide anaesthesia or sedation to facilitate obtaining a CT in an agitated child. Upon review by* [Dr E] *in the emergency department, emergency intubation and ventilation was undertaken, because of* [Miss A's] *decreased level of consciousness. The CT revealed no abnormality. In the absence of a surgical cause* [Dr E] *subsequently transferred the patient to the intensive care unit for overnight ventilation. All this was consistent with good emergency resuscitation and management.* [Dr E] *was the only senior medical officer with knowledge of the case and therefore was responsible for the care of the patient from the time of assessment, until such time as he transferred care to another colleague. From the evidence given it would appear that the primary clinician under whom* [Miss A] *was admitted (a general surgeon) was not contacted at any stage. This being the case there are a number of possibilities.*

(1) The admission was such a minor routine matter in which junior medical staff or other specialists feel that there is little risk of an adverse event, and then the senior clinician of another service may not be contacted.

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Independent Advice to Commissioner *continued*

(2) *A second alternative was that* [Dr E] *was providing a general anaesthesia service to facilitate a CT scan of the head, and once completed the care was to be managed by the general surgical team.* [Dr F's] *notes refer to* [Dr E] *being called to provide anaesthesia, rather than a referral for an intensive care review.*

(3) *The third alternative is that* [Dr E] *was acting as the consultant on call for the intensive care unit and thus had responsibility for* [Miss A's] *case in consultation with other specialities.*

[Miss A's] *condition was one of a ventilated and critically ill child in intensive care so the first possibility did not really exist. It would be remarkable for a ventilated child to be admitted to intensive care to be regarded as a minor or social admission.*

[Dr E] *states that his involvement in the intensive care unit is limited to airway management and related problems. I find this difficult to accept, as no other clinician was directly on call for the Intensive care unit. However, if* [Dr E's] *duties were limited essentially to those of a consultant anaesthetist providing acute anaesthesia,* [Dr E's] *responsibility was for that patient during the time that they were under the influence of general anaesthetic.*

The Australian & New Zealand College of Anaesthetists Policy Document PE20 (1996) 'Responsibilities for the Anaesthetist in the Post-Operative Period' (attached) states

'… 2: The anaesthetist has responsibility for ensuring that the patient recovers safely from anaesthesia in an area appropriately equipped and staffed for that purpose …

2.3 Where transfer to an intensive care unit or a high dependency unit is necessary responsibility of care remains with the anaesthetist until that transfer is complete.

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Independent Advice to Commissioner *continued*

2) *Ensuring that there will be adequate post-operative care of the patient after discharge from the recovery area.'*

[Dr E] *did not transfer the care for* [Miss A] *to any other senior medical officer, nor did he ensure that anyone else did so. Until the arrival of* [Dr L], *no other senior medical officer was aware of her admission or responsible for her care.* [Miss A] *remained sedated and ventilated after the CT scan under the influence of the anaesthetic. Therefore* [Dr E] *continued to have prime responsibility for the care of* [Miss A], *and an obligation to provide adequate care for the child until that care could be discharged to another clinician.*

He did have opportunity to transfer that care to or consult for advice from:

1. *The consultant surgeon on call for* [the public hospital].

2. *The paediatric consultant on-call,* [Dr L].

3. *Consultation with* […] *Paediatric Intensive Care Unit in* [the public hospital in the city] *by telephone; and/or*

4. *The neuro-surgical team in* [the city], *by telephone*

There is no record of this having occurred. [Dr E] *left the Hospital with no effort made to consult or involve other clinicians. Thus the responsibility for a management plan for the care, investigation and treatment of* [Miss A] *remained with* [Dr E].

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Independent Advice to Commissioner *continued*

The third scenario was that he was providing care as the senior medical officer on call for the unit. Although [Dr E] *states that he does not hold vocational registration, or a post graduate qualification in Intensive Care Medicine, he does have a Fellowship of the Australian and New Zealand College of Anaesthetists. The ANZCA document Duties of the Anaesthetists TE6 (1995) states that clinical duties of an anaesthetist may include:*

'2.9: Supervising and/or Assisting with the management of patients in the Intensive Care Unit.' (enclosed)

The arrangements that exist in [the area] *are similar to that in provincial hospitals, where anaesthetists commonly provide intensive care services.*

[Dr E] *should have had the experience and expertise to resuscitate and stabilise* [Miss A] *and, at least, the knowledge that the information available was inadequate to support the primary diagnosis of head injury. If* [Dr E] *felt that the management of an unconscious child with no CT evidence of head injury is beyond his capability and expertise then it was his responsibility to obtain additional support and advice immediately as indicated in the scenario above. He did not do so. When another consultant (*[Dr L]*) was contacted at 0600 she came without protest, and was more than willing to provide her expert help to care for the child. Thus whether* [Dr E] *was acting as senior medical officer providing intensive care or providing anaesthetic services, he was the senior medical officer with direct responsibility for the patient in the ICU.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

5. *Can you comment on the adequacy of* [Dr E's] *clinical documentation? Should there be a record of sedation administered?*

In the Treatment and Progress Notes, on a page starting 'in view of deterioration will need urgent CT' there is an entry at the bottom of the page, 17/7/99, 0400, GA for CT scan, signed by (I assume) [Dr E].

He documents 'Diprivan 80mg, Esmeron 30mg, ET (endotracheal tube) size 7 cuffed, ventilator with logic, CT head clear'. There was no other mention of the physiological response and condition of [Miss A] *during the time she had her CT scan. On arrival in ICU it is noted that blood pressure was 180/110, pulse 120 before she was further sedated.*
The ANZCA College Policy Document P6 (1996) Minimum Requirements for the Anaesthesia (attached) record requires the following

'1. Basic information. The name of the patient, etc. Most of the information here is implicit in that it is written in the body of the notes, bar that of the name of the anaesthetist.

1. Information Prior to Anaesthesia. There is no documented pre-anaesthetic assessment of the patient apart from that done by [Dr F]. *However there was a reasonable history obtained by him. Given the acuity of the case it would be reasonable for* [Dr E] *to proceed with the general anaesthetic after checking a basic history, drug therapy and checking for any available drug sensitivity.*

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Independent Advice to Commissioner *continued*

2. *Anaesthesia Information. The medications are recorded, technique is not recorded although endotracheal tube was placed, size 7. There are no recordings of time apart from the start time. No record of intravenous fluid therapy, no record of position and no record of any monitoring or other observations performed by* [Dr E] *(or any other person). Postoperative information was recorded in intensive care and therefore does not have to be documented separately.'*

In summary there is a brief note that covers all the interventions performed by [Dr E] *with general anaesthetic but no physiological data.*

It would perhaps be preferable if [Dr E] *was providing simply a general anaesthetic service to complete an anaesthetic form. This brief record, apart from the absence of any physiological data, would not be atypical of a record for an investigation such as a CT scan in an acute patient. It would however be usually covered by a more extensive admission note and management plan in the notes following transfer to the ICU. There is no such note. The only notes record that* [Dr E] *makes two provisional diagnoses, head injury and meningitis. There is no specific management for the meningitis except for a note for LP in the morning. Subsequent to the unexpected deterioration of* [Miss A] *in intensive care, it seems remarkable that* [Dr E] *did not make any further notes regarding his care or observations. This is an omission and makes the recall of details of subsequent events difficult.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

7. [Dr E] *stated that he did not order the full blood count and had no way of knowing it had been ordered. Is this reasonable? Should he have ordered a full blood count himself?*

Although noted in the clinical notes, prior to [Dr E's] *own entry he may have overlooked that a full blood count had been ordered. Similarly the verbal information may not have been passed onto him. However, as stated before, an unconscious child with a diagnosis that questioned both head injury and meningitis should have had a full blood count and other blood tests performed at the time of admission to an intensive care unit. Conventional routine investigations would include measure of glucose, electrolytes, arterial blood gases, blood count and examination of a blood film* [Oh TE, Manual of Intensive Care, 1997, Butterworths, London]. *Coma without a clear cause would also require liver function tests, toxicology screen, paracetamol and ethanol level, if available. As* [Dr E] *did not hand over the care of his patient to any other medical practitioner, he was obligated to investigate and/or treat other reasonable conditions that* [Miss A] *may have had. He should therefore have ordered a full blood count, arterial blood gas and an electrolyte count at admission to intensive care, if they had not been performed previously, and arranged to have the results forwarded to him.*

8. *Were the actions* [Dr E] *took when* [Miss A] *was transferred to the Intensive Care Unit adequate and appropriate?*

[Dr E] *states that … 'on admission to Intensive Care the patient was well settled and the ventilator settings were satisfactory. Her blood pressure was about 140/50 and oxygen saturation 99-100%. Seeing that the patient was well settled, and after ascertaining that the nurse in charge of the patient was comfortable with the instructions, I returned home which was only about five minutes away from the hospital'.*

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Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

There is neither admission note nor a contemporaneous record of [Dr E's] *actions in the unit recorded by him. There were no chest x-ray LP or blood tests ordered or performed. The time that* [Dr E] *departed was not recorded. The morphine and labetalol charting was completed but no other care plan apart from a note to keep MAP (mean arterial pressure) at 80. It seems that morphine would be used as a sedative for ventilation and midazolam, morphine, pancuronium and labetalol as bolus medication to maintain ventilator compliance. It is not clear whether a naso-gastric tube is passed.*

[Dr E] *believed he was treating a child with a head injury and it would therefore not be unreasonable to maintain the child on a peripheral drip without a central venous line.*

Options for management by [Dr E] *were:*

Order and view a chest x-ray: The Chest X-ray was indicated to confirm tube placement. If impractical this could be left until the morning if the ventilation of the left and right lungs were equal, the tube was secured and the lungs ausculated. However this would be a departure from the normal standard of care and chest examination is not noted. In the absence of a diagnosis a chest x-ray should have been performed to exclude potential causes (eg pneumonia with sepsis) of a decreased level of consciousness.

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Independent Advice to Commissioner *continued*

Insert an arterial line: Indication for the arterial line is: the need to repeat arterial blood gases (or other tests) or the need for close monitoring of blood pressure. An arterial blood gas was mandatory for the exclusion of metabolic cause of a decreased level of consciousness. The arterial Carbon Dioxide tension in the arterial blood is important in the treatment of head injury. Hyper ventilation (with resultant low Carbon dioxide levels) is no longer considered best practice (although suggested by [Dr F]*)* [Chestnut RM, Guidelines for the Management of Severe Head Injury, Yearbook of Intensive Care and Emergency Medicine, 1997]. *Avoidance of hypo-ventilation (under ventilation) or excessive hyperventilation remains crucial. Use of an end tidal (expired breath) carbon dioxide monitor is a possible alternative in the management of head injuries in young patients. In addition* [Miss A] *had an elevated blood pressure. Both the head injury and blood pressure could provide indication for an arterial line, but its omission in this case lies within the bounds of acceptable practice.*

Insert a central venous line: There was no strong indication at the time of admission to monitor the CVP.

Check the laboratory data, or order more tests. If the diagnosis of meningitis was being considered, at least blood cultures and a full blood count should have been taken. Likewise a blood glucose, electrolytes and arterial blood gas.

Order and review an ECG. [Miss A] *was both hypertensive and had a rhythm abnormality at admission to ICU. This is unusual, and although an ECG is unlikely to have revealed any more information than was available from the monitored rhythm strip, attention should have been placed upon both electrolytes and metabolic state as a cause of cardiac irritability. The electrolytes were being processed, and should have been checked as a routine, whether or not the cardiac ectopic activity was present. The absence of the 12 lead ECG at that time is in retrospect unfortunate but is not a major omission. The failure to check electrolytes for other causes is an omission.*

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Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

Chart antibiotics, medication for prevention of stress ulceration (Sucralfate or ranitidine). The charting of medication for this case was minimal, did not involve a management of any underlying process.

Record the results of examination: A chest and cardiovascular examination should have been completed on admission to ICU (after intubation). This should have been recorded.

If, as [Dr E] *states, he expected her to wake by the morning, then it may have been reasonable to forego invasive procedures. However* [Dr E] *had not taken reasonable care to establish a clear diagnosis, nor exclude important other diagnoses which could have been reasonably treated. He left* [Miss A] *in the care of a Staff nurse with four months of Intensive care experience and no ICU postgraduate qualification, without ascertaining the safety of the patient.*

9. *Please comment on* [Dr E's] *communication with ICU nursing staff about* [Miss A's] *condition and treatment.*

It appears that [Dr E] *left the Intensive Care Unit without discussing further management with the nursing staff. There is again paucity of a record both by medical and nursing staff on the events at the time.* [Mrs I] *in her interview states that she thought that* [Dr E] *was still in the building.* [Mr J] *was not aware that* [Dr E] *had gone.* [Ms B] *was not aware that* [Dr E] *had left. It does not appear that* [Dr E] *clearly communicated his concerns about* [Miss A]*, or that he was leaving the unit.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner ***continued***

[Mr J] *was a relatively new nurse to the Intensive care unit with four months of experience.* [Miss A] *was a critically ill child, with an unclear diagnosis (acknowledged by* [Dr E]*). Clear instructions and parameters should have been left to guide the unit nursing staff as to the expected outcomes and course. It is not clear that all the possible diagnoses were conveyed to the family or the staff. Discussion with the family may have been brief. It was about 5:00am,* [Dr E's] *primary diagnosis was head injury and* [Dr E] *expected* [Miss A] *to wake the next day. The discussion may have been shorter than ideal in retrospect, but in the absence of a clear record of these discussions it is impossible to comment further.*

10. *Was* [Dr E's] *decision to leave ICU when he did reasonable? Was* [Miss A] *stable enough to be left without medical supervision?*

It is not unreasonable for [Dr E] *to leave a stable ventilated patient in an intensive care unit in the care of senior nurses with junior medical staff in the hospital. This would be common practice throughout the country in all but the major centres. Major centres would have resident medical officers attached to the ICU.* [Miss A] *had an abnormally elevated blood pressure, was starting on sedation and had a diagnosis that was unclear.* [Dr E] *believes the diagnosis was either head injury or meningitis and that* [Miss A] *was 'settled' on the ventilator. This is recorded in the nursing notes. However it is unusual for a child sedated on a ventilator to develop hypertension unless:*

1) *They are awake with pharmacological muscle paralysis*

2) *They have severe hypertension from some other cause*

3) *They are in severe pain*

4) *There is brainstem compression (coning) from an intra-cranial cause.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

The charting of labetalol (an anti-hypertensive) for blood pressure control as a routine is not general accepted practice for ventilated patients. A more definite cause for the hypertension should have been sought. Most hypertensive patients on ventilators require either a specific intervention or require more sedation and/or more analgesia.

Whether [Miss A] *was stable is difficult to ascertain, as there is no physiological data recorded during the general anaesthetic for the CT scan, and only one blood pressure recorded from before 0600 in the ICU.* [Dr E] *by his own admission did not investigate any further to establish* [Miss A's] *stability by checking or ordering blood results. Even if the diagnosis was as first thought, 'Head injury', a number of baseline investigations should be carried out.* [Dr E] *neither tracked down previously ordered tests, ordered additional tests nor arranged for them to be done. As such he could not be sure of the stability or otherwise of the patient. His departure therefore was premature.*

11. When in your opinion could a diagnosis of meningitis have first reasonably been made? Could an earlier diagnosis have altered the outcome?

[Miss A] *presented with the history of a head injury two days prior. Until the exclusion of intra-cranial lesion it would be not unreasonable to consider this the primary working diagnosis. The records clearly demonstrate there was no elevation in temperature; there was no neck stiffness, and no rash. There was one recorded episode of hypotension. A history obtained by* [Dr L]*, subsequent to the first arrest, comments on a sore neck for one day, with headaches.*

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Independent Advice to Commissioner *continued*

At the time of arrival in ICU, or shortly after, when an elevated white cell count was available and the decreased level of consciousness was still unexplained, the possibility of the meningitis, or sepsis, or encephalitis should have been raised. [Dr E] *made the provisional diagnosis of meningitis or head injury in his notes at this time but no further action was taken. Meningococcus Disease (that caused by Neisseria meningococcus) can present as meningitis or severe systemic sepsis. The disease has received considerable publicity in recent years, unfortunately largely as the result of adverse finding against medical staff for failure to diagnosis or treat the disease. In* [Miss A's] *case there were precious few signs of an infective process. Absence of neck stiffness, photophobia and rash all tend to reduce the chance of infection. There were a few spots of a purpureal rash found, after the first collapse, by* [Dr L]. *None had been noted early. This is not inconsistent with the natural progression of the disease, and cannot be taken to mean that earlier observation was inadequate. However, the publicity particular in* [that region] *of New Zealand should have led to a high index of suspicion amongst the clinicians caring for* [Miss A], *and a lowered threshold for empiric treatment.* [Dr E] *included this possibility of the disease in his short differential diagnosis but failed to follow the diagnosis with an adequate management plan.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

11a. Could an earlier diagnosis have altered the outcome?

This is unclear. The diagnosis is only important if appropriate therapy is administered, and it appears the diagnosis was made at the earliest possible time. Antibiotics were administered at the time of her cardiovascular collapse on [Dr E's] orders at 7am approximately – 2 ½ hrs after her arrival in the Intensive Care Unit and about 2 hours after meningitis was first considered in [Dr E's] 4am note (presumably made following the CT scan). Even at admission to ED, there were (in retrospect) ominous signs such as a decrease in the conscious level, and the hypertension soon after arriving in ICU (probably due to brainstem swelling and compression) that could mean empiric treatment even at 4:30am would be too late. There were no signs or symptoms indicating earlier administration of antibiotics, in ED.

Meningitis as a diagnosis was not confirmed until post-mortem, and then only after growth was reported on the second report of a meningeal swab. A definitive diagnosis was not possible during life. Meningitis and meningococcus bacteraemia with severe sepsis is a devastating disease; even with patients in whom ideal management has occurred the outcome in some individuals may be exceedingly poor. The reasons for this are multi-factorial and relate in part to bacterial load, relative immune status of the patients, genetic predisposition as well as the time to therapy. Nevertheless, antibiotics should be started as soon as possible.

It is impossible to know whether an earlier provisional diagnosis or empiric treatment would have affected the outcome. Her rapid deterioration and constant downward course would have suggested that a systemic response and deterioration was already occurring and the omission of antibiotics is unlikely to have changed her outcome.

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Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner ***continued***

In the guidelines for expert opinions I note that 'OUTCOME OF CARE OR TREATMENT IS IRRELEVANT'. Therefore the advice as to whether the diagnosis, or administration of antibiotics would have affected outcome should also be irrelevant. However, if [Miss A] *had regained consciousness it would be doubtful that this complaint would have been laid, even if the standard of care had been identical.*

Alternatively if antibiotics had been omitted, and [Miss A] *had died from another cause (for example a toxin ingestion) then this question would also not have been asked.*

The relevant questions therefore are:

Should antibiotics have been prescribed by [Dr E] *(Yes) and when (as soon as possible after intra-cranial mass lesions were excluded, and the possibility of the diagnosis of meningitis was raised, at approximately 4:30-5:30am).*

12. *Was it reasonable for* [Dr E] *not to return to ICU when first telephoned by nursing staff?*

There is a discrepancy between the information [Dr E] *provides and that recorded in the nursing notes recorded at the time.*

[Dr E] *states, 'it was encouraging that she was bucking on the tube because that suggested to me that perhaps she was waking up …'.*

The nursing notes do not record bucking and record a sluggishly reactive pupil. The dilated pupils are signs of:

1. *Raised sympathetic tone and response such as to fever, anxiety, and pain.*
2. *Raised intra-cranial pressure, paralysis with the third cranial nerve.*
3. *A drug effect.*

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Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

If it was a sympathetic response pupils would be dilated but briskfully reactive. Morphine would tend to decrease the sympathetic response and also decrease pain. It is unlikely to decrease the response of the pupils to light. Labetalol and morphine would tend to constrict pupils. The blood pressure was elevated and the heart rate was elevated and the diagnosis for lightening was possible, dilated pupils could be the result of a paralysed patient who is awake. However this would not account for the sluggish reactive pupils. If the patient was bucking on the ventilator, as recalled by [Dr E]*, but not recorded in any other clinical or contemporaneous note, and not recorded in the nursing notes, then it is possible that she was waking up. If the patient was sedated and not moving, and sluggish intra-cranial pressure and other CNS deterioration. It is difficult to reconcile the two records,* [Dr E's] *recall of the events sometime after, in a written statement, and the nursing notes made at the time.*

As previously stated [Dr E's] *departure from the unit was premature but his account of events suggests no new information that would have mandated his return to the unit. It is noted that the nurse,* [Mr J]*, did not directly ask* [Dr E] *to return to the unit and it is therefore probably not unreasonable that he did not.* [Dr E's] *management of* [Miss A's] *problems are consistent with* [Dr E's] *recall of his understanding of* [Miss A's] *condition at the time. He did return promptly after the second phone, on request of the nursing staff.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

13. *Can you comment on the allegations that the endotracheal tube had moved to an endo-bronchial position, and that this had caused* [Miss A's] *deterioration? Is this possible and reasonable?*

The endotracheal tube was secured in a standard fashion and later found to be at 27cm by [Dr E]. *This would certainly cause 'endo-bronchial intubation'. This occurs when the endotracheal tube passes beyond the bifurcation of the trachea to one of the two main bronchi. This causes one lung to have an obstruction and the risk of the other lung (depending on the ventilator mode) to be over-ventilated. The obstructed lung could result in a decrease in oxygen content in the blood. However, once corrected, it would be unlikely that this would cause a further deterioration or cardiac arrest on its own.*

No chest x-ray was performed at any stage to confirm the correct length of the ET tube.

The post-mortem did not show any lung pathology such as tension pneumothorax or collapsed lung on either side. This suggests that although the endo bronchial intubation may have occurred, it would have caused only a moderate decrease in the ventilation and oxygenation of [Miss A]. *It is not likely to be the cause of the primary collapse and arrest, although it may have contributed to it. Knowing the post-mortem diagnosis, the collapse would likely be caused by one or a combination of Septic shock secondary to meningitis or meningococcemia, brainstem herniation (coning) and/or circulatory collapse secondary to brainstem dysfunction from the meningitis. Waterhouse-Friederichsen syndrome (Adreno-corticol failure) is also a possibility, although the post-mortem does not report the status of the adrenal glands.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

14. *Can you comment on* [Dr O's] *recommendations, and* [Hospital and Health Services'] *implementation of them?*

My understanding of the report was that it was commissioned by [Hospital and Health Services'] *chief medical officer as part of a quality assurance exercise, following an appeal by* [Ms B]. *The report was to report upon the case management and a comment on the hospital process. It was not intended, nor treated as, a punitive exercise, nor was it intended to determine culpability. A number of the staff involved in care, including the ED officer and the ICU nurse, were not interviewed. Although unfortunate, it is not entirely necessary to do so in order to identify areas of possible service improvement.*

The report is extensive and, given the restraints of time for interview and discussion, it has addressed a number of system anomalies and weaknesses. It was commissioned as a quality assurance activity, and could be legally protected as a defined quality assurance activity under the Medical Practitioners Act if the Chief Medical Officer of [Hospital and Health Services], *the Anaesthetic Department, or* [Dr O] *had desired. Their pro-active stance in trying to address the failures of the system, and their openness with* [Ms B] *over the findings should be commended.*

[Ms B] *states that the report 'is neither illuminating nor satisfying to me'. Its role was not intended to perform that function, and clearly states that from the outset.* [Ms B] *is obviously seeking some resolution that the report was not able to provide.*

I concur with [Dr O's] *comments regarding:*

The need for a protocol for calling senior staff for ED patients with decreased levels of consciousness.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

The need for all practitioners who provide intensive care services to retain a practice currency and competency is essential. If this is not possible mandatory referrals to appropriately trained clinicians are essential.

…

The recommendations made by [Dr O] *and the implementation of them by* [Hospital and Health Services].

Recommendation 1. There was a breach of protocol on [Miss A's] *admission, in that a hypotensive child was admitted without activation of an appropriate response. Likewise a decrease of conscious level should have triggered an urgent consultation from a senior member of staff.* [Dr F] *reports he had only had the briefest of orientations in the emergency department. This would certainly have influenced his ability to access and apply a department protocol.*

Recommendation 2. No comment.

Recommendation 3. I note that this has been discussed at the Audit Meeting of the Anaesthetic Department but needs reiterating that earliest possible referral is critical in providing a high quality of care.

Recommendation 4. I note a new Director has been appointed. It is likely that he would meet the criteria for vocational registration in intensive care and this may help in enhancing the leadership in the unit.

Recommendation 5. Anaesthetic staff involvement in another intensive care unit programme would be desirable. With the upcoming implementation of oversight legislation this may become a necessity.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

Recommendation 6. Critical Incident Debriefing has been developed.

Recommendation 8. As commented earlier [Dr O's] *report could be protected as a quality assurance activity. The disclosure to* [Ms B] *and* [Mr C]*, and subsequently to the Health and Disability Commissioner is not necessarily a requirement but is to be commended.*

15. Any other issues raised by the supporting documentation?

The above decisions made by [Dr E] *(and others) during the period 4am to 7am. I believe that patients are entitled to access to acute care as required rather than restricted to office working hours, and that provision of those services should not be unduly delayed because of the hour of presentation. Although difficult the decisions not to further investigate the cause of the decreased consciousness could not be delayed until the following morning.*

I am also aware of the effect of repeated disruption of sleep. This interferes with both decision making and interpersonal relationships. The requirement to perform optimally at a time when normally rest would be taken places a significant strain and responsibility upon individuals. The brevity of the conversation with staff and with the family by [Dr E] *may reflect this and should be considered. The hour of the day that the services were delivered should be taken into account when addressing the above issues.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

SUMMARY:

This report has focused upon the delivery of care of an individual, namely [Dr E], *as a Consultant Specialist Anaesthetist providing Intensive Care services to a desperately ill child between the hours of 4:00am and 10:00am on a Saturday morning.* [Dr E] *when confronted with* [Miss A], *was faced with a patient suffering from a devastating disease process that challenges, and often defies, optimally delivered state-of-the-art care.*

The difficult environment coupled with the individual performance of [Dr E] *and others resulted in the less than optimal delivery of care. There were certainly a number of areas where a small amount of additional effort, thought and inquiry could have improved the service delivered. There are a number of system problems that have been addressed in other forums. The major question to be answered is whether* [Dr E] *failed to provide the standard of care required.*

I believe he did in one of two ways.

Either

[Dr E] *failed to provide adequate care as the senior medical officer responsible for* [Miss A's] *care. Having made the provisional or differential diagnosis of meningitis at (or some time shortly after) 4:00am he took no steps to either establish a clear diagnosis, exclude or treat other reversible conditions. The differential diagnosis he established was not acted upon by the prescription of appropriate anti-microbial, or other therapy. Although the signs were few the relatively high occurrence of the disease in recent years coupled with the severity and rapidity of its progression meant that it should have been a high priority for diagnosis and treatment.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Independent Advice to Commissioner *continued*

Or

If his care was limited to anaesthetic services he was obliged to hand on that care to an appropriate person. [Dr E] *failed to inform, or consult with, appropriate colleagues in a timely manner on the management of a critically ill child. As above, as he suspected meningitis he was obliged to act as soon as possible. He did not consult with, or transfer care to any other colleague, either in* [Hospital and Health Services] *or further afield.*"

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Response to Provisional Opinion

The anaesthetist, Dr E, responded to my provisional opinion as follows:

"...

Diagnosis and Modicum of Clinical Treatment
The clinical diagnosis and treatment process at [the public hospital] *has been, and I understand continues to be multidisciplinary team based, where medical staff, nursing and allied health professionals work together to provide consumers with optimal healthcare. In so doing, all team members bear a shared responsibility for providing the standard of care to be reasonably expected from able practitioners within their particular discipline.*

Due to the regular complexity and predominantly urgent nature of emergency medicine, it is normal practice for all members of a team to place significant reliance upon each other. This point, and the comments that follow, is not to be confused with an assertion that I blame others, for that is not the case. Rather I say that in judging my role/conduct you ought more fully consider the complaint in the circumstance of the multidisciplinary context that existed at the time. This reliance extends to the expectation that in a critical situation, all members have carried out their anticipated duties related to the care of a patient. Further, because of the size of the [public hospital] *and the number of individuals working within it, it is impossible to know the exact work experience history of capability of each individual involved in a care episode, and therefore it is reasonable to make contextual judgements as to the skills and abilities of a person based upon where they have been staffed.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Response to Provisional Opinion *continued*

Shared Clinical Responsibility

As a vocationally trained anaesthetist, it is my normal practice to provide specialised medical care to patients in particular situations. In the context of an ICU, I am rarely the attendant or on-going senior medical care provider – my involvement relates primarily to the specific care and management of airway and related problems.

My provision of care in this instance was premised upon an expectation that the nursing and medical team involved had taken reasonable and appropriate initial steps based upon provisional diagnosis to attend to [Miss A's] *immediate clinical needs – including the ordering and review of bloods, the charting of appropriate medication, and if necessary establishing contact with additional senior medical, surgical or paediatric personnel.*

While a radiologist and myself as in my capacity as a consultant anaesthetist had been contacted, no attempt had been made to contact or refer the child to specialist medical personnel with specific expertise either in the management of head injuries or of children with severe medical complaint. In my opinion, this should have been the immediate first step once the junior medical and nursing team recognised either the complexity of diagnosis or management of [Miss A] *upon admission.*

Indeed the primary clinician (a general surgeon) under whom [Miss A] *was originally admitted was not contacted at any point by the team, either before or after my arrival at the hospital.*

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Response to Provisional Opinion *continued*

Subsequent Care and Management
Upon completion of my initial care and treatment of [Miss A]*, I was satisfied that immediate concerns as to her welfare were met in the ICU and I returned home without referring the patient to a senior medical colleague, having stabilised the child for further review and investigation the following morning. In doing so, it was not my responsibility to ascertain the full capabilities and experience of the attendant ICU personnel to care for and adequately manage* [Miss A's] *care for the remainder of the night. In my opinion, adequate management of* [Miss A] *in this instance included a shared responsibility for the referral of the child where indicated to appropriately skilled medical personnel.*

While these factors in no way remove my primary responsibility as senior medical officer in the situation, I suggest that they should have been given more significant consideration in your opinion.

..."

Dr E noted that, subsequent to this incident, he has reviewed his overall anaesthetic and medical practice and participated in the Australian and New Zealand College of Anaesthetists Maintenance of Professional Standards Programme.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Code of Health and Disability Services Consumers' Rights

The following Rights in the Code of Health and Disability Services Consumers' Rights are applicable to this complaint:

RIGHT 4
Right to Services of an Appropriate Standard

1) *Every consumer has the right to have services provided with reasonable care and skill.*

…

5) *Every consumer has the right to have services provided that comply with legal, professional, ethical, and other relevant standards.*

RIGHT 6
Right to be Fully Informed

1) *Every consumer has the right to the information that a reasonable consumer, in that consumer's circumstances, would expect to receive, including –*
    a) *An explanation of his or her condition; and*
    b) *An explanation of the options available, including an assessment of the expected risks, side effects, benefits, and costs of each option; ….*

4 Definitions

In this Code, unless the context otherwise requires, –

…

"Consumer" means a health consumer or a disability services consumer; and, for the purposes of rights, 5, 6, 7(1), 7(7) and 7(10), and 10, includes a person entitled to give consent on behalf of that consumer.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: No Breach House Surgeon, Dr F

Right 4(1)

I accept my advisor's opinion that the house surgeon, Dr F, performed to the standard required of a junior doctor with his level of experience, given the position in which he was placed as a foreign trained practitioner, newly arrived and registered in New Zealand. The consumer, Miss A's, condition necessitated a very difficult diagnosis and required more senior and expert medical professionals, in emergency medicine and intensive care, to reach the correct conclusions. In my opinion, Dr F treated Miss A with reasonable care and skill and did not breach Right 4(1) of the Code.

My advisor stated that for patients suspected of having acute meningitis, tests should be performed to detect meningeal signs. Dr F checked whether Miss A's neck was stiff, noted she had no rash and that her pupils were equal and reacting to light. On examination Miss A did not have a temperature and showed no evidence of Brudzinski's sign. Dr F recognised that Miss A's level of consciousness was decreasing, and due to a lack of meningeal signs and fever considered the possibility of an intracranial space-occupying haemorrhage caused by her minor head injury two days earlier, or possibly a brain tumour. Dr F's decision that an urgent CT scan was required to confirm this diagnosis was correct.

Dr F obtained intravenous access and sent blood for laboratory analysis. Although he did not perform blood cultures as he had ruled out the possibility of meningitis, nursing staff also indicated they did not feel Miss A had meningitis as her temperature was normal. Dr F reassessed Miss A in response to concerns expressed by nursing staff, and he outlined her descending GCS score and general deterioration. However, he did not record any further physical signs other than restlessness, whereas nursing staff had noted that her posture was decerebrate then decorticate. My advisor said that Dr F reviewed and monitored Miss A appropriately. It was appropriate to obtain the CT scan and this was imminent when her condition was deteriorating.

Dr F was not adequately qualified or experienced to undertake the rapid sequence induction and intubation required to sedate Miss A to facilitate the scan, so he called in more experienced help from anaesthetist Dr E.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: No Breach House Surgeon, Dr F ***continued***

There was a factual dispute as to whether Miss A did in fact have a raised temperature. Miss A's mother and stepfather said she was hot and sweaty. The temperature reading taken in the ED was normal. My emergency medicine advisor explained that it was likely that Miss A's actual temperature was in fact higher than normal. Alternatively, it was likely that Miss A had meningococcemia and septic shock in which case she could have had a subnormal temperature.

The complainant, Ms B, was concerned that Dr F was not present when the oral airway was inserted. An oral airway assists oxygen flow through the patient's airway. This was inserted as Miss A's level of consciousness was decreasing. I accept that it is acceptable for this type of airway to be inserted by nursing staff without a doctor's oversight. The fact that Miss A was stuporous to the point of tolerating this airway was recognised as an indication that her level of consciousness was becoming severely impaired. Nursing staff advised Dr F of this. At this point Dr E's arrival was imminent. As expert assistance was on its way, I accept that it was reasonable for Dr F not to call for further assistance at this stage but to continue as planned.

Miss A was not the only patient in ED that night, but Dr F was the only doctor on duty. Dr F was not present continuously with Miss A while she was in ED. However, Miss A was constantly monitored by nursing staff, and her mother, an enrolled nurse and trainee anaesthetic technician, was also present. In my opinion it would not be reasonable to expect Dr F to have stayed with Miss A to the exclusion of treating other patients in the ED that night.

In my opinion Dr F exercised reasonable care and skill and provided Miss A with services of an acceptable standard.

Right 4(2)

Miss A had the right to have emergency medical services of an appropriate standard provided to her. The public hospital's protocols require consultant agreement to request an after hours CT scan.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: No Breach House Surgeon, Dr F *continued*

I note that if Miss A had been triaged by nursing staff as a level 2 status rather than level 3 or 4, a senior medical consultant would have been called out initially to assess her condition. However, as she was assessed during triage as being less seriously unwell, she was left in Dr F's care.

My advisor in emergency medicine stated that protocols in emergency medicine generally require senior staff to back up junior staff for trauma and medical emergencies. Hospital and Health Services advised me that paediatric and surgical staff were on call that night, and could have been contacted by telephone if their assistance was required.

My advisor explained that it would have been prudent for Dr F to call the surgical registrar for assistance, given his initial working diagnosis of a head injury and possible space-occupying haemorrhage resulting in deterioration in consciousness. I note that Miss A was admitted under the surgical consultant's name. Furthermore, as Miss A was in the paediatric age group and exhibiting signs of deterioration in her level of consciousness, it would have been appropriate to consult the on-call paediatrician.

I was advised that it would also have been prudent for Dr F to have contacted a paediatrician or surgical expert when he became aware of Miss A's rapidly deteriorating level of consciousness. However, by this time the urgent CT scan had been organised and Dr E (the on-call anaesthetist who was also on call for ICU) was on his way to assist with anaesthetising Miss A so that the CT could be performed.

Dr F was new to New Zealand and had only recently been employed by Hospital and Health Services. He described a brief and cursory orientation to ED. Dr F was left unsure of the existence and location of standard protocols and procedures and of necessity relied on advice from nursing and other medical staff to assist him when he was unaware of the appropriate procedure or policy. Dr F stated that he was unaware how to organise a CT scan, requested advice from nursing staff and was told to telephone the radiologist, Dr M.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: No Breach House Surgeon, Dr F ***continued***

Hospital and Health Services described the usual orientation procedure for new doctors in ED, and advised that Dr F had had two days' orientation there before beginning work. Hospital and Health Services also described the usual procedure of giving new doctors an orientation document, which was to be explained by the Clinical Director. However, Hospital and Health Services could not confirm that this was done for Dr F. I do not accept that Dr F's orientation to ED was sufficient to ensure that he was familiar with essential policies and procedures.

Although it would have been prudent, and correct according to Hospital and Health Services' protocols, for Dr F to have called senior assistance such as a surgical consultant/registrar or paediatrician when Miss A's level of consciousness was deteriorating, the radiologist and anaesthetist were already on their way. At this point senior medical staff were expected and I accept that it was reasonable for Dr F to wait for them to arrive rather than request additional help.

In my opinion Dr F co-operated appropriately with nursing and medical staff in Miss A's care. Nursing staff advised him of Miss A's deterioration, at which point senior medical staff needed to be notified. Dr M and Dr E were already on their way to perform the CT scan, which was a clinically correct course of action. In all the circumstances, although it would have been preferable, and in accordance with Hospital and Health Services' internal policy, for Dr F to have called more senior specialist assistance earlier, I consider his actions to have been reasonable in the circumstances. Accordingly, Dr F did not breach Right 4(2) of the Code.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E

Right 4(1)

In my opinion the anaesthetist, Dr E, did not exercise reasonable care and skill in treating the consumer, Miss A, and breached Right 4(1) of the Code.

Causes of deterioration
A CT scan was undertaken in order to exclude a head injury as the cause of Miss A's problems. The scan showed that there was no late intracranial bleed or other space-occupying lesion. My anaesthetic advisor stated that urgent attention should therefore have been placed on excluding or treating other possible reversible causes of Miss A's decreasing level of consciousness. The CT excluded a surgically treatable cause for the decrease in consciousness and demonstrated the absence of severe raised intracranial pressure. A child with a head injury followed by a two-day lucid interval, who presents with rapid and progressive decreasing consciousness associated with a normal CT scan, is not typical and further investigation was required immediately. The causes that needed to be considered included a metabolic cause, drug intoxication, infections and systemic events. Many of these diagnoses required intensive care support as well as ongoing investigation.

As the senior medical officer present Dr E was obliged to consider alternative causes for Miss A's condition, investigate those causes and treat those that were reversible. Alternatively, if Dr E felt that this was outside his clinical expertise, he should have consulted with a suitable colleague.

Meningitis
After the CT scan, Dr E noted in Miss A's notes that she was possibly suffering from meningitis and that a lumbar puncture should possibly be performed in the morning. However, Dr E took no action to follow up his observations, and there is no evidence to show that he communicated his suspicions to other medical or nursing staff.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E ***continued***

I note that there was a high incidence of meningococcal disease in the region in July 1999. Practitioners should have been aware of this, and been extra vigilant in treating suspected cases of meningitis as a result.

My anaesthetic advisor stated that there was no clinical reason not to proceed with a lumbar puncture at that point, but it was not absolutely necessary. However, whether or not a lumbar puncture procedure was performed, there should have been no delay in giving urgent antibiotic cover for possible bacterial meningitis. If the lumbar puncture was not to be performed or was to be delayed, and meningitis was a potential diagnosis, Miss A should have been given intravenous antibiotics when Dr E first considered the diagnosis of meningitis. If blood cultures were obtained and antibiotic therapy commenced it would have been acceptable to leave a lumbar puncture until later in the morning. However, ideal practice would have been to perform the lumbar puncture immediately following the CT scan and to administer antibiotics at this point.

Blood tests

While Miss A was in ED Dr F ordered blood tests, including a full blood count and electrolytes and urea. He recorded this in Miss A's notes. The results were indicative of an infection. It is unclear when medical staff were first aware of these results. Dr F and ED staff do not recall receiving these results. Ms B recalls seeing the results pinned on the wall next to Miss A's bed when she was in ICU. Intensive care nurses do not recall seeing the results. Dr L stated that by the time she arrived in ICU, shortly after 6:00am, the blood test results were available.

Dr E advised me that the blood test results were not available to him and that he was not aware they had been requested.

Hospital and Health Services advised me that the results were first available in the hospital computer system at 4:33am, and that they were first accessed at 4:51am; also, that the computer is the usual mode of communicating such results and that in this case the results were not so unusual that the policy required them to be communicated urgently to clinical staff by telephone.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E ***continued***

My advisor stated that an unconscious child with a possible diagnosis of head injury or meningitis should have had a full blood count and other blood tests performed at the time of admission to ICU. As Dr E did not hand over Miss A's care to any other medical practitioner, he was under an obligation to exercise reasonable care and skill to investigate and treat any conditions that Miss A may have had.

I do not accept Dr E's submission that he did not know blood tests had been ordered and had no way of knowing that they had in fact been ordered, and therefore could not know to look for the results. Dr F had clearly noted in Miss A's medical notes that he had ordered the tests. These results were available from 4:33am, which is the time at which Dr E took over Miss A's care. They were accessed at 4:51am.

If Dr E believed blood tests had not been ordered, he was under an obligation to order them himself. My advisor stated that Dr E should have ordered a full blood count, arterial blood gas and an electrolyte count at admission to ICU if they had not been performed previously, and arranged to have the results forwarded to him urgently. As Miss A had a coma without a clear cause, other tests that were indicated included a measure of glucose, liver function tests, toxicology screen, paracetamol and ethanol level. Dr E did not order such tests.

Record keeping

In my opinion Dr E's records of Miss A's admission and treatment were not of an acceptable standard. My advisor noted that there was neither an admission note nor a contemporaneous record of Dr E's actions in ICU. There was no chest x-ray, lumbar puncture, or blood tests ordered or performed. Although Dr E stated that he ordered a chest x-ray, there is no record of this. The morphine and labetalol charting was completed but there was no other care plan, apart from a note Mr J took during a telephone call to keep Miss A's mean arterial pressure at 80. It was not clear whether a nasogastric tube was used.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E *continued*

In the record that Dr E did make of his treatment of Miss A he documented the drugs used to sedate and intubate Miss A when he arrived. There was no other mention of her physiological response and condition during the CT scan. On arrival in ICU only her blood pressure and pulse were noted before she was further sedated. There is no note of the cardiac abnormalities noticed by nursing staff.

My advisor explained that the information Dr E recorded about Miss A's anaesthesia was not sufficient according to the standard set by the Australian and New Zealand College of Anaesthetists College policy document, in relation to minimum requirements for the anaesthesia record. The basic information about Miss A was present in the notes already. Although there was no documented pre-anaesthetic assessment of Miss A in the notes by Dr E, Dr F had given Dr E a reasonable history. Given the acuity of the case, I accept that it was reasonable for Dr E to proceed with the general anaesthesia after checking a basic history, drug therapy and checking for any available drug sensitivity. However, the anaesthesia information was inadequate. There were no recordings of time apart from the start time. There was no record of intravenous fluid therapy, no record of position and no record of any monitoring or other observations performed by Dr E or any other person. The brief note made by Dr E included general anaesthesia but no physiological information. This was not of an acceptable standard.

My advisor stated that it would have been preferable for Dr E to have completed an anaesthetic form. The record for an investigation such as a CT scan in an acute patient would normally be covered by a more extensive admission note and management plan in the records following transfer to ICU. However, there is no such note. Dr E simply recorded two provisional diagnoses, head injury or meningitis. Head injury had been excluded by the CT scan. There is no specific management plan for the meningitis except a note for a possible lumbar puncture in the morning. My advisor stated that following Miss A's unexpected deterioration in ICU it was remarkable that Dr E did not make further notes regarding his care or observations. I consider this to be a serious omission.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E *continued*

Dr E recorded only the most basic information about Miss A's condition, treatment and deterioration. In my opinion his standard of record keeping fell significantly short of acceptable standards. Dr E should have kept full and accurate records of all observations and interventions while Miss A was under his care.

Management in ICU
Dr E has stated that he is an anaesthetist who specialises in pain management, and that although he was on call to cover ICU, he is not qualified as an intensivist, and his responsibility in ICU was limited to the management of airway and related problems.

Hospital and Health Services advised me that as the on-call anaesthetist covering ICU, Dr E was responsible for the care of patients in ICU. If surgical, medical or paediatric expertise was required, appropriate staff were available to assist. Hospital and Health Services did not limit Dr E's responsibility to airway and related problems. The Australian and New Zealand College of Anaesthetists includes among an anaesthetist's duties, the supervision and/or assistance with managing patients in ICU.

My advisor listed the options for management available to Dr E while Miss A was in ICU. Although I accept that some of Dr E's decisions and management plans were of an acceptable standard, there were also significant omissions.

A chest x-ray was indicated to confirm the endotracheal tube's position. If impractical this could have been left until the morning if Miss A's ventilation was satisfactory, but this would have been a departure from the normal standard of care. No chest examination has been noted or recorded. In the absence of a diagnosis, a chest x-ray should have been performed to exclude other potential causes of Miss A's decreased level of consciousness, such as pneumonia with sepsis.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E ***continued***

Ms B was concerned that Dr E did not insert an arterial line or a central venous line. My advisor stated that there was no strong indication at the time of admission that a central venous line was necessary. My advisor also stated that although the fact that Miss A had a suspected head injury, and an elevated blood pressure indicated that an arterial line would be useful, the omission to insert an arterial line in this case lay within the bounds of acceptable practice.

Dr E, as discussed above, should have checked laboratory data available or ordered more blood tests. If a diagnosis of meningitis was being considered, at the very least, blood cultures and a full blood count should have been taken, as well as a blood glucose level, electrolytes and arterial blood gas.

On admission to ICU Miss A was hypertensive and had rhythmic abnormalities in her heartbeat. My advisor stated that in retrospect an ECG would have been helpful but was not a major omission. The ECG was unlikely to have revealed any more information than was available from the monitored rhythm strip recorded by Ms K.

Antibiotics should have been charted, along with medication to prevent stress ulceration. My advisor stated that the charting of medication for Miss A was minimal and did not involve management of any underlying process.

My advisor stated that the results of examination, specifically chest and cardiovascular examinations, should have been completed and recorded on admission to ICU after intubation.

Dr E stated in response to my provisional opinion that he left ICU satisfied that immediate concerns about Miss A's welfare were being met, and that her condition had been stabilised pending further investigations in the morning. However, there is insufficient medical evidence recorded to show that Miss A's condition was in fact stable. Her subsequent and dramatic deterioration would suggest that she was not.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E ***continued***

Shortly after Dr E left ICU Miss A became hypertensive, then her blood pressure became labile. When Dr E was telephoned he charted labetalol, an anti-hypertensive, to control her blood pressure. However, I am advised that this is not generally accepted practice for ventilated patients. Dr E should have looked for a more definite cause for Miss A's hypertension at this point, as it is unusual for a sedated child on a ventilator to develop hypertension.

Dr E stated that when Mr J telephoned him a second time about Miss A's condition he was advised that Miss A was bucking on the ventilator. This was encouraging to Dr E as it suggested that perhaps Miss A was beginning to wake up. However, as he did not want her to wake up before morning he ordered further sedation.

My advisor stated that if Miss A was bucking on the ventilator, as recalled by Dr E, it was possible that she was waking up. However, the bucking was not recorded in any clinical or contemporaneous note, and not recorded in the nursing notes. Mr J did not recall Miss A moving any more than light twitches on admission. He stated that he witnessed no violent convulsions. My advisor stated that the fact that Miss A's pupils were not reacting to light was not consistent with Dr E's conclusion. I do not accept as accurate Dr E's recollection that Miss A was bucking on the ventilator at this time. My advisor stated that if Miss A was sedated, not moving, with sluggish reactive pupils, she needed to be examined as these are signs of raised intracranial pressure and other CNS (central nervous system) deterioration.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E ***continued***

Summary

Dr E has stated that he expected Miss A to wake up in the morning when he intended to wean her off the sedation. As this was his plan it may have been reasonable for him to forego invasive procedures. However, Dr E had not taken reasonable care to establish a clear diagnosis or to exclude other important diagnoses that could have been reasonably treated at that time. I do not accept that his responsibility was limited to airway related problems. Minimal investigations were made into other possible causes of her deterioration. He also left Miss A in the care of a nurse with only four months' intensive care experience and no ICU postgraduate qualification, without being assured of Miss A's stability or safety. When Miss A deteriorated after Dr E had left ICU, he charted more medication to maintain her sedation until morning, rather than look for causes of the deterioration. She needed to be re-examined at this point. In my opinion these omissions show a significant lack of reasonable care and skill on the part of Dr E.

In my opinion Dr E failed to provide Miss A with services with reasonable care and skill and breached Right 4(1) of the Code.

Right 4(5)

Dr E was under an obligation to communicate with other medical and nursing staff involved in Miss A's care, to ensure quality and continuity of care. In my opinion Dr E failed to do this and breached Right 4(5) of the Code.

Dr E said that he left ICU after ascertaining that Miss A's ventilator settings were satisfactory and all was well with the nursing staff. However, Miss A's primary nurse, Mr J, stated he was not aware when Dr E left ICU and that Dr E did not check with him before leaving whether his instructions had been understood and everything was okay. Mr J stated that Dr E left no parameters or guidelines for Miss A's ongoing care, nor were any parameters or guidelines listed by Dr E in Miss A's medical notes. Ms G stated that when she arrived in ICU at about 5:15am nursing staff expressed their frustration at the difficulty of obtaining medical assistance.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E *continued*

Ms B was also concerned that Dr E did not communicate with her adequately before leaving. He had told her that Miss A was fine and that he would ventilate her for the night and wake her up in the morning. Ms B left the room briefly and when she returned Dr E was gone and Miss A's condition had destabilised.

In my opinion Dr E did not clearly or adequately communicate with nursing staff about Miss A's condition and treatment, or that he was leaving the unit. Dr E should have left clear instructions and parameters to guide nursing staff as to the expected outcomes and course of Miss A's treatment. I do not believe that all possible diagnoses and possibilities were adequately conveyed to either family or staff. I note that Mr J was a relatively new and inexperienced nurse in ICU and Miss A was a critically ill child with an unclear diagnosis. In my opinion Dr E's communication with other staff at this point was unacceptably brief.

My advisor stated that it would not have been unreasonable for Dr E to have left a stable, ventilated patient in ICU under the care of senior nurses with junior medical staff in the hospital. However, Miss A's blood pressure was abnormally elevated, she was sedated, and her diagnosis was unclear. Whether Miss A was in fact stable or not is difficult to ascertain, as there is minimal physiological data recorded in her notes. Dr E did not investigate further to establish Miss A's stability by either checking or ordering blood results. Even if her diagnosis was that of a head injury, a number of baseline investigations should have been carried out. As Dr E did not track down previously ordered tests or order additional tests he could not be sure of Miss A's stability. His departure from ICU in these circumstances was premature.

Shortly after Dr E had left ICU Miss A's condition deteriorated and Mr J telephoned Dr E twice for assistance. During the first call Dr E ordered more medication, and as a result of the second call he returned to ICU to reassess Miss A.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E *continued*

Ms B was concerned that Dr E did not return to ICU after first being telephoned by Mr J. I note that Mr J did not actually ask Dr E to return to the unit during this call, and my advisor stated that Dr E had been provided with no new information that would have mandated his return to the unit given his assessment of the situation. In my opinion it was not unreasonable for Dr E not to return to the unit the first time Mr J telephoned him. Dr E did return promptly after the second phone call, when nursing staff asked him to. In this respect Dr E did not breach the Code.

My advisor stated that if Dr E's role in Miss A's care was limited to providing anaesthetic services, and he was not overseeing her care as an intensivist, Dr E was obliged to hand Miss A's care on to an appropriate person. Dr E simply ventilated and sedated Miss A in ICU. Dr E failed to inform, or consult with, appropriate colleagues in a timely manner on the management of a critically ill child. As he suspected meningitis he was obliged to act as soon as possible. Dr E did not consult with or transfer care to any other colleague either in Hospital and Health Services or further afield. At around 6:00am paediatrician Dr L was called on the suggestion of nursing staff. Dr E agreed to Dr L being called, but this was too late. If Dr E was not able or willing to treat Miss A appropriately himself then he should have transferred her care to a paediatrician as soon as his suspicion of meningitis (after the clear CT scan) had been established.

In response to my provisional opinion Dr E reiterated that his responsibility for ICU patients is generally limited to the management of airway and related problems. Dr E submitted that he had assumed that other staff had already attended to Miss A's immediate clinical needs, ordered appropriate tests and contacted appropriate senior medical staff. He further submitted that this was a reasonable assumption to make in a multidisciplinary environment, and that junior staff should have contacted senior medical staff once the complexity of Miss A's diagnosis and management were recognised.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E ***continued***

I disagree. Hospital and Health Services, the College of Anaesthetists and my advisor concur that an anaesthetist's duties include the management of ICU patients. I agree that it would have been prudent for ED staff to have called for senior medical assistance other than Dr E at an earlier stage. However, a practitioner in Dr E's position and of his seniority and experience should have been more proactive in the care of a child in Miss A's condition. Dr F and ED nursing staff had not recognised the complexity of Miss A's diagnosis and management and, once the CT had discounted the possibility of a head injury, Miss A was left in Dr E's care.

In my opinion Dr E failed to co-operate adequately with other medical and nursing staff involved in Miss A's care. Dr E left ICU without clearly and adequately communicating with nursing staff about Miss A's care, condition and treatment, or indeed that he was leaving. Miss A's medical notes, as recorded by Dr E, do not contain adequate information. Dr E also failed to inform or consult with appropriate medical colleagues, in a timely manner, on the management of this critically ill child. In these circumstances Dr E breached Right 4(5) of the Code.

Rights 6(1)(a) and (b)

Every consumer has the right to receive the information that a reasonable consumer in that consumer's circumstances would expect to receive, including an explanation of his or her condition and the treatment options available. Clause 4 of the Code defines a "consumer", for the purposes of Right 6, to include a person who is entitled to give consent on behalf of a consumer. In this case, Miss A was a child, and was unconscious. Her mother and legal guardian, Ms B, was therefore entitled to receive necessary information on Miss A's behalf.

Ms B complained that Dr E did not communicate with her about Miss A's condition and treatment options before he left them in ICU, and that he left without telling them that he was going. When Ms B specifically asked Dr E about her daughter's condition he simply told her that Miss A was fine and that he would ventilate her overnight and wake her up in the morning.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Anaesthetist, Dr E *continued*

Dr E advised me that he was concerned for Miss A and relieved that the scan was clear. He asserted that he communicated with Ms B on several occasions, and that before leaving ICU he told Ms B that he would wake Miss A in the morning and see how things progressed.

In my opinion Dr E failed to communicate adequately with Ms B about Miss A's condition and the available treatment options before he left them in ICU. Ms B was an understandably worried mother, whose qualifications and experience as an enrolled nurse and trainee anaesthetic technician meant that she could expect a greater degree of information than might usually be given to an anxious, but clinically unqualified, parent.

Dr E told Ms B that Miss A was fine, when he had not in fact taken adequate steps to establish this was the case. Miss A's condition was not at all stable at that point, and Dr E's departure from ICU was premature. Dr E was not correct in telling Ms B that her daughter was fine. Nor did he give her an adequate explanation of the treatment options available. It seems unlikely that Dr E had even canvassed appropriate treatment options in his own mind, let alone communicated them to Ms B. Dr E made a brief note in Miss A's record that perhaps she was suffering from meningitis and that a lumbar puncture should be considered in the morning, but he did not communicate this possibility to Ms B or take any action to follow up his suspicion.

In my opinion Dr E failed to give Ms B the information that a parent/guardian in her circumstances could reasonably expect to have received about her daughter's condition and treatment options, and therefore breached Rights 6(1)(a) and (b) of the Code.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: No Breach Hospital and Health Services

Right 10

The complainant, Ms B, was concerned that Hospital and Health Services' response to issues she raised about circumstances surrounding Miss A's death was inadequate; in particular, that the Quality Assurance review that Hospital and Health Services commissioned was inadequate in that not all staff involved in Miss A's care were interviewed, and she had seen no evidence of corrective action being instituted in the departments involved.

Several meetings were held by Hospital and Health Services, both internally and with Miss A's parents, to discuss the circumstances surrounding her illness and death. Hospital and Health Services also commissioned an independent quality assurance review. The purpose of this review was not to allocate blame or determine punitive measures but to review the case management and comment on hospital processes, with a view to making some recommendations to assist the quality assurance process.

My anaesthetic advisor stated that although some staff directly involved in Miss A's care were not interviewed, it was not necessary to do so in order to identify areas of service improvement. My advisors did not indicate that Ms B's concerns about this review were substantiated. The systems problems identified were addressed by Hospital and Health Services.

In all the circumstances I am satisfied that Hospital and Health Services took reasonable steps to address concerns that Ms B raised about services provided to Miss A the night she died, and did not breach Right 10 of the Code.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Opinion: Breach Hospital and Health Services

Right 4(1)

Orientation for the house surgeon, Dr F

Hospital and Health Services advised me that Dr F received a two day orientation to Hospital and Health Services, and that in ED he was given an orientation document that detailed requirements, conduct, admission policy, education and the availability of senior medical staff. Hospital and Health Services also advised that the Clinical Director discusses this document's content with each SHO during their first week of employment, but could not confirm whether this occurred for Dr F.

Dr F said that when he arrived at the public hospital both ED consultants were unavailable. He was given a quick tour of ED by a registrar that lasted about 30 minutes. Dr F was not shown policies or procedure manuals, although he was aware that they existed. If he needed to know how to do something he would ask nursing or medical staff for advice.

In response to my provisional opinion Hospital and Health Services advised me that Dr F had previous ED experience so should already have been familiar with the ED system; also, that Hospital and Health Services' policies and procedures are similar to those in other hospitals in Australasia and the UK, and that the purpose of the two day orientation was not for Dr F to memorise the protocols, but to understand and familiarise himself with the system.

My emergency medicine advisor reviewed her advice in light of this submission, and concluded that the new information did not alter her previous advice.

I do not accept that Dr F received an adequate orientation to ED at the public hospital, as evidenced by his ignorance of standard policies and procedures. I note that my emergency medicine advisor identified the fact that Dr F was new to New Zealand, was a junior doctor and therefore lacking in expertise, and was unfamiliar with the hospital protocols and staff, as factors in his decisions.

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Opinion: Breach Hospital and Health Services ***continued***

I note that Miss A's triage coding may not have been accurate, which impacted significantly on the decision not to activate the protocols for calling senior medical assistance available. Had Miss A been assessed as status 2, senior medical assistance would have been called initially.

In my opinion, had Hospital and Health Services provided Dr F with an adequate orientation to ED, he would have been much better equipped to deal with the situation he was presented with. Hospital and Health Services failed to ensure that Dr F was properly acquainted with ED before he was left as sole doctor on duty overnight. Hospital and Health Services did not meet the standard of care reasonably expected of a public hospital in these circumstances and therefore breached Right 4(1) of the Code.

Right 4(2)

Record keeping
As explained above, Dr E's record keeping was inadequate. My advisors noted other instances of insufficient record keeping during Miss A's stay in hospital. The ED chart does not demonstrate a graphic deterioration in Miss A's GCS score and there are no further temperature recordings beyond the initial triage. The blood pressure printout by the protocol machine was not entered under Miss A's vital signs sheet with her GCS findings and temperature recordings for trend analysis. Dr E kept no contemporaneous record of Miss A's time and treatment in ICU.

In response to my provisional opinion Hospital and Health Services advised me that records for patients who receive emergency treatment in ICU are often written up after the event, as staff are busy managing the patient. This may well be the case in some circumstances, but Dr E made no record at all of Miss A's condition or care after 4:30am. I note that he timed the only record he made of Miss A's care at 4:00am, yet it was entered subsequent to the record made by Dr F (and countersigned by Dr M) at 4:25am. This is unacceptable.

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Opinion: Breach Hospital and Health Services ***continued***

During this investigation I requested a full copy of Miss A's medical records. However, the blood test results ordered by Dr F and the record of the ENT review by Dr N were not included. Several months after Miss A's death Mrs I noticed that her ENT outpatient notes had yet to be filed. Even after Mrs I sent these to the Medical Records Department they were not placed with Miss A's file until, during the course of this investigation, it was noted that they were not on her file. The ECG rhythm strips printed out by Ms K in ICU are also not on the file.

The haphazard manner in which I have been provided with information by Hospital and Health Services is unacceptable. Hospital and Health Services has not ensured that adequate records were kept of Miss A's time in the public hospital, nor that her records were carefully and appropriately filed.

I have seen no evidence that Hospital and Health Services took reasonable steps to ensure that medical record keeping was of an acceptable standard. Hospital and Health Services did not meet the standard of documentation reasonably expected of a public hospital in these circumstances and therefore breached Right 4(2) of the Code.

I note that in response to my provisional opinion Hospital and Health Services advised me that a documentation analyst/educator has been appointed. This person will review the record-keeping and filing procedures to ensure that all medical records are of an appropriate standard.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Other Comments: Meningitis Diagnosis

My two advisors agreed that the diagnosis of meningitis for the consumer, Miss A, was an extremely difficult one to make, and that a definitive diagnosis of meningitis was not possible while Miss A was still alive. The presence of a head injury, which could have caused Miss A's deterioration, unconsciousness and her headache, was a significant red herring. I note that a definite diagnosis was made only after Miss A's post-mortem examination, when meningitis was identified by DNA amplification. My anaesthetic advisor stated that the meningitis diagnosis appeared to have been made at the earliest possible time.

Miss A initially had very few signs of an infective process. My anaesthetic advisor stated that there were no signs or symptoms indicating that antibiotics should have been administered while Miss A was in ED. The earliest time when antibiotics should have been considered was at 4:30am, after the CT scan. It is quite likely that by the time Miss A was exhibiting neurological and cardiovascular instability, when the elevated white cell count was available and her decreased level of consciousness was still unexplained, meningitis should have been raised as a possibility. However, even if antibiotics and steroids had been administered at this point, the possibility of saving her life was extremely remote. It is impossible to know whether an early provisional diagnosis or empirical treatment would have affected the outcome. Miss A's rapid deterioration suggested that a systemic response and deterioration was already occurring, so the omission of antibiotics is unlikely to have changed the outcome or saved her life.

Thus, even though there were significant shortcomings in the care and treatment given to Miss A, it is important to note that it would have been very difficult, if not impossible, to have saved her life.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Actions

I recommend that the District Health Board (the legal successor to Hospital and Health Services) take the following actions:

- Apologises in writing to the complainant, Ms B, and Miss A's family. The apology is to be sent to the Commissioner, and will be forwarded to Ms B.
- Reviews its orientation procedure for newly employed medical staff, to ensure that they receive an appropriate orientation to the hospital and the department/s they will be working in, and are made aware of all relevant policies and procedures.

I recommend that the anaesthetist, Dr E, take the following actions:

- Apologises in writing to Ms B and Miss A's family. This apology is to be sent to the Commissioner and will be forwarded to Ms B.
- Reviews his practice in light of this report.
- Provides written confirmation from the Australian and New Zealand College of Anaesthetists that he has participated in the Maintenance of Professional Standards programme since the time of this incident.

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Hospital and Health Services / Anaesthetist, Dr E / House Surgeon, Dr F /

Opinion – Case 00HDC00340, continued

Other Actions

- A copy of this opinion will be sent to the Medical Council of New Zealand with a request that a review of the anaesthetist, Dr E's, competence be undertaken should he return to New Zealand.
- A copy of this opinion will be sent to the Medical Board of another country where Dr E is currently practising.
- Copies of this opinion with personal identifying details removed will be sent to the Ministry of Health, Quality Health New Zealand and the Chief Executive Officers of all District Health Boards.
- A copy of this opinion will be sent to the Australian and New Zealand College of Anaesthetists with a request that the College consider suitable educative and rehabilitative steps for Dr E, in order to improve his standard of care. A further copy of this opinion with personal identifying details removed will be sent to the College for educational purposes.

Director of Proceedings

I will refer this matter to the Director of Proceedings under section 45(f) of the Health and Disability Commissioner Act 1994 for the purpose of deciding whether any action should be taken.

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