

General Surgeon, Dr C
Lakes District Health Board

A Report by the
Health and Disability Commissioner

(Case 06HDC08129)



Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Parties involved

Ms A	Consumer (deceased)
Mr A	Complainant/Ms A's partner
Mrs B	Complainant/Ms A's mother
Mr B	Complainant/Ms A's father
Dr B	Complainant/Ms A's sister
Lakes District Health Board/ Rotorua Hospital	Provider
Dr C	Provider/Consultant general surgeon, Rotorua Hospital (RH)
Dr D	General practitioner, an Accident & Medical (A&M) Clinic
Dr E	General practitioner, A&M Clinic
Ms F	Registered nurse, Rotorua Hospital Emergency Department
Ms G	Registered nurse, Rotorua Hospital Emergency Department
Mr H	Registered nurse, Rotorua Hospital Emergency Department
Dr I	Surgical registrar, Rotorua Hospital
Dr J	Senior house officer, Rotorua Hospital
Dr K	Locum house officer, Rotorua Hospital Emergency Department
Dr L	Consultant obstetrician and gynaecologist, Rotorua Hospital
Dr M	Director of Anaesthetics, Rotorua Hospital
Ms N	Registered nurse, Rotorua Hospital Intensive Care Unit
Ms O	Registered nurse, Rotorua Hospital Intensive Care Unit
Ms P	Registered nurse, Rotorua Hospital Intensive Care Unit
Dr Q	Consultant anaesthetist, Rotorua Hospital
Dr R	Intensive Care Clinical Director, Rotorua Hospital
Dr S	General practitioner
Dr T	General practitioner

Complaint

On 1 June 2006 the Commissioner received a complaint from the partner and family of Ms A about the services provided to Ms A by Lakes District Health Board and general surgeon Dr C a few months earlier. The following issues were identified for investigation:

- *The appropriateness of the care provided to Ms A by Rotorua Hospital.*
- *The appropriateness of the care provided to Ms A by general surgeon Dr C.*

An investigation was commenced on 26 July 2006.

Information reviewed

Information was received from:

- Mrs B
- Mr B
- Mr A
- Dr B
- Dr I
- Dr C
- Dr L
- Dr M
- Dr Q
- Ms F
- Ms N
- Ms O
- Ms P
- Quality and Risk Manager, Lakes District Health Board

Ms A's A&M Clinic records and Rotorua Hospital records were reviewed. A copy of ACC's decision of 13 September 2006 and the independent expert advice provided to ACC by a gynaecologist and by anaesthetist/ICU specialist Dr Forbes Bennett were reviewed.

Independent expert advice was obtained from general surgeon Dr Garth Poole, gynaecologist Dr Bernard Brenner, and anaesthetist/ICU specialist Dr Ross Freebairn.

Information gathered during investigation

Overview

Ms A, a 27-year-old woman, was admitted to Rotorua Hospital Emergency Department with a three-day history of increasingly severe abdominal pain. Ms A was assessed by the surgical registrar, who made a provisional diagnosis of peritonitis secondary to pelvic inflammatory disease. Shortly after diagnostic X-rays were performed, Ms A deteriorated rapidly. The general surgeon was notified. He reviewed Ms A and organised an urgent transfer to theatre for exploratory laparoscopic surgery. The surgery revealed extensive infection of the Fallopian tubes (salpingitis) and pus in the peritoneal cavity. A gynaecologist was called in to advise on treatment. During the surgery, the anaesthetist was concerned about Ms A's condition and, following surgery, transferred her to the Intensive Care Unit for postoperative monitoring.

Ms A's condition continued to cause concern during the night. She was reviewed by the anaesthetist at 2am. At 7am, it was decided that more invasive measures were needed to stabilise her. However, as these measures were being implemented, Ms A suffered a cardiac arrest. She was unable to be resuscitated and died at 9.24am.

Chronology

Accident and Medical Clinic

At 7.24pm on Day 1, Ms A, accompanied by her partner, Mr A, presented at an Accident and Medical Clinic in Rotorua where they were holidaying. Ms A was complaining of cramping abdominal pain in the left iliac fossa (abdominal area inside the left hip bone). She had had the pain since waking the previous morning and had been taking the anti-inflammatory medication Voltaren, and an analgesic, Paradex, with limited relief. The examining doctor, Dr D, noted that Ms A had had an IUCD (intrauterine contraceptive device) inserted three years previously. He found that her abdomen was soft and tender with guarding at the left iliac fossa. Ms A's temperature was 36.8°C and a Dipstick test of her urine was positive for blood, protein and leucocytes (white blood cells). A pregnancy test was negative. Dr D considered the diagnosis of a kidney infection and ordered urine and blood tests for laboratory culture. He prescribed an antibiotic, trimethoprim, anti-inflammatory medication, diclofenac, and analgesic medications, paracetamol and Doloxene.

At 9.27am on Day 3 Ms A returned to the Accident and Medical Clinic because the pain had worsened. She was seen by Dr E. Ms A informed Dr E that she had not had a bowel motion for about three days and was unable to completely empty her bladder. Her menstrual period had started. Ms A described her pain as severe, in the epigastric (upper, central abdominal) region, associated with shoulder tip pain, which worsened on inspiration. When Dr E examined Ms A, she found her to be pale and clammy, in severe pain, with a temperature of 35.6°C, and an elevated pulse rate of 100 beats per minute (bpm). Dr E diagnosed an "acute abdomen", but was unsure of the cause. She

inserted a luer (intravenous line) and arranged for Ms A to be admitted to Rotorua Hospital.

In her referral letter to Rotorua Hospital, Dr E, anticipating that Ms A might require surgery, noted that her last oral intake had been at 7.30am, when she had had a glass of milk with Voltaren and Panadeine tablets.

Rotorua Hospital

At 9.55am, Ms A arrived at the Rotorua Hospital Emergency Department by ambulance, accompanied by Mr A. Ms A's parents, Mrs B and Mr B, arrived shortly afterwards. Emergency Department (ED) registered nurse Ms F met the ambulance and received a verbal report from the paramedics about Ms A's condition and was given Dr E's referral letter.

Ms A's temperature was recorded as 37.0°C, pulse 107bpm, and her blood pressure 18/68mmHg.¹ Her respiration rate was slightly increased at 22 per minute. Ms F recorded that Ms A was distressed and reporting abdominal pain, and pain in her shoulders on breathing.

Ms F telephoned the surgical registrar, Dr I, to advise him of Ms A's arrival and her condition. Dr I was unable to attend at that time, but ordered intravenous morphine 1–5mg to relieve Ms A's pain, and 10mg Maxolon, an anti-nausea medication.

At 10.10am Ms F started intravenous fluids and at 10.15am she gave Ms A 2mg of morphine and 10mg of Maxolon. Five minutes later, Ms F observed that Ms A was experiencing increasing pain, and she attempted to contact Dr I by pager. Dr I did not respond so Ms F discussed her concerns about Ms A with the Emergency Department medical officer. Ms F stated:

“[At] 1020hrs I became quite concerned about [Ms A] when the pain relief I had given had not helped ease her pain and [Ms A's] pain in her shoulder was increasing. Paged [Dr I] again to advise him of my concerns. When I did not get a call back I consulted with [the locum ED doctor]. He advised to contact the laboratory and add a BhCG level (as the patient has not been able to provide a urine sample. We needed to know if she was pregnant).”

At 10.20am, Ms F administered 3mg of morphine to Ms A and a further 2mg at 10.25am. The clinical notes record that at 10.30am Ms A's pulse was 92bpm,

¹ Blood pressure is the pressure of blood against the walls of main arteries. Pressure is highest during systole, when the ventricles of the heart are contracting (*systolic pressure*), and lowest during diastole, when the ventricles are relaxing and refilling (*diastolic pressure*). Blood pressure is measured in millimeters of mercury. The normal range varies with age, but a young adult would be expected to have a systolic pressure of around 120mmHg and a diastolic pressure of 80mmHg. These are recorded as 120/80.

respiration rate 22 per minute, and blood pressure 137/68mmHg. Ms F gave Ms A a further 2mg of morphine at 10.27am, and an additional 1mg at 10.32am.

At 10.35am, Ms F paged Dr I again as she believed that Ms A needed to be seen as soon as possible. Dr I informed her that he was conducting a ward round but would arrive to see Ms A shortly.

Ms F stated that it was around 10.35am when she handed over the care of Ms A to registered nurse Ms G.

The clinical notes record that at 11.15am Ms A was seen by the surgical registrar and was to be admitted. Dr I recorded that Ms A had a three-day history of pain, initially in the left iliac fossa and then becoming generalised. His clinical findings were that she looked unwell, moderately dehydrated, and afebrile. His abdominal examination revealed a generally tender and guarded abdomen. He recorded his provisional diagnosis of pelvic peritonitis and queried salpingitis as the cause. His plan was for Ms A to have preliminary investigations, including blood tests, an abdominal X-ray, and treatment with intravenous fluids with a view to a diagnostic laparoscopy.

Ms A's abdominal X-ray, performed at around 1pm, was read and reported by a radiologist, who noted that the features seen on the films "suggest some process such as ischaemia and necrosis to bowels and organs drained by the portal venous system. IUCD is noted."

When Ms A returned to the Emergency Department at about 1.15pm, her vital signs were: pulse 108bpm, blood pressure 114/58, and respiration rate 22 per minute. She was given a further 2mg of intravenous morphine.

At approximately 1.30pm the surgical house officer, Dr K, arrived in ED to complete the documentation for the admission of five surgical patients who were in ED at that time. Ms F advised him that Ms A was the priority. Shortly after Dr K went in to admit Ms A, he asked Ms F to take further recordings. Ms F found that Ms A's pulse had increased to 113bpm and her blood pressure had dropped to 107/56. Acting on this information, Dr K transferred Ms A into the acute/resuscitation area (Resus) at 2pm.

Registered nurse Mr H took over the care of Ms A in the resuscitation area. A further drop in her blood pressure was noted. At 2.12pm her pulse was 128bpm and her blood pressure 103/47. Dr K called consultant general surgeon Dr C to review Ms A. Dr C stated:

"[A]t approximately 1400hrs [2pm], I was called by my house officer, [Dr K], to say that [Ms A's] blood pressure had fallen suddenly, accompanied by an elevated heart rate, ie indicating shock. I was at that time about to commence an operation, so I arranged for my registrar to carry on with this while I went immediately to the Emergency Department and assessed [Ms A]. It was clear to me that [Ms A] was in

shock, short of breath and seriously unwell and needed immediate surgery to assess and treat what was clearly an intra-abdominal catastrophe. My impression at that time was that she may have ruptured a viscus (eg bowel or appendix). I initiated aggressive fluid resuscitation and asked for [three] units of packed red blood cells to be cross matched for possible transfusion. I spoke with theatre to ask for expeditious transfer and operation. I explained the rationale for the operation to [Ms A], viz to treat a serious intra-abdominal condition, and stated that the operation would start as a laparoscopy with the possible ‘conversion’ to an open laparotomy, should this be necessary, and would include an appendicectomy if that were the cause of the peritonitis. I impressed upon her at the time the need for this operation with the minimum of delay. [Ms A] agreed to proceed and signed the consent form. I recall that [Ms A’s] partner, [Mr A], was present during this consent process, but I did not record this fact. Certainly, [Ms A’s] parents were not in attendance.

The theatre team sent for [Ms A] at 1517hrs [3.17pm] and she arrived in the theatre suite at 1525hrs. The time intervening between my assessment and her arrival in theatre was utilised by the administration of resuscitation fluids to restore her blood pressure. Upon arrival in theatre, her blood pressure was recorded at 101/50, with a heart rate of 114bpm. She was met by [Dr M], the on-call anaesthetist, who consented her for an anaesthetic which subsequently commenced at 1540hrs.”

The consent form Ms A signed was for “Laparoscopy +/- laparotomy +/- appendicectomy.”

Operation

The operation was a diagnostic laparoscopy and peritoneal washout and removal of IUCD under general anaesthesia. The operation was performed by Dr C with Dr I assisting. Dr C arranged for Ms A to be given 1.2g of Augmentin (antibiotic) intravenously at the start of the operation. Augmentin is a broad-spectrum antibiotic designed to cover a range of conditions, and in this case was prescribed as cover until a diagnosis was secured and the precise antimicrobial treatment prescribed. Dr C said that his decision to perform a laparoscopy was based on the need to urgently determine the source of Ms A’s condition. He advised that many pathologies, such as appendicitis and salpingitis, can be treated satisfactorily through the use of laparoscopy, which has the advantages of limiting the size of the incision and enhancing postoperative recovery. It can even be a superior method of dealing with some intra-abdominal infections by providing global access to the whole peritoneal cavity.

Dr C stated that it became apparent, when the laparoscope was introduced, that Ms A had established salpingitis and tubo-ovarian abscesses on both sides, and there was extensive pus throughout the abdomen, originating from her Fallopian tubes. This condition is normally managed by gynaecologists. The appendix was not directly visualised, but it was clear that it was not the cause of the problem. Dr C took

peritoneal fluid samples for microbiological analysis and called in Rotorua Hospital consultant gynaecologist Dr L. Dr L advised adding the antibiotics ciprofloxin, metronidazole (Flagyl) and doxycycline, and came to the operating theatre to discuss the findings with Dr C. Dr C recalls that Dr L attended in theatre approximately five to ten minutes after commencement of the operation and gave advice on treatment for Ms A, which was recorded in the clinical notes by Dr C. Microbiology results later confirmed a culture of *Bacteroides* species.

Dr L stated:

“I was requested by [Dr C] in theatre to evaluate the findings. Severe pelvic inflammatory disease was present, with bilateral tubo-ovarian abscesses as well as a large amount of free pus. [Dr C] and I agreed verbally that washing the pelvis and drainage was the correct surgical treatment at that stage. The recommendations regarding post operative antibiotics were done orally and noted by [Dr C] and his assistant in the patient’s notes....

I also concur that the consensus reached by discussion with myself, [Dr C] and his other colleagues was that this lady had established severe sepsis on presentation to the hospital.”

Dr C stated that the advice he received from Dr L was that following removal of the IUCD and the peritoneal washout using five litres of sterile saline, Ms A should be commenced on the recommended antibiotics. Dr L commented subsequently that conversion to a laparotomy would have added little, if anything, to the operation.

There is an apparent discrepancy in the theatre clinical records about the actual time that Ms A’s operation commenced. The “Theatre Suite” record, which appears (from the handwriting) to have been completed by the circulating nurse, shows the surgery commencing at 1603hrs (4.03pm) and finishing at 1642hrs (4.42pm) on Day 3. However, Dr M’s anaesthetic record is dated Day 4 and shows the anaesthetic drugs as given at 1545hrs (3.45pm).

The family raised concerns about the dosage and oral administration of the antibiotic doxycycline to Ms A. Dr C stated that doxycycline was not administered intravenously; it is almost always administered orally, and the intravenous preparation of doxycycline is only available in New Zealand under a section 29 application to Pharmac, which takes about two days to process. He said that most post-laparoscopy patients can tolerate an oral intake, so he charted the antibiotics via the oral route.

The family later clarified that their concerns were not with the oral administration of the doxycycline, but with the adequacy of the total antibiotics administered, given Ms A’s condition.

The drug chart, dated Day 3, shows that Dr C initially prescribed Ms A oral doxycycline 50mg twice daily. (This prescription was cancelled by Dr J, senior house officer. He re-prescribed the doxycycline as 200mg to be given twice daily by either oral or nasogastric route, and dated the prescription Day 4.) Dr C also prescribed the antibiotics metronidazole 500mg and ciprofloxacin 400mg to be taken twice daily orally.

The anaesthetic drug record also shows 1.2g of Augmentin being administered between 1545hrs (3.45pm) and 1555hrs (3.55pm), and ciprofloxacin 400mg and metronidazole 500mg at about 1610hrs (4.10pm).

Towards the end of the operation, Dr M noted that Ms A's airway pressures were increasing and he was concerned about the development of severe sepsis. When it became apparent that Ms A was seriously unwell and unlikely to tolerate oral antibiotics, Dr M re-prescribed the ciprofloxacin and metronidazole, ordering the antibiotics to be given intravenously.

Dr M suspected that Ms A had some degree of acute lung injury secondary to intra-abdominal sepsis and decided to transfer her to the Intensive Care Unit (ICU) for her postoperative care once her condition had been stabilised in Recovery.

Postoperative care

On arrival at Recovery, it was noted that although Ms A was breathing spontaneously, she was having difficulty. Her oxygen saturation was 90 to 95 percent on 6 to 8 litres of oxygen per minute via a Hudson mask. The nursing staff noted that Ms A had a low blood pressure and fast heart rate.

At 5.30pm, Dr M recorded that Ms A's oxygen saturation was 90 percent and her blood pressure 86/43mmHg. His examination of her chest revealed a few fine crepitations and reasonable air entry. His plan was for treatment in ICU with high flow oxygen and CPAP (continuous positive airways pressure) if oxygen saturation dropped below 90 percent. At 5.50pm the intravenous fluids were increased. However, she was tolerating sips of fluid.

Ms A was admitted to ICU at approximately 6pm and registered nurse Ms N took responsibility for her care. Ms N stated that on arrival Ms A was alert and orientated, and accompanied by Mr A and her parents.

Ms N stated:

“I attached the ECG leads onto [Ms A] which gave me continuous cardiac monitoring, a pulse oximetry for oxygen monitoring and a blood pressure cuff and commenced regular postoperative observations. I also commenced intravenous fluids running at a 4 hourly rate. [Ms A] also had an indwelling catheter which I took hourly urine measurements from to monitor her output. I also took [Ms A's]

temperature. I then assessed [Ms A's] abdomen and the laparoscopic surgical sites which were intact with no breakthrough ooze. [Her] abdomen felt soft.

On arrival to the unit [Ms A] had oxygen delivered via a Hudson mask with 6 litres/min administered. This gave oxygen saturations of 92–94%, so [I] decided to change [Ms A] onto a humidified high flow oxygen circuit where oxygen saturations improved to 96–98%. I assessed [Ms A's] pain level, she declined that she was in any pain and appeared comfortable. [Ms A] continued to chat with her partner and parents. [Ms A's] parents then left. At 1900hrs [7pm] I handed over to staff nurse [Ms O], who was taking over [Ms A's] care for the night shift.”

Ms A's sister, Dr B, stated that the family was reassured by Dr I's report that the operation had gone well and that they were “specifically told that [Ms A] was not in Intensive Care for the usual reasons, that she needed to rest and they would be able to see her in the ward the next morning”. Dr B stated that, based on this information, her parents and Mr A felt reassured enough to leave. She spoke to her mother that evening by telephone. When her mother relayed the information from the medical staff, Dr B felt “completely reassured”.

Registered nurse Ms O (who was on duty in Rotorua Hospital ICU that night) recalls asking Mr A if he wished to stay with Ms A throughout the night. She recalls that he declined. Ms O stated that Rotorua Hospital's ICU “is an open unit and if family want to know about all changes then they are free to be here”. She also stated, “I recall asking Ms A if she wanted her family contacted during the night. Her decision was not to call stating that her partner was ‘really tired from late nights’.”

Ms O stated that Ms A was awake and alert and talking in full sentences when she took over her care. She was able to communicate her needs despite requiring some humidified respiratory support. At 9.30pm Ms O noted that Ms A had some neck and shoulder discomfort but this eased with a change in position. Her respiration rate was still high at 26 to 32 per minute, her heart rate 122 to 130bpm, and her blood pressure 80/40 to 70/45mmHg. Mr A left about this time, stating that he would return later. According to Dr B, Mr A asked staff that he be immediately contacted if there were “any” change in Ms A's condition.

The ICU recording chart notes that 50mg doxycycline was given orally at 11pm.

Ms O stated that Ms A required high-maintenance care throughout the night because she repeatedly asked to have the oxygen mask removed and to lie flat despite explanations about the importance of keeping the oxygen mask in place.

Day 4

At 2.30am Ms O contacted Dr M to review Ms A, who was complaining of having to work harder to breathe and was refusing to wear the CPAP mask. Dr M stated that

when he reviewed Ms A, she had oxygen saturations of 94 percent and a high respiratory rate of 45 per minute. He saw from the clinical records that she was tachycardic (fast heart rate) and her systolic blood pressure was 90mmHg. Dr M explained to Ms A that he needed to measure her blood pressure more accurately, and to do this he needed to introduce an arterial line. Ms A consented to this procedure. Dr M also explained to her that she needed to keep the CPAP mask on to assist with breathing. He gave her 1mg of midazolam to control her anxiety to help her tolerate the mask and the introduction of the arterial line. Dr M noted that Ms A's urinary output was adequate. He commenced IV Neosynephrine (a vasoconstrictor used to increase blood pressure) with the aim of maintaining her arterial pressure above 75mmHg, alongside her ongoing fluid resuscitation.

Dr M stated:

“I remained in the ICU for 1½ hours to review the arterial blood gas results and clinical progress. At 0400 [Ms A] was tolerating CPAP. She was conversing fully with me; prior to my departure we were in fact discussing living in the UK and places we had both visited.

I noted in the clinical note that her blood pressure had improved, her respiratory rate had fallen and [Ms A] stated her breathing was easier on CPAP. ... When I left the ICU at this time I was satisfied that [Ms A's] condition was improved from when I arrived. At no point did she request that I contact her family to discuss her treatment.”

Ms O stated:

“The family was not notified when a medical review was undertaken at 0230 hrs as [Ms A] was alert and able to communicate all her needs, which she continued to do throughout the entire shift. Her GCS [Glasgow Coma Scale — measurement of consciousness levels] was 14–15/15 the entire night. She was encouraged to rest and sleep, which she did do for short periods of time. By 0400 hours, following [Dr M's] review, she was clinically stable and there was no immediate need to contact the family at this time. Her respiration rate had decreased, oxygen saturations had improved and arterial blood gases taken at 0330 showed normalised oxygenation.”

At around 5.30am Ms A refused to use the CPAP mask. Ms O spent some time talking to her, but when she observed that Ms A's respiration rate was starting to increase, she persuaded her to use the CPAP mask again.

Between 6.45am and 7am, Ms O handed over care of the ICU patients to the morning nurses, Ms P and Ms N. Ms P was assigned the care of Ms A. She recalls that at the handover they were informed that Ms A was unwell but stable. Ms A was still talking and communicating her needs clearly, and her condition seemed stable, but they were aware that this could change at any time owing to the nature of her illness.

Ms N recalls that during the handover she heard Ms A call out. She went immediately to Ms A and saw that her condition had deteriorated. She was pale, anxious and agitated.

Immediately following handover, Ms P assessed Ms A and realised that she needed more invasive respiratory support because her respiration rate was 50 to 60 per minute and she had a slight blue tinge to her lips. Ms A was also complaining of being tired and wanting to rest. She was feeling cold, the urinary catheter that had been inserted was irritating her, and she was bothered by the CPAP mask. Ms P completed her assessment of Ms A at about 7.30am, and recorded that her systolic blood pressure was 60 to 80mmHg, her pulse rate 140 bpm, and oxygen saturation 90 percent. Ms A was only able to speak in one- to four-word sentences.

Ms N assisted Ms P with Ms A's care. While Ms P was completing her initial assessment, Ms N took blood from Ms A to send to the laboratory for testing.

Ms P increased the Neosynephrine infusion rate with a resultant brief rise in Ms A's systolic blood pressure to 119mmHg. Ms P stated:

“The Neosynephrine administered on the morning of [Day 4] to [Ms A] was titrated to the constantly changing blood pressure recordings observed on the cardiac monitor while I stood at [Ms A's] bedside. The syringe driver containing the diluted Neosynephrine was immediately next to me therefore I was able to alter the rate without leaving [Ms A's] side. It is standard protocol in this ICU to prescribe a dose range and therefore, to titrate the medication according to the patient's needs. It was increased in small increments and is impractical to document each change. The medication chart is located at the head of the bed, which requires 4–5 steps around the bollard to get there. I was conscious of not leaving [Ms A's] bedside at this time as we were awaiting the arrival of the anaesthetist and family members and [Ms A] was agitated and restless.”

Ms N stated:

“[Ms A] was very anxious and refusing to keep the CPAP mask on. I had to hold the mask over her mouth and nose for her. She was needing constant encouragement to keep the mask on. She was talking 1–4 word sentences, she was working hard at her breathing, her respiratory rate was above 50 breaths per minute which was why it was important to keep her breathing supported with the CPAP. However she would still refuse to have it on. I managed to establish a plan of keeping her on the mask for 5 minutes at a time and then I would give her a sip of water.

With this assessment of [Ms A] I was aware she needed to be urgently assessed by the Intensive Care Anaesthetist. I rang [Dr Q] at 0745hrs. I got his answer phone and left a message, he called me back minutes later at approximately 0748hrs. I

informed him of [Ms A's] rapid deterioration, he stated he was on his way. I then rang [Ms A's] parents at 0750hrs and spoke to [Mrs B] informing them that [Ms A's] condition had worsened and [that she needed] more support with her breathing. [Mrs B] also stated that they would be coming in."

There is discrepancy in the information about how Dr M was notified about Ms A's deterioration. Dr M recalls that he contacted ICU at 7.45am and learnt that Ms A's condition had deteriorated. He telephoned the on-call anaesthetist for the day, Dr Q, who was on his way to the hospital, to hand over the care of Ms A. Dr Q was the on-call anaesthetist at Rotorua Hospital on Day 4 and started his shift at 8am that day.

Ms P stated that while they waited for the anaesthetist to arrive, she reassured Ms A and held the mask for her. She told Ms A that she might need to be ventilated and that this would involve giving her medication to put her to sleep, and that a tube, connected to a ventilator, would go down her throat to help her breathe. Ms A told Ms P she would like to be ventilated to have a sleep. Ms P stated that Ms A was tired and finding it so much effort to breathe, and said she "wanted the help and was holding out for the arrival of the anaesthetist".

Ms N said:

"I then went back to assisting [Ms P] with trying to calm [Ms A] and keep the CPAP mask on her. Although I tried to explain the importance of the CPAP and why she needed it, [Ms A] was too anxious and restless to tolerate it.

[Dr Q] arrived at approximately 0820hrs."

Ms P recalls that Dr Q, Mr A and Ms A's parents arrived at ICU at much the same time, about 8.15am.

When Dr Q saw Ms A, his assessment was that she was suffering from an overwhelming systemic infection and the severity of her sepsis was "clearly apparent". By 8.30am she was suffering from a significant degree of respiratory distress. Dr Q recognised Ms A's respiratory distress as a sign of worsening sepsis and decided that Ms A would require endotracheal intubation (an airway introduced into the trachea) and the placement of a central venous catheter to allow him to more adequately measure the amount of fluid in her vascular system, and give her the amount of medication required to increase her blood pressure to safer levels. He asked the nursing staff to prepare resuscitation equipment in the event that Ms A's condition changed rapidly during intubation.

Dr J also arrived at ICU and recorded that Ms A was breathing fast and had shortness of breath with decreasing oxygen saturation on CPAP. He noted: "For full ICU care currently", and that the anaesthetist was shortly to intubate and ventilate Ms A.

Dr Q explained the severity of Ms A's condition and that she now required aggressive treatment. Dr Q advised me that although medicine is practised "very openly nowadays and ICU is not different", at times medical staff need to perform invasive procedures, which can be very distressing for any non-medical person to watch. It is common practice to ask relatives to leave the room while endotracheal tubes, central lines and intercostal drains are placed. He said, "This was indeed the situation on the morning of [Day 4] when I asked the family to step outside just prior to the necessary intubation of [Ms A's] windpipe. I am sorry if my request was perceived in any other way than as a protective measure for [Ms A's] family."

Dr Q stated:

"I remember clearly her father responding to my statement that we would have to sedate [Ms A] while she was this poorly. He seemed very surprised when I indicated that [Ms A] would likely be sick for several days. I formed the impression that no-one in the family had realised how sick [Ms A] had become at this stage. I outlined what needed to be done and asked both parents to spend a few seconds with [Ms A] before I had to ask them to leave, promising that we would immediately call them back, once we had placed the lines and the endotracheal tube.

I organised a skilled assistant (anaesthetic technician) from theatre to assist with the airway management and rapidly gave [Ms A] some fluid to lift her blood pressure. Ominously her blood pressure did not respond to a fluid challenge nor to boluses of Neosynephrine, a medication similar to Noradrenaline, used specifically to lift blood pressures.

During my presence, [Ms A] had experienced increased difficulty in breathing and, having prepared all equipment and emergency drugs and having assigned tasks and roles to all team members present (ICU nurses, anaesthetic technician), I induced anaesthesia with Ketamine (the safest sleeping agent in the case of severe shock). I paralysed her muscles with Suxamethonium to allow her body to accept a tube in the windpipe, but before the drug had a chance to take effect [Ms A's] skin colour had changed and no pulse was detectable. At the same time of securing [Ms A's] airway with an endotracheal tube, I declared an emergency and the cardiac arrest team was called immediately (in addition to resident medical officers, the [medical consultant] was present throughout the arrest). The type of cardiac arrest was identified as pulseless electrical activity (PEA) and the cardiac arrest was managed aggressively according to ACLS [Advanced Cardiac Life Support] guidelines.

I offered the family the opportunity to attend [Ms A's] bedside to be present during the resuscitation.

After 5 minutes her heart rhythm changed to asystole (no electrical activity). In view of [Ms A's] youth and a potentially treatable underlying cause (sepsis) we

continued full resuscitation efforts for a total of 33 minutes. Throughout our resuscitation the team was able to perform excellent cardiac compressions reflected in good perfusion pressures monitored via the arterial line. Indeed her lungs were protected by the endotracheal tube and functioned to the degree that we had continuous readings of 100% oxygen in the blood. An arterial blood sample taken during the arrest showed a severe acidosis and sodium bicarbonate was given to address this however, with no clinical effect.

In summary [Ms A] suffered from overwhelming sepsis which caused a rapid deterioration of her condition between seven and eight o'clock in the morning which led to her cardiac arrest."

Ms A was pronounced dead at 9.24am. The details of the events from Dr Q's arrival in ICU until Ms A's death were documented retrospectively by Dr Q, Ms P and Ms N. Dr Q recorded that he spoke to Mr A and Mr and Mrs B about the cause of Ms A's death. He noted, "All were extremely upset and I am unsure how much of the information given has sunken in." Dr Q offered to sit down with Ms A's family, but Mr B wanted to go home.

Dr C and Dr M arrived in ICU shortly after cessation of resuscitation attempts. Dr C recalls:

"When I was called at around 0830hrs on the morning of [Day 4] to hear that [Ms A] had arrested, I came straight to the hospital, but there was nothing I was able to offer to improve the situation. [Dr L] was also notified, but the circumstances were beyond the scope of any surgeon's abilities to make a positive impact, and he, like me, could offer nothing.

...

[R]esuscitative efforts had already stopped and [Ms A] had been declared deceased. At this time, [Drs Q, M] and I spoke briefly to the family around the bedside, and expressed our condolences to them. This was obviously a terrible time for the family, and I acknowledge that it is extremely difficult for family in this setting to take in information."

Dr C contacted the Rotorua Coroner soon after Ms A's death. The Coroner advised that an autopsy and investigation into the circumstances of Ms A's death was required. The Rotorua Police were also notified and escorted Ms A's body to the mortuary for the autopsy. A couple of days later, Dr C telephoned Ms A's listed general practitioner in another city.

Case review

Eight days later a case review and debrief meeting was held in the ICU to discuss the circumstances of Ms A's death. The meeting was arranged by ICU Director Dr R. The

meeting was attended by Dr R, Dr M, Dr Q, ICU the Clinical Nurse Leader, Ms O, Ms N, the anaesthetic technician and other medical and nursing staff. Dr C and Dr L were unable to attend because of prior commitments, but had discussed the case with Dr R before the meeting. Dr R decided to go ahead with the debrief since Ms A had deteriorated in the “ICU phase” and the surgeons were not directly involved with her care during the deterioration.

The purpose of the meeting was to:

1. consolidate information relating to the patient’s admission and course of illness
2. establish if anything could be learned from the patient’s illness, admission/treatment
3. determine, in retrospect, if there could have been any actions that may have improved the outcome
4. establish if there are any processes in need of development for future, similar cases
5. provide support for staff following the unexpected death of a young patient.

Dr M, Dr Q, Ms O and Ms N outlined the course of Ms A’s admission, and the issues were discussed.

Dr R told the meeting that he had discussed the case with Dr C and Dr L prior to the meeting. Dr R noted, “Even in retrospect, [Dr C and Dr L] were of the opinion that the chosen course of management was correct.” He reported that, although the post-mortem results were not available at the time of the meeting, the working diagnosis regarding the cause of death was sepsis with significant myocardial dysfunction. Dr R stated that he had examined the clinical records and acknowledged that the severity of the disease was not recognised at the time. He said he was unable to find any “significant, tangible evidence of deterioration in terms of cardio-respiratory parameters, symptoms and clinical signs until a short time before cardiac arrest”.

Dr R reported the outcome of the meeting and noted in summary:

“[T]his was a tragic, untimely, unexpected death of a young woman which clearly had a profound impact on members of staff involved with the case. It is not possible to make systemic recommendations based on the circumstances surrounding this case.

As Clinical Director of Intensive Care, I am in the process of introducing guidelines for sepsis resuscitation and management based on very comprehensive recommendations from the ‘Surviving Sepsis’ campaign (an international organisation of experts concerned with improving survival from sepsis). However, these guidelines would not have helped in the management of this patient. Although she did have evidence of sepsis, her management would not have been significantly different using the ‘Surviving Sepsis’ guidelines.”

Dr C stated:

“[T]his incident has been investigated by an internal case review process and discussed at a General Surgical Department audit meeting, and no steps were identified which could have led to a favourable outcome. [Ms A] had, in retrospect, presented with established sepsis, which consists of a cascade of physiological events which are often difficult to stop, even if the offending organ is removed in its entirety.

None of this detracts from the fact, however, that [Ms A’s] death was a tragic event. All of the hospital staff involved were deeply upset and would wish [Mr A] and [Ms A’s] parents our sincere condolences.”

Dr R’s contact with family

Dr R explained his attempts to contact Ms A’s family after the case review and debrief:

“Following the debrief, it was felt (with reservations) that an early approach to family members may be appropriate despite the risks that this may derail the grieving process. I made several calls to the home of [Mr A], since he was registered as the ‘1st contact’ (i.e. effectively the next of kin). There was no answer from his home telephone, the registered mobile telephone number (taken from the clinical notes) was not functioning. At this stage I was unwilling to leave an answerphone-message as there may have been confidentiality issues. I’m not sure how many calls I made. The timing was interspersed with [a week of annual leave].

I called the [family] house, presumably [a month after Ms A’s death]. I did not record the date, time and content of this call. ... The purpose of the call was to make contact with the family, to ask [Mr B] to encourage [Mr A] to make contact with me, and/or to arrange for a meeting with the family to discuss the events surrounding [Ms A’s] death.

I had a difficult conversation with [Mr B]. Quite understandably, he seemed to be experiencing emotions of shock and anger. I explained that I had called to make contact, express sympathy and make provisional plans to address the family’s needs regarding the bereavement process. We spoke about some of the details of [Ms A’s] case including the cause of death and the post mortem report. I explained that [Dr Q] had attended the post mortem and relayed the information to me although I had not received an official report at that time. I explained that I would arrange a meeting in the future, the time scale was likely to be a ‘few weeks’. The reason for this time frame was to ensure clarification of all the report processes (i.e. circulation of a PM [post mortem] report, status of any Coroner’s investigation/inquest etc). I also felt that the family may still be at too early a stage in the grieving process for an initial bereavement meeting to take place. I did not

communicate this to [Mr B] in order to avoid exacerbation of the anger phase of the grief process.

I note from the HDC report that [the family] received a written PM report the day following my phone call. I received a copy some time after.

I spoke with [Dr S], a local GP working in the practice of [Dr T], about [the family] a short time after my conversation with [Mr B]. [Dr T] is their General Practitioner, he was on leave at this time. [Dr S] had seen the family (i.e. [Ms A's] parents) on a number of occasions.² She told me that the family were very angry with 'the hospital' and did not wish to communicate with us at this time. ... [Dr S] intended to support the family (along with [Dr T]). I agreed to leave the matter with the GP practice, they would indicate if and when the family members were ready to meet with hospital staff.

Further attempts to contact the family proved difficult, but were successful after obtaining an email address from the Rotorua Police service.

The offer of a meeting was declined.”

Post-mortem

A month after Ms A's death, the pathologist reported his findings of Ms A's post-mortem performed at midday on Day 4. He stated:

“Principal pathological findings:

1. Acute peritonitis resulting from a
2. Left tubo-ovarian abscess
3. Benign hepatoma.

Death was due to an acute peritonitis consequent upon an acute tubo-ovarian abscess. It is recommended that reports should be obtained from the surgeon and anaesthetist concerned through the hospital [Clinical Director]. The benign liver tumour is considered coincidental. This type of tumour may in some cases be linked with use of contraceptive pills.”

The pathologist noted: “The uterus, right Fallopian tube and right ovary were oedematous and inflamed. The left ovary was replaced by an irregular mass 4 cm across, to which the left Fallopian tube was adherent. Small amounts of creamy yellow pus were present throughout.”

² Dr B clarified that Dr S had seen only her mother, when her regular GP was away, but not her father.

Coroner

On 13 September 2006, the Rotorua Coroner advised that the family had asked him to delay completion of his inquest until completion of the outcome of the Health and Disability Commissioner investigation.

ACC

On 12 August 2006, an obstetrician and gynaecologist provided independent advice to ACC on a treatment injury claim investigation into Ms A's death. He advised:

“In summary I believe that [Ms A] received appropriate medical care for her condition, and there were no errors, or omissions. Pelvic infection of this severity is unusual but can occasionally result in mortality.”

On 6 September 2006, Dr Forbes Bennett, anaesthetist/intensive care specialist, provided independent advice to ACC regarding Ms A's treatment and care. Dr Bennett advised:

“My opinion is that the treatment was aggressive and appropriate. It should have been effective given the present state of our knowledge about severe sepsis. It is certainly not a failure to treat, as many people in the team caring for [Ms A] were doing the best they could.”

On 13 September 2006, ACC accepted the claim as treatment injury on the basis of “Tubo-ovarian abscess formation and peritonitis resulting in death caused by the insertion of an IUCD [intrauterine contraceptive device]”.

Communication with the family

The family

On 19 June 2006, Mr A forwarded a statement that he and the family compiled regarding Rotorua Hospital's communication with the family. They stated:

“[Ms A's partner, mother and father] left the IC unit at Rotorua Hospital around 9.30pm on [Day 3]. As far as we knew, [Ms A] was fine and only in IC for minor breathing problems; we were told that she would be in a normal ward in the morning. The nurse promised she would contact us if there was *any change* whatsoever in [Ms A's] condition. ... [Mr A] specifically requested the nurse contact him *immediately* if [Ms A's] condition changed even nominally for the better or worse. We would have stayed at the hospital if we had *any indication* that [Ms A's] condition was potentially serious and we would have returned *immediately* had we been advised of any deterioration in her condition....

The next communication we had from the hospital was around 8am on [Day 4] when the night nurse called to say that [Ms A] could do with our moral support. When [Ms A's partner and parents] arrived at the IC unit, [Dr Q] said, ‘It's inappropriate for these people to be here. This girl is very sick and she needs to be

put into a coma'. However, the nurse took us to [Ms A] and each of us spoke to her (a few minutes in total), then we were asked to sit outside the door. [Dr Q] explained that [Ms A] needed to be put into a coma. We waited outside for a short while ([Mrs B] made a quick phone call to [Dr B]). Suddenly bells were ringing and staff were rushing past us to the IC ward. A nurse came to tell us that [Ms A] had suffered a cardiac arrest and they were trying to resuscitate her. Then [Dr Q] said he wanted us to watch so that we could see how hard they were working to save her. When the resuscitation attempts ceased, [Dr Q] explained that [Ms A] had been completely overwhelmed by the infection. [Ms A's partner and parents] returned home, leaving a message for [Ms A's sister] who was travelling from [another city].

When [Dr B] arrived at the hospital, she was told by the nurse, 'I'm sorry, [Ms A] didn't make it'. [Dr B] asked to see [Ms A] and was told that this was not advisable, that she should return home to be with her parents as soon as possible. She was given no explanation of [Ms A's] death except for the nurse saying, 'We worked really hard on resuscitating her'. As she was leaving the hospital, [Dr B] was called back to identify her sister's body. When she left, [the Constable] ascertained that she had someone to drive her. ([Dr B] was stunned to learn that her parents and [Mr A] had driven themselves home after witnessing the most horrific and traumatic event imaginable.)

[The Constable] came to our home later on [that day] to advise that the autopsy was complete and that a large cyst had been found on [Ms A's] ovary and also a tumour in her liver. He was compassionate and kind, but unable to answer the many medical questions we had. [He] advised that we would receive a post-mortem report in about two weeks. ...

Nothing was heard from the hospital until [a month later] when [Mr B] received a phone call from [Dr R]. He claimed to have been trying to phone [Mr A] without success ([Mrs B] telephoned [Mr A] immediately and no one had telephoned or left any message). [Dr R] told [Mr B] that he wanted to arrange a meeting between the family members and the hospital staff so that they could explain what had happened to [Ms A]. [Mr B] asked what had happened — was it septicaemia? [Dr R] confirmed this and said it was caused by a very deep seated abscess, revealed during the autopsy at which a member of their staff, [Dr Q], was present. When [Mr B] said that we would wait for the post mortem report, [Dr R] replied that he thought that would take some time. We were given a copy of the post mortem report the following day.

We found it upsetting that the hospital took so long to initiate contact with us, despite them having had a staff member at [Ms A's] autopsy. We were concerned with the timing of [Dr R's] call, immediately preceding release of the post mortem report to us. The post mortem indicated a cause of death that did not match what [Ms A] had been treated for, so we still had little understanding of why [she] had

died. However, we felt we had no choice than to wait for the hospital reports and release of [her] detailed medical notes.

On May 9, the Coroner advised that the reports and [Ms A's] notes were finally available for us to review. We found the hospital reports inadequate, misleading and insulting (for example, the 'Case Review and Debrief' that was attended by none of the three surgeons involved in [her] operation). We found that the hospital was not willing to be honest and open and that their prime concern was to look after their own interests.

... There was no further contact from Rotorua Hospital until May 19 when they emailed [Mrs B] and [Mr B] to advise a meeting had been scheduled to discuss [Ms A's] care and address any concerns we had (this was shortly after the ACC claim was filed). The meeting was scheduled for May 26; we declined to attend at that stage."

On 5 July 2006, Mrs B said that they did not approach the hospital following Ms A's death. They had been told at the time she died that her body had been overcome by the infection. Mrs B recalls that the staff appeared to be in shock themselves. The person who gave them the most information was Dr I, the surgical registrar. He gave them his initial diagnosis — an infected Fallopian tube which arose from the IUCD. He told them that he had seen cases of this before. Mrs B said that she thought that Dr I had performed the operation because he told them after the surgery, "I have removed the coil and cleaned out the Fallopian tubes." He said that Ms A's tubes had been badly infected and it was lucky that the infection hadn't gone into the bowel — the worst would be if it went through to the bowel. Mrs B said that all reference to infected Fallopian tubes disappeared after this and only reappeared in the Police report.

Family's concerns

Dr B

On 7 November 2006, Dr B requested copies of all the responses and documentation supplied by the staff involved in her sister's care, and copies of the reports provided by the Commissioner's independent experts. This information was provided to Dr B on 8 November. Dr B reviewed this information with the assistance of an obstetrician and gynaecologist.

On 11 December, Dr B submitted a detailed 24-page report and summarised her continuing concerns about the care her sister received as follows:

"The overarching question we still have is why there was *no indication* given to [Ms A] or her family of the potential seriousness of her condition. Underscoring our concern is that there was continual underestimation by medical staff of the severity of [her] condition. We are also concerned about the accuracy of the information supplied to us since [her] death.

Our major concerns about [Ms A's] treatment remain:

- 1) On [Ms A's] initial presentation to hospital, there were several key indications that she was critically ill. Why then did she not receive more urgent treatment, including IV antibiotics?
- 2) The diagnostic operation was inadequate. The left tubo-ovarian abscess that led to [Ms A's] overwhelming infection was missed. More definitive treatment was required, particularly given that she was showing signs of septic shock. Why was the surgical management, which apparently included specialist gynaecological advice, so inadequate?
- 3) Some important aspects of [Ms A's] intensive care treatment were inappropriate, given that she had severe sepsis/septic shock. Why was the progression of the sepsis not more carefully monitored, and why was more appropriate treatment not provided? ...

Information should have been provided *openly, honestly and effectively*, including after [Ms A's death]. ...

More information on what happened during the surgery is needed to provide missing information and explain apparent inconsistencies. ...

— The theatre suite notes indicate that the timing of [Ms A's] operation [was] from 1603–1642 on [Day 3]. However, the anaesthetic chart indicates timing from 1545 to 1625 and this is dated [Day 4]. Why is the anaesthetist's chart inconsistent with the actual operation details? ...

— Two of the antibiotics appear from the anaesthetist's charts to have been administered at 1605, i.e. 2 minutes after the theatre note indicates the operation commenced. These antibiotics were stated by [Dr C] to have been administered after he'd seen the pathology involved and discussed with [Dr L]. How can this be explained? ...

— Was the supine position maintained throughout the operative procedure and at what stage was [Ms A] repositioned to remove the IUCD? ...

— There appear to be some inconsistencies ... also, with the administration of Phenylephrine on the first page not seeming to quite match the entries on the fluid input chart. Nurse [Ms O's] shift finished at 7am and no entries appear on the drug administration chart after then. However, there is some Phenylephrine noted on the fluid chart at 7.30am and Nurse [Ms P's] report indicates that 'neosynephrine infusion rate increased ...' but there is no administration of this indicated on the medication chart. How can these apparent inconsistencies be explained?

Under the heading “Lessons to be learnt”, [Dr B] stated:

“Lakes DHB [Lakes District Health Board] supplied policies and guidelines to the HDC for best practice on PID [pelvic inflammatory disease] and septic shock. Despite [Ms A’s] treatment not even coming close to meeting these guidelines, it is argued that nothing could have been done differently for her. There seems almost a determination not to learn any lessons, e.g.:

- A case debrief attended by none of the three surgeons involved with [Ms A’s] operation: how can this debrief be credible, given that an appropriate operative procedure was crucial to [Ms A’s] survival?
- Retrospective reports have been written that do not accurately reflect actual events.
- There has been no comparison of [Ms A’s] care with Lakes DHB protocols or national or international treatment guidelines to see if any aspects of her care might have been improved.

While we understand and accept the opinion that it is not certain any other course of action would have brought about a different outcome, we do not believe [Ms A] was given treatment that offered her any chance of survival. In particular, significant inadequacies with her antibiotic, surgical and intensive care have been identified. It is very disturbing that exactly the same thing could happen to another woman presenting to Rotorua Hospital in similar circumstances with a potentially treatable illness. ...

In addition to lessons to be learnt on how to better manage women with an acute tubo-ovarian abscess, there are lessons to be learnt on improving the treatment of sepsis. It is of concern that [Ms A’s] treatment was deemed acceptable in terms of sepsis management. Sepsis is a serious problem in New Zealand: it was implicated in 25% of all ICU deaths in NZ and factors that include the ‘adequacy of surgical and microbial therapy’ influence the outcome (Liang et al 2003).

Finally, there are lessons to be learnt on appropriately and openly providing accurate information to family members, particularly in deeply traumatic situations such as this. ...”

Lakes District Health Board

Lakes DHB was provided with copies of HDC’s independent experts’ advice and Dr B’s report. Lakes DHB Quality and Risk Manager responded to Dr B’s concerns stating:

“There seems to be some concern about the inconsistencies on the recorded times surrounding the assessment in recovery, the induction of anaesthetic at the start of the operation, the conclusion of the operation and the return to recovery and finally

also an incorrect date written on the anaesthetic record. The reality is that there is no time keeper whose sole job it is to stand in the operating theatre and record times. In reality what occurs is that busy doctors and nurses make recordings in the midst of performing their clinical duties. This inevitably results in some inaccuracies in the recorded times.

There are also semantic differences as to when the operation commences, which can variously be described as when the patient enters the operating theatre, when they are first given an anaesthetic drug, when they are fully anaesthetised, when the surgeon has finished draping the patient or when a first incision is made. Different observers each making different records can easily therefore record a different time as the start of an operation. The intent is not to obfuscate, but is a reflection of the human element in keeping clinical records. We would think that this would most certainly account for the inconsistencies in the times that have been recorded. The error in the date on the anaesthetic note is a human error and is simply a mistake.

The anaesthetic record (indeed all of [Ms A's] clinical records) was most definitely not written retrospectively and the record is absolutely a contemporaneous record. The apparent absence of recordings of the last 10–15 minutes of the anaesthetic record relate to the fact that [Dr M] was not able to make entries in the notes as he was busy with a patient who was emerging from an anaesthetic which is the most dangerous time of a general anaesthetic. His priority had to be one of ensuring the safe ex-tubation and transfer of the patient to recovery and not making notes at the time. ...

The reason for the apparent short interval between the commencement of the operation and the administration of the second tier of antibiotics is that it generally takes less than five minutes to obtain views within the abdominal cavity after commencement of a laparoscopy and this is when the pathology was identified and [Dr L] called. Furthermore it must be pointed out that the times recorded relating to the administration of antibiotics are coming from the anaesthetic record which gives a general indication only as to the time when the antibiotics were administered.

[Dr L] attended in theatre approximately 5–10 minutes after commencement of the operation when [Dr C] had identified the nature of the pathology. The precise time of his (ie, [Dr L's]) attendance was not recorded.

It is standard practice when commencing laparoscopy for a general surgical procedure to have the patient in the supine position. However, once it was identified that the pathology was pelvic inflammatory diseases and [Dr L] recommended removal of the IUCD, [Ms A's] legs were re-positioned in the lithotomy position to enable the removal of the IUCD. This was performed upon completion of the laparoscopy but before reversal of the anaesthetic was performed. ...

It is correct that there is an apparent inconsistency in the record of administration of Phenylephrine on the ICU chart. The Phenylephrine has been recorded as being administered as part of an infusion on the right hand side of the ICU record in the drugs administered. However, on the fluid input column, one hour's administration has been omitted. It is most likely that this was simply an oversight in recording. The drugs have in fact been signed off in the drugs chart on the right hand side of the ICU record which is a more reliable indication that the drugs were in fact administered.

[Ms A's] condition was monitored as per standard procedure for Rotorua Intensive Care Unit and this has been ratified by the Director of Intensive Care. ... [A]ll clinicians involved believe they were acting in the best interests of the patient and were enacting treatments which were appropriate and thorough."

Independent advice to Commissioner

The independent advice provided by general surgeon Dr Garth Poole, gynaecologist Dr Bernie Brenner and ICU specialist Dr Ross Freebairn is attached at **Appendices 1 to 3**.

Responses to Provisional Opinion

Dr C

Dr C made a number of points in response to the provisional opinion. Dr C noted that when he arrived at the hospital shortly after Ms A's death, he, Dr Q and Dr M spoke briefly with Mr and Mrs B and Mr A at the bedside and expressed their condolences. Dr C acknowledged that this was an extremely difficult time for the family, but commented: "Notwithstanding the brevity of this interaction, the fact that senior clinicians did 'front up' to the family at this time is of relevance with respect to Lakes DHB's conclusions" about Rotorua Hospital staff communication with the family and explanation of the circumstances of Ms A's death.

Dr C accepts the conclusion that the "totality of the communication with [the family] after [Ms A's] death was not *effective*", something which is "regrettable". However, he noted: "[I]f partners or family are in the throes of a grief reaction and clearly do not want to engage in communication, then that communication cannot be thrust upon them."

Dr C stated:

“I wish to repeat and emphasise my empathy for [Mr A] and [Ms A’s] family, acknowledging that [her] death was tragic, and that they do have my sincere condolences.”

Lakes District Health Board

In response to the provisional opinion, Lakes District Health Board (the Board) clarified a number of factual points and made the following submissions:

In relation to communication prior to Ms A’s death, the Board stated:

“Although consideration for family is extremely important, our primary relationship and communication is with the patient. We are guided by their wishes. It is not uncommon for doctors to be called in to attend patients in ICU during the night as the nature of their illness often includes a degree of instability. This does not routinely indicate family members need to be notified.

The finding that the family should have been called at 2am is one opinion. In retrospect it may have been easier for the family’s grieving process had they been present at that time, indeed their presence would have been encouraged and supported had the staff perceived any risk of serious deterioration. However, the likely scenario (even in retrospect) was that the family would have been encouraged to get some sleep once [Ms A] was stabilized on the CPAP therapy. I would suggest that the ‘critical factor’ was the wishes of the patient, not the family.

The family was called later that morning (approx 7am) when a significant deterioration was recognised. A request for ‘moral support’ may not have indicated the degree of urgency. When considering making a telephone call to relatives one has to balance the degree of urgency with the risk of enticing them to make a hasty journey. ...”

In relation to the bereavement process, the Board stated:

“Following the death of a patient, our primary relationship is with the family. It can sometimes be difficult to ‘do the right thing’ since one protocol does not fit all occasions.”

The practice at Rotorua Hospital ICU is to follow the accepted consensus guidelines for care of the bereaved. Some hospitals have bereavement services, which include an early approach to families following the unexpected and sudden death of patients. This is usually done by skilled, independent professionals such as counsellors and social workers. Rotorua Hospital’s bereavement care is performed by a small group of unit staff who have undergone training from a prominent bereavement counsellor and trainer. The consensus guidelines include the following key elements:

“Bereavement meetings should be delayed for 8–12 weeks.

- All new information should be discussed with the family.
- An opportunity should be given to address any clinical concerns/questions.
- Staff undertaking bereavement meetings need to understand and recognise signs of pathological grief.”

Lakes DHB expressed regret for “the reality for [Ms A’s] family [that] the communication was not effective”, noting Dr R’s comment that “the communication difficulties were frustrating to hospital personnel as well as the family members”. However, the DHB noted again that “the clinicians were not expecting the tragic outcome”.

The family

Dr B responded to the provisional opinion on behalf of the family:

“It is with great regret that we find we cannot accept your provisional finding that [Ms A] was provided an appropriate standard of care at Rotorua Hospital. We are unable to reconcile some significant aspects of your report with what we know to have occurred. In particular, we do not understand why you conclude that [Dr C] ‘correctly diagnosed tubo-ovarian abscess as the primary source of infection’. This is not simply a matter of semantics as suggested by Dr Brenner. A *ruptured* tubo-ovarian abscess is life-threatening and ‘conservative’ treatment was not appropriate. Dr Brenner concedes (an interesting choice of word) that the antibiotic dosage was sub-optimal. Other experts also raise issues that, even if alone may not seem crucial, in combination they indicate a lack of understanding by hospital staff of the nature of [Ms A’s] condition. We find it difficult to accept that [Ms A’s] treatment can be viewed as appropriate for a critically ill person in a modern hospital. With the bar set so low, it will be no surprise when future patients die unnecessarily, no matter how young and strong they may be. Naturally we feel disappointed that no medical lessons have been salvaged from our loss.

... Our view is that the failure of LDHB staff to explain the seriousness of [Ms A’s] infection and the need for her to be in the ICU after surgery was not simply a lack of communication. However, since hospital staff wish to claim that they did understand the seriousness of [her] condition, ... they should have communicated this to us (and to [Ms A]) at the time.”

Dr B submitted that there are a number of inaccuracies in Dr R’s recollection of his contacts with the family after Ms A’s death. She said that there were no problems with Mr A’s mobile phone at this time and no indication that Dr R tried to contact him. Dr B also said that, contrary to Dr R’s recollection, her father was not angry when they spoke. Her father was “calm during the conversation” and noted what had been said, so he could pass the details on to other family members.

Dr B stated:

“I feel compelled to emphasise that we were not looking to assign blame for our loss to others. The day of [Ms A’s] death my father asked [the Constable] to pass on our thanks to the medical staff for doing all they could for her. We waited patiently (though anxiously) for information that would help us to understand what had happened. When we received information, we thoroughly and cautiously reviewed it, including taking expert medical advice. We needed to understand what had happened and we would have been more that willing to accept that [Ms A’s] death was an unavoidable tragedy if that was what the evidence showed. We have endeavoured to provide full and accurate information to assist this investigation and find it deeply disconcerting that LDHB does not appear to have taken this approach.”

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

RIGHT 5

Right to Effective Communication

- (1) Every consumer has the right to effective communication in a form, language, and manner that enables the consumer to understand the information provided. ...*
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Opinion

Introduction

The family is concerned that the care provided to Ms A at Rotorua Hospital was not appropriate. Ms A was admitted to hospital on Day 3 with severe abdominal pain and underwent exploratory laparoscopic surgery. The family believe that Ms A's death from overwhelming sepsis, within 24 hours of admission, was the result of her being treated with insufficient urgency, inappropriate antibiotic treatment, an inadequate diagnostic operation, and inadequate surgical and gynaecological management.

Emergency Department

Ms A was previously a fit, young woman who sought medical attention at an accident and medical clinic on the evening of Day 1. She presented with a 12-hour history of left-sided abdominal pain. The examining doctor provisionally diagnosed a urinary tract infection, and ordered diagnostic blood and urine tests and prescribed treatment with an antibiotic and analgesic medication. On the morning of Day 3, Ms A presented again at the clinic in severe pain. She was pale and clammy and had an elevated pulse rate. The clinic doctor diagnosed an acute abdomen and arranged for Ms A to be admitted to Rotorua Hospital.

Ms A arrived at the Rotorua Hospital Emergency Department (ED) at about 10am on Day 3. She was triaged by the ED nursing team, who telephoned the surgical registrar, Dr I, to advise of her arrival. Observations revealed a raised pulse rate and respiration rate, and normal blood pressure. Ms A was given intravenous morphine for pain, and intravenous fluid was commenced. At 11.15am Ms A was seen by Dr I, who thought Ms A had peritonitis, possibly related to her IUCD. However, he was unsure of the exact source of the infection, and the preliminary blood tests and abdominal X-ray did not provide a definitive diagnosis. At around 2pm Ms A's condition rapidly deteriorated and consultant surgeon Dr C was called out of theatre to review her urgently. He immediately arranged for Ms A to be transferred to theatre for a diagnostic laparoscopy.

My independent general surgeon advisor, Dr Garth Poole, stated that because Ms A was young and fit, she was able to manage up to three days of increasing infection with only minimal change to her vital signs. However, this changed around midday on Day 3, shortly after she was admitted to Rotorua Hospital, and a "cascade of events" started that would lead to multi-organ failure within 18 hours. Dr Poole advised that each person's reaction to this cascade is unpredictable; an infection that will have a minimal impact on one person will cause rapid death in another.

Dr B questions why Ms A did not receive more urgent treatment, including intravenous antibiotics. Dr Poole noted that a surgical examination took place within 90 minutes and Dr I made the correct presumed diagnosis of peritonitis. Dr Poole advised that there were other possible diagnoses including a severe urinary tract infection, pancreatitis, or internal hernia that needed to be ruled out. In these

conditions, the early administration of antibiotic therapy is either not indicated or can obscure the diagnosis. Dr Poole stated that the tests that Dr I ordered were timely and appropriate and helped to rule out the differential diagnoses. My independent gynaecologist advisor, Dr Bernard Brenner, also noted that antibiotics were administered at the time of surgery, and advised that immediate intravenous antibiotics on admission and prior to establishing a diagnosis would have been inappropriate. Dr Brenner noted that investigation by an ultrasound scan would have been inappropriate because it may have delayed the diagnostic laparoscopy.

In my view, the ED nursing staff closely monitored Ms A's vital signs and contacted the medical staff in a timely manner. They organised and administered pain relief and ensured that Ms A was given priority in being processed for admission. Dr I made an appropriate diagnosis and ordered the appropriate diagnostic tests. When Ms A's condition deteriorated at 2pm, Dr C attended immediately and made a new assessment in view of the changing clinical signs. Dr C appropriately arranged for Ms A's urgent transfer to the operating theatre for diagnostic laparoscopic surgery, and arranged further supportive measures during the transfer. I am satisfied that during the time Ms A was in ED, Dr C and other medical and nursing staff undertook appropriate observations, made a correct diagnosis, provided initial treatment, and proceeded to surgery in a timely manner.

Surgical care

The family is critical of Dr C's assessment of Ms A's condition, suggesting that there was "continual underestimation" of the severity of her condition. They question the decision to undertake a laparoscopy, rather than open surgery (a laparotomy).

Dr Poole considered that when Dr C decided that urgent exploratory surgery was required for Ms A, he made the correct decision, and his choice of laparoscopy was also correct.

On laparoscopic examination, Dr C's findings were of established salpingitis, tubo-ovarian abscesses on both sides, and extensive peritoneal soiling as a result. Since Ms A's condition was clearly gynaecological, Dr C sought an intraoperative opinion from gynaecologist Dr L, who attended promptly. Dr C followed the therapy recommended by Dr L — removal of the IUCD, peritoneal washout, and commencement of three antibiotics, ciprofloxacin, metronidazole and doxycycline.

Dr B expressed concern that the undrained abscess found on Ms A's left ovary had been missed at laparoscopy. She believes that if Dr C had proceeded to a laparotomy (a procedure covered by the consent form Ms A signed), he would have found the abscess, and it could have been drained. As noted by my independent intensive care advisor, Dr Ross Freebairn, "source control of infection is of paramount importance" and follow-up treatment and care "may be futile in the presence of an undrained collection".

Dr Brenner advised that Dr C's operation notes clearly state the presence of a tubo-ovarian abscess, and that the pathology was not missed. I asked Dr Brenner to comment on the diagnosis of bilateral tubo-ovarian abscesses made at operation. Dr Brenner noted that the pathologist's report clearly identifies the pathology as a left tubo-ovarian abscess, and mentions right tubal oedema and inflammation (salpingitis). He said that this is part of pelvic inflammatory disease and can result in a tubo-ovarian abscess, as was the case on the left side. Dr Brenner stated that whether the tubo-ovarian lesion is unilateral or bilateral is of no consequence. The main issue is that severe pelvic inflammatory disease was diagnosed, and a clinical decision was made to treat with antibiotics and lavage.

In response to Dr B's concern about the words "tubo-ovarian abscesses" in the operation note, and treatment with antibiotics and abdominal lavage (rather than pelvic lavage), Dr Brenner provided further clarification:

"The pathologist has confirmed a left tubo-ovarian abscess. This is clearly confirming the diagnosis as was established at laparoscopy. I wonder if the oedema and inflammation noted on the right side is causing some difficulty — technically speaking there was not a tubo-ovarian abscess on the right side but a swollen and inflamed right adnexum. It can be very difficult to differentiate a tubo-ovarian abscess from a severe salpingitis and the fact that tubo-ovarian abscess was correctly diagnosed (at least on the left side) is of major relevance here. While excision and drainage of a tubo-ovarian abscess can be performed, the conservative management by IV antibiotics is NOT an incorrect method of treatment. The pelvis is part of the abdominal cavity and so reference to abdominal lavage includes also reference to the pelvis."

A decision was made to treat Ms A with antibiotics rather than resection of the abscess. Dr Brenner advised that given the laparoscopic diagnosis, the management with the antibiotic regime and peritoneal washout suggested by Dr L was reasonable. Conservative management of tubo-ovarian abscess is a well-recognised method of treatment. Intravenous antibiotics are usually very successful in containing the infection, and only if there has been no response in 48 hours is a more radical approach advocated. Dr Brenner noted that laparotomy and surgical removal of the abscess would not necessarily have changed the outcome; conservative management is an acceptable method of treatment of tubo-ovarian abscess.

Dr Brenner stated that the ultimate diagnosis, as reported in the post-mortem, was acute peritonitis consequent upon an acute tubo-ovarian abscess, which corresponds with the surgical diagnosis made at laparoscopy. A growth of *Bacteroides* was cultured from the abscess, so the use of metronidazole demonstrates the correct antibiotic cover.

The family noted that Dr L did not record his presence in the theatre and his advice to Dr C. However, I agree with Dr Brenner's view that under the circumstances it was

reasonable for Dr C to record the opinion he had sought from Dr L on the management of Ms A's condition without Dr L actually writing or recording separate notes. At that time Dr L had not taken over the care of Ms A, and Dr C and Dr L concurred in the management plan, which was to treat "conservatively".

Dr B raised concern that Ms A "was never properly assessed because she was prepped and draped and positioned for a general surgery procedure and not a gynaecological one". Dr Poole advised that the appropriate position for acute laparoscopy is supine (lying down with the face up), and that this position can easily be converted if the operation becomes gynaecological. Dr B's advisor queried the adequacy of drainage and gynaecological examination when a patient is positioned for general surgery. In response, Dr Brenner advised that once a diagnosis of tubo-ovarian abscess had been established, an experienced laparoscopist would not have undertaken a disruptive and interfering surgical procedure.

The family also raised concerns about the dose and administration of doxycycline to Ms A, although their main concern was "the adequacy of the total antibiotics administered". Dr Brenner advised: "The Doxycycline is not in my opinion of major importance and although a 50mg dose was prescribed — even 200mg would most likely have been to no avail as the organism isolated was a *Bacteroides* for which the metronidazole was the appropriate antibiotic." It appears that although 50mg of doxycycline is a suboptimal dose, this did not have any significant bearing on the situation because other broad-spectrum antibiotics were administered.

Dr Brenner noted that the frequency of the administration of metronidazole would have been better at six-hourly intervals, rather than 12-hourly intervals, but doubted that this was critical. Dr Brenner advised: "There is a large variety of antibiotics available and any deviation from guidelines is generally the prerogative of the specialist treating the sepsis. It depends on many variables like experience of the consultant, availability of certain drugs and the clinical judgment of the attendees." Dr Brenner advised that given differences in personal preferences for antibiotic cover, the dose and frequency as recommended by Dr L was not unreasonable or inappropriate. Finally, Dr Brenner commented that the recording of antibiotics administered postoperatively in the ICU chart rather than the drug prescription chart is standard practice.

The evidence does not indicate that the seriousness of Ms A's condition was underestimated by the staff involved in her care. Ms A was treated with urgency by the surgical team after her condition deteriorated in ED. Anaesthetist Dr M was also concerned about Ms A's condition towards the end of the surgery because he suspected that Ms A had some degree of acute lung injury secondary to intra-abdominal sepsis. As a result he transferred her to ICU for close monitoring and intervention in the postoperative period.

Dr Brenner advised that it was recognised that Ms A was seriously ill on admission, and Dr C offered expert and appropriate management at all times. His decision to

proceed to laparoscopy was sound. In light of the findings, he obtained a gynaecological opinion, which was the correct course of action. Dr Brenner advised that Dr C's management was appropriate at all times. Even in hindsight, he is unsure whether any other course of action would have brought about a different outcome.

Dr Poole was unable to find fault in Dr C's management of Ms A. Dr Poole advised that Dr C made the correct operative choice of laparoscopy and, on finding that the diagnosis was gynaecological, sought an intraoperative opinion from a specialist in that area. He then carried out the recommended therapy and facilitated transfer to intensive care.

ACC's independent expert gynaecologist also advised that Ms A received appropriate medical care.

Conclusion re Dr C

I conclude that Dr C's assessment and management of Ms A was appropriate in the circumstances, and the decision to proceed to laparoscopy was reasonable. Dr C correctly diagnosed tubo-ovarian abscess as the primary source of infection. Furthermore, it was appropriate for Dr C to seek advice from gynaecologist Dr L during the operation and then follow the recommended conservative treatment of a peritoneal washout and broad-spectrum antibiotics. Dr C treated Ms A with reasonable care and skill and in accordance with professional standards, and therefore did not breach the Code of Health and Disability Services Consumers' Rights (the Code).

Intensive care

Dr B claims that although Lakes DHB provided policies and guidelines regarding best practice for the treatment of pelvic inflammatory disease and septic shock, the treatment and care that was provided to Ms A did not "come close" to meeting the guidelines.

Dr M was Ms A's anaesthetist during her surgery, and the on-call consultant for intensive care services on Day 3. Ms A was admitted to ICU at about 6pm, accompanied by her parents and partner. The registered nurses responsible for her care reported that Ms A was alert and awake and talking in full sentences in the early part of the night. She was able to communicate her needs despite requiring some humidified respiratory support. At around 2am on Day 4, she started to experience difficulty in breathing and declined to use the CPAP mask.

Dr Freebairn advised that Rotorua Hospital has a level two ICU and there is no resident medical cover available to the consultants. This situation is not uncommon in a number of units in smaller cities in New Zealand. As a consequence, Dr M, having provided anaesthetic cover during the day, was on call during the night. Dr M was notified about Ms A's breathing difficulties and arrived in ICU to review her at 2.30am.

Dr M inserted an arterial line to more accurately assess Ms A's blood pressure, gave 1mg of midazolam to control her anxiety and help her tolerate the CPAP mask, and started her on a Neosynephrine infusion to maintain her arterial pressure at an acceptable range. He remained in ICU for 1½ hours until he was satisfied that Ms A was stable. Dr Freebairn stated that Dr M's assessments, "though briefly documented, appear to be accurate and are consistent in all the records".

Dr Freebairn noted that the aim of the therapies implemented for Ms A by the intensive care team was to maintain her blood pressure within an acceptable range, and to improve oxygenation and organ perfusion. Dr M chose to use non-invasive ventilation. Dr Freebairn stated that non-invasive ventilation techniques are a useful adjunct to ventilation management, and are often used to avoid invasive intubation. The "Surviving Sepsis Guidelines"³ suggest that this technique may be useful in appropriate candidates and, when used, supports respiratory effort and oxygenation for several hours. While earlier intubation, rather than persisting with the non-invasive ventilation, *may* have been beneficial in resolving Ms A's respiratory distress, when Ms A was intubated she suffered a cardiac arrest. The interventions Dr M implemented were aimed at improving her physiological parameters in an attempt to reduce further multi-organ failure. Dr Freebairn advised that on each of the three occasions where Dr M reviewed Ms A, he adjusted the therapy appropriately. In his view Dr M's decision to pursue CPAP/non-invasive ventilation and other therapy was appropriate and his assessment and management was "without reproach".

At around 7am the nursing staff became aware that Ms A's condition had suddenly deteriorated. They performed a thorough assessment, held the CPAP mask for her, and increased the Neosynephrine infusion rate to increase her blood pressure. The on-call anaesthetist, Dr Q (who was on his way to the hospital), and Ms A's family were notified.

It is not clear why the nursing staff did not call Dr M at around 7.20am. Dr Q did not have the advantage of firsthand knowledge of Ms A. However, Dr M contacted him on his way into the hospital and briefed him on Ms A's condition overnight.

When Dr Q arrived in ICU at about 8.15am he found a desperately ill woman in respiratory distress, requiring urgent intervention. He made a decision to intubate Ms A immediately and obtained her permission for this procedure. He appropriately asked the family (who had arrived at around the same time) to leave after a brief moment with Ms A.

Dr Q used Ketamine to induce Ms A. Dr Freebairn advised that this was a reasonable choice, as Ketamine is less likely to cause hypotension than other induction agents.

³ Singer, M, "The Surviving Sepsis Guidelines: evidenced based ... or evidence-biased?", *Crit Care Resusc*, 2006, 8(3), pp 244–5.

Sedation for intubation and ventilation in such circumstances is hazardous, and a major problem facing the staff was Ms A's oxygenation and respiratory distress, poor renal perfusion and falling blood pressure. Additional fluids were required to increase Ms A's renal and cardiac perfusion, but the fluids were also likely to worsen her respiratory distress.

Hypotension is a common occurrence following intubation and implementation of positive pressure ventilation. Critically ill patients, particularly those with septic shock, are prone to profound hypotension, which compounds the usual risks associated with induction, including the risk of hypotension and subsequent cardiac arrest.

The vasopressor Neosynephrine (phenylephrine) and fluid therapy had been used to control Ms A's unstable blood pressure throughout the night. Dr Freebairn stated that although the "Surviving Sepsis Guidelines" recommend noradrenaline or dopamine, there is no strong evidence supporting the use of any agent over another. There are a number of treatment options for severe sepsis and toxic shock, and the "Surviving Sepsis Guidelines" provide one set of recommendations. Dr Freebairn advised that Ms A's oxygenation and respiratory difficulties appear to have been the priority of treatment. While increased doses of pressors or inotropes (which stimulate heart muscle contraction) and/or further fluid resuscitation may have avoided Ms A's catastrophic collapse, other treatment options may also have led to rapid deterioration and death.

Dr Freebairn advised that the presence of rostered resident staff in ICU may have made the monitoring and interventions less arduous and reduced the risk of therapy being delayed. I comment on this issue later in my report (see "Other Comment"). However, Dr Freebairn stated:

"[Dr Q's] decision to intubate, and his actions in preparing and performing the induction and ventilation, all appear to be reasonable decisions based on the information available at the time and the urgency of the situation. ...

The actions of the two medical staff at the time of the incident appear to be of an acceptable standard. While the outcome was a tragic death, there is nothing that [Dr Q] or [Dr M] could reasonably be expected to do that would have altered the outcome. There are no major deficiencies with the overall care provided to [Ms A] within the unit."

Dr Freebairn stated that overall the care provided in ICU was timely and appropriate for Ms A's condition at the time, responding to her increasing needs. I conclude that the medical care provided to Ms A by Dr Q, Dr M and other ICU staff was of an appropriate standard.

Conclusion re Lakes DHB standard of care

It is shocking that a previously healthy 27-year-old woman can die from sepsis within 24 hours of admission to a modern hospital. The family is convinced that Ms A's treatment at Rotorua Hospital was inadequate. My role is to judge the quality of assessment, diagnosis and treatment against the standard of care expected of responsible clinicians given the circumstances faced *at the time*. Hindsight bias — the use of “the retrospectoscope” to judge conduct with the benefit of the knowledge of the disastrous outcome — must be carefully guarded against.

All of the independent experts who have reviewed this tragic case — a gynaecologist and obstetrician, and Dr Bennett for ACC, and Dr Poole, Dr Brenner and Dr Freebairn for HDC — have concluded that Ms A received care of an appropriate standard. This is not a case where the independent experts differ in their opinion about the quality of medical treatment.

In these circumstances, the only proper conclusion on the available evidence is that Rotorua Hospital staff provided an appropriate standard of care to Ms A.

Record-keeping

Good documentation is essential to ensuring quality and continuity of health services. Dr B raised concerns about the credibility of some of the clinical records and, in particular, that there were inconsistencies in the records, and that Lakes DHB used retrospective reports as an opportunity to rewrite what actually happened.

The clinical records provided by Lakes DHB were written around the time that events took place. After Ms A died, Dr Q, Ms P and Ms N wrote up the events that occurred between 7am and her death at 9.24am. Dr Q clearly indicated that his report was retrospective. This method of recording information is acceptable, as it would be unrealistic to expect staff actively involved in a critical situation to take time out from resuscitative measures to record actions. The staff involved in Ms A's care provided statements in August and September 2006, based on their recall of events and the clinical records. Although the drama of these events would have made a lasting impression on the staff, it is unrealistic to expect that they would recall with total accuracy every detail after this lapse of time. I have no reason to believe that any minor discrepancy in the detail is intended to mislead.

In response to the provisional opinion Dr B stated that the family has no problem accepting clinical records that are written retrospectively, “as long as they are noted as such and accurately represent what happened”. Dr B noted that the operation record dated Day 3 was not typed until four days later, and asked, “Is it acceptable for reports written retrospectively not to be indicated as such?” It is usual practice for many hospital procedures, such as operation notes and radiological examinations, to be dictated by the specialist, typed and then sent back to the specialist for checking. I have no concerns about this method of recording clinical information.

On behalf of Lakes DHB, the Quality and Risk Manager acknowledged the inconsistencies in the times recorded for theatre processes. The reality in theatre is that there is no one person whose sole job is to record times. The doctors and nurses make recordings as well as performing their clinical duties. Theatre staff may have a different idea about when an operation starts — it is variously thought to be the commencement of anaesthesia, the draping of the patient, or the incision. This would most likely account for the inconsistencies in the times recorded. The Quality and Risk Manager commented that the error in the date on the anaesthetic note is simply a mistake, a human error.

Dr B is concerned by the apparent inconsistencies in the recording of when Ms A's antibiotics were administered, and noted that there appears to be too short a time between the commencement of the laparoscopy and the record of the antibiotic being given. She noted that the anaesthetist's medication record shows that two antibiotics were administered at 4.05pm, two minutes after the surgery commenced. Yet Dr C said that these antibiotics were administered after he saw the pathology and spoke to Dr L.

As noted above, there is a discrepancy in the recording of when the surgery commenced. Dr M's record shows that anaesthesia started at 3.45pm, while the circulating nurse recorded the operation start time as 4.03pm. Dr C advised that he arranged for Dr M to give Ms A 1.2g of Augmentin at the start of operation. After he viewed the abdominal cavity and discussed the pathology with Dr L, ciprofloxacin and metronidazole were given.

Dr M's medication record is segmented into five-minute intervals beginning at 1545hrs (3.45pm). The Augmentin administration record appears in the two segments between 1545hrs (3.45pm) and 1555hrs (3.55pm), shortly after the anaesthetic drugs were given, which corroborates Dr C's recollection. The record shows the other two antibiotics as given at about 1610hrs (4.10pm). I am advised that it takes less than five minutes to obtain views of the abdominal cavity after commencement of a laparoscopy. Therefore, it was not unreasonable for the ciprofloxacin and metronidazole to be given seven minutes after the start of surgery. Although the time Dr L arrived in theatre is not recorded, I am satisfied that he arrived shortly after Dr C viewed the condition of Ms A's abdominal cavity.

Dr B is also concerned by the apparent inconsistencies in the administration of the phenylephrine by the nursing staff in ICU. There are no entries for the phenylephrine on the drug administration chart after 7am when Ms O went off duty, but the drug appears on the fluid chart at 7.30am.

Ms A's condition suddenly deteriorated at 7am. Ms N and Ms P had just started duty and immediately became aware of the change in her condition. Although Ms P had been assigned to care for Ms A, Ms N decided that she would need assistance to perform all the necessary tasks.

I also note that it is standard practice in Rotorua ICU for the doctors to prescribe a drug range, and for the medication to be titrated according to the patient's needs. Ms P advised that she titrated the phenylephrine in accordance with the prescription and Ms A's constantly changing blood pressure recordings, which she was watching on the cardiac monitor as she stood beside the bed. Ms P's focus at that time was on her patient, Ms A, and on watching the monitor and titrating the medication accordingly.

In explaining the apparent inconsistency in the record of administration of phenylephrine on the ICU chart, the Quality and Risk Manager submitted that the phenylephrine has been recorded as being administered as part of an infusion on the right-hand side of the ICU record of the drugs administered. However, on the fluid input column, one hour's administration has been omitted. It is most likely that this was simply an oversight in recording. The drugs have been signed off in the drugs chart on the right-hand side of the ICU record, which is a more reliable indication that the drugs were in fact administered. In my view, this is a reasonable explanation for inconsistency in the records regarding the titration of the phenylephrine under the circumstances.

Overall, I do not doubt the credibility of the clinical records and consider the DHB's explanation for the inconsistencies reasonable in the circumstances.

Communication with the family

The family complained that at no time were they made aware by the clinicians of the seriousness of Ms A's condition; that they were not notified of a change in her condition during the night despite their requests that they be advised of any change; and that they were not contacted again until a month after Ms A's death. For the reasons set out below, I consider that Rotorua Hospital staff did not communicate adequately and effectively with the family.

When Dr C became aware of the seriousness of Ms A's condition at about 2pm on Day 3, he left the theatre immediately to go to the Emergency Department and assess her. Although Ms A was very ill and in pain, there is no suggestion that she was not capable of understanding what Dr C had told her when he advised her and [Mr A] that she required urgent surgery.

Dr M transferred Ms A to ICU after the surgery because he was concerned that she had some degree of acute lung injury secondary to intra-abdominal sepsis. Dr I spoke with family members after the surgery concluded. He told them that Ms A's IUCD had been removed, and her Fallopian tubes cleaned of infective material, and assured them that the surgery had gone well. The family was under the impression that Ms A was transferred to the ICU because she had "minor breathing problems". It appears that Dr I underestimated the family's understanding of the seriousness of Ms A's infection. The family recall that they were "specifically" told that Ms A was not in Intensive Care for the "usual reasons, [but] that she needed to rest" and they would be able to see her in the ward the following day. They did not realise that it is unusual for a patient to be

transferred to ICU, instead of the ward, following laparoscopic surgery. If the family was indeed told that Ms A had gone to ICU because she “needed to rest”, this would have (no doubt unintentionally) given a misleading impression and misrepresented the true nature of her condition.

Mr and Mrs B and Mr A accompanied Ms A to ICU. Mr and Mrs B left after an hour, but Mr A stayed until 9.30pm. During this time Ms A was comfortable and chatting with her family and staff, despite requiring some humidified oxygen support. ICU registered nurse Ms O recalls asking Ms A if she wanted her family contacted during the night. Ms A’s response was that Mr A was “really tired from late nights” and that the family should not be called.

In my opinion, the paucity of information provided to the family about Ms A’s condition meant that they had little understanding of the seriousness of the situation. Although nurse Ms O remembers discussing with Ms A whether she wanted her family called in, Ms A was a seriously ill young woman and was probably in no state to make a rational decision about whether she wanted her family’s support at her bedside.

Dr M was called to the ICU at 2.30am when Ms A was finding it increasingly difficult to breathe. He talked to her about her condition and the need for her to maintain the oxygen mask in place, and explained that he needed to insert an arterial line to monitor her more closely. Ms A consented to these procedures. Dr M gave Ms A medication to control her anxiety and assist her breathing before placing an arterial line. He stayed with her for 1½ hours, during which time they talked about overseas travel. Because she improved with the treatment, Dr M and Ms O saw no reason at that time to advise the family that Ms A had required additional treatment.

One can see that it would be a difficult judgement whether to call family in such a situation. Ms A’s condition had deteriorated, and she required midazolam to control anxiety to help tolerate the CPAP mask and the introduction of the arterial line for invasive monitoring. She was also started on a Neosynephrine infusion for the maintenance of an adequate blood pressure. But by 4am, when Dr M left, Ms A’s condition had stabilised.

The critical factor is that the family had asked staff to contact them if there was *any change* in Ms A’s condition.

Even when Ms A became agitated and the ICU nurses noted a further deterioration in her condition at 7am, staff did not call her parents to the hospital until 7.50am. This is no doubt partly explained by the crisis they were dealing with at the time.

Mr A and Mr and Mrs B arrived at about the same time (8.15–8.20am). Dr Q explained the severity of Ms A’s condition and that she now required aggressive treatment. He advised that Ms A would need to be sedated while she was “this poorly”. Dr Q realised that the family had little understanding of how ill Ms A had

become. He told them what he needed to do and invited them to spend a few minutes with Ms A before he sedated and intubated her.

After the medical team ceased their resuscitative efforts at 9.24am, Drs Q, M and R spoke to Mr and Mrs B and Mr A. They briefly explained why Ms A had died and expressed their condolences. They realised that the family was shocked and probably not capable of taking in information.

A short time after Mr and Mrs B and Mr A left the hospital, Dr B arrived and was told that her sister had died, but was not given an explanation by the nurse to whom she spoke. As Dr B was leaving the hospital, the Police constable acting for the Coroner asked her to identify her sister. The family was advised by the constable that a post-mortem report would be available in about two weeks' time.

It is not surprising that the family was shocked by Ms A's death, and left confused about the circumstances surrounding her death. The family complained that they did not hear from hospital staff again until a month later, when Dr R telephoned Mr B.

I accept Dr R's word that he made been several unsuccessful attempts to contact Ms A's partner, Mr A, before that date. It would have been a good idea to leave a discreet message for Mr A to call back, after the second unsuccessful call.

Dr R advised that when he failed to contact Mr A he spoke to a GP at Mr and Mrs B's medical practice, Dr S, who told him that the family was angry and did not want any communication with the hospital. Understandably, at that point Dr R decided not to make any further attempts to contact the family.

I am advised that bereavement practice at Rotorua Hospital follows accepted guidelines, including the philosophy that meetings with a bereaved family should be delayed for eight to ten weeks. I accept that sometimes it can be difficult to "do the right thing" and that one protocol does not meet all individual needs. However, "meeting" with a family is different from making contact. I appreciate that these events were shocking for the hospital staff, and that it is not easy to make contact with people who are in deep grief and may be upset and questioning. However, it is not sufficient to "attempt" to make contact and hope that the problem has been dealt with by other services. The family should have been contacted in the days following Ms A's death. They should not have had to wait a month to hear from hospital staff.

On 1 February, Dr R offered to arrange for hospital staff to meet with the family to explain what had happened. Dr R confirmed that the cause of Ms A's death was a "deep seated abscess". The family decided that they would await the post-mortem report. There was no further communication from Rotorua Hospital until 19 May 2006 when they were advised by email that a meeting had been scheduled for 26 May for the family to meet with staff. The family declined to attend.

In my opinion, although Ms A was treated appropriately in very difficult circumstances, Lakes DHB owes the family an apology for failing to explain the seriousness of Ms A's infection and the need for her to be in ICU after surgery; for not making contact when Ms A's condition deteriorated early in the morning; and for the delay in telephoning when Ms A further deteriorated at 7am.

Furthermore, there should have been an early offer of a meeting with key staff (including Dr C) in the days following Ms A's death, to offer condolences and support and to explain what had happened.

The outcome of the case review should have been promptly and sympathetically communicated to the family. It is unacceptable that it took Lakes DHB until 1 February to offer to meet, and that the case review was not shared with the family until May, via the Coroner's Office. It is hardly surprising that the family declined to meet. I agree with Dr B's view that information should have been provided to the family during her admission and after her death, and that "there are lessons to be learnt on appropriately and openly providing accurate information to family members, particularly in deeply traumatic situations such as this."

The tragic outcome of Ms A's illness was totally unexpected. I accept that Rotorua Hospital staff believed that they were providing appropriate information to Ms A and her family at the time. However, it is clear that the family did not understand that Ms A was seriously ill. Senior clinicians spoke to the family immediately after the resuscitation efforts failed, but at the time everyone was in a state of shock. It is reasonable to assume that the family's comprehension at this time would be limited.

When there was no information forthcoming in the days and weeks following Ms A's death, the family's doubts about the appropriateness of her care naturally increased. By the time that the hospital management offered to meet with the family, one month after Ms A died, the offer was refused because the family no longer trusted hospital staff to openly and honestly explain what had happened to Ms A.

In all the circumstances, I conclude that Lakes DHB did not communicate adequately and effectively with the family, and accordingly breached Right 5(1) of the Code.

Other Comment

Intensive care policy

As part of the case review, Dr R decided that although it was not possible to make systemic recommendations based on the circumstances surrounding this case, he would introduce guidelines on the resuscitation and management of sepsis based on the recommendations from the “Surviving Sepsis” campaign.

Dr Freebairn commented on the place of Clinical Morbidity & Mortality sessions and case reviews as quality assurance activities. He noted that there had been a comprehensive review of the ICU management and that the outcome of that review had been conveyed to the family. Dr C informed me that the case was discussed at a General Surgical Department audit meeting and that no steps that could have led to a favourable outcome were identified.

Dr Freebairn notes that Dr R referred to the “Surviving Sepsis Guideline”. He cautioned that these guidelines have created some controversy and need to be applied using clinical acumen. The guidelines are not yet accepted as the standard of care. As an example he noted the guidelines’ recommendations of treatment with steroids and activated protein C. The recommendation on the use of low-dose steroids in these circumstances is not universally accepted. It is based on three European studies that suggest an improved outcome; however, a larger trial — the results of which were published in September 2006 — demonstrates no survival benefit from the use of low dose steroids. Therefore, the omission of steroids cannot be considered a failure to deliver a proper standard of care. Dr Freebairn also noted that activated protein C has an anticoagulant activity, which predisposes patients to bleeding, particularly postoperative bleeding.

I have previously discussed Dr Freebairn’s views on the provision of dedicated resident medical staff in a level two intensive care unit. He quoted from the Joint Faculty of Intensive Care Medicine Standard that recommends that “in addition to the attending specialist, at least one registered medical practitioner with an appropriate level of experience” is exclusively rostered and “predominantly present in the unit at all times”. This standard is supported by the Ministry of Health in its intensive care service document.

Recommendations

- Lakes District Health Board provide a written apology to the family for its breach of the Code.
 - Lakes District Health Board review its practice in relation to communication with families in light of this report and advise the Commissioner of the steps it will take to improve practice.
 - Lakes District Health Board review its intensive care policy in light of Dr Freebairn's comments regarding the provision of dedicated resident medical staff in a level two intensive care unit, and advise the Commissioner of the steps taken in response.
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Follow-up actions

- A copy of this report will be sent to the Medical Council of New Zealand and the Rotorua Coroner.
- A copy of this report, with details identifying the parties (other than Rotorua Hospital and Lakes District Health Board) removed, will be sent to the Ministry of Health, the Chief Executives of all District Health Boards, Quality Health New Zealand, the New Zealand Nurses Organisation, the Royal Australasian College of Surgeons, the Joint Faculty of Intensive Care Medicine, the Australian and New Zealand College of Anaesthetists, and the New Zealand Society of Anaesthetists, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix 1

General surgery advice

The following expert advice was obtained from Dr Garth Poole, general surgeon:

“My name is Garth Poole. I hold the following positions and qualifications:

- General Surgeon and deputy HOD CMDHB
- Director of the CMDHB Upper GI, Laparoscopic and Breast Services
- Past President of NZAGS
- National Supervisor of Basic Surgical Training
- FRACS MBChB

To form my opinion I have reviewed the following documents provided by the HDC:

- 1) Introductory documents from HDC
- 2) Documents A, B, C, D, E, F, G, H, I and J comprising of 128 pages. I have also accessed the mainstream surgical literature.

This expert has been asked to comment on the appropriateness of care provided by [Dr C] to [Ms A].

1 and 2) Was the treatment provided to [Ms A] in the emergency department reasonable?

Yes. [Ms A] was admitted to the ED at approximately 1000 hrs. Observations were taken and these revealed a raised pulse rate, slightly raised respiratory rate, a normal blood pressure and a normal temperature.

Medical opinion was sought from the surgical team. Phone advice was given and an opinion was also sought from an attending ED doctor.

The appropriate tests were ordered and general supportive therapy was given. A surgical examination took place within 90 minutes and the correct presumed diagnosis was made.

A rapid deterioration then occurred and a consultant surgical opinion was sought from [Dr C].

[Dr C] then left the operating theatre and made a new assessment in view of the changing clinical signs. He recommended transfer to the operating theatre and exploratory laparoscopic surgery.

3 and 4) Was [Dr C's] assessment and treatment of [Ms A] appropriate?

Yes. [Dr C] made a triage decision to leave the operating theatre and attend to [Ms A]. He then made the correct decision to hasten exploratory surgery as well as arranging further supportive measures during the transfer.

He then made the correct operative choice of laparoscopy. On finding that the diagnosis was clearly gynaecological he sought an intraoperative opinion from a specialist in that area. He then carried out the therapy recommended by that specialist and facilitated transfer to intensive care.

Summary

[Ms A] died of overwhelming sepsis. As a young fit woman, she was able to manage up to three days of increasing infection with only minimal change to her vital signs. At approximately midday on [Day 3] this began to change. A cascade of events commenced that would lead to multi organ failure within 18 hours.

This 'cascade' is the source of intense medical research because the blocking of this cascade would save countless lives.

The reaction of the human body to this cascade is unpredictable. A minor infection that will clear up in most people will suddenly cause rapid death in another.

[Dr C] led a team that took observations, made a diagnosis, commenced therapy, arranged surgery and then sought other speciality help from anaesthesia, gynaecology and intensive care.

This expert can not find fault in the management provide by [Dr C] in this case.

NB. As is often the case there is some confusion in the correspondence about what a 'General Surgeon' is.

It is important to stress that a General Surgeon is an expert in acute surgery. He/she has training in recognising severe illness, instituting therapy and coordinating a team. He also has the ability to recognise conditions that belong to the other 10 surgical disciplines and to advocate for the patient by getting a second opinion."

Additional general surgery advice

Dr Poole provided the following additional general surgery advice:

“Additional issues

- 1) Timing of the antibiotics preoperatively

In retrospect in any case of sepsis death there is almost always a concern that antibiotics should have been earlier, stronger and more specific to the organisms. In this case the diagnosis of PID made in ED was probable, not certain.

Other possibilities included a severe UTI, pancreatitis or internal hernia. In these diagnoses, early antibiotics are either not indicated or can even obscure the diagnosis. The tests arranged by Dr I were timely and appropriate and the outcomes of these tests helped to rule out many of the differentials.

2) Position of patient on table

Supine is the appropriate position for acute laparoscopy. This position can easily be converted if the operation becomes gynaecological.

I am not in a position to comment on the operative advice given by [Dr L].

I am not in a position to comment on the post operative intensive care.”

Appendix 2

Gynaecology advice

The following expert advice was obtained from Dr Bernard Brenner, gynaecologist:

“I have been asked to provide an opinion to the Commissioner on case number [06HDC08129].

I have read and agree to follow the Commissioner’s Guidelines for Independent Advisors.

I am a Fellow of the Royal Australian and New Zealand College of O and G. I have been in Specialist practice for 26 years and am a founder member of the Australian Gynaecological Endoscopy Society and a member of the American Society of Gynaecological Laparoscopists. I am in active clinical practice and have extensive experience in advanced laparoscopic surgery and general gynaecology.

I have been asked to provide my professional opinion to the Commissioner, on the matter regarding the adequacy and standard of care provided to [Ms A] at Rotorua Hospital and in particular:

1. If the treatment provided to [Ms A] in light of the diagnosis of salpingitis on [Day 3], was reasonable?
2. If not, what other action should have been taken.
3. Was gynaecologist [Dr L’s] assessment and treatment plan for [Ms A] appropriate?
4. If not, please comment on what else should have been advised in these circumstances.

And also whether any aspects of the care provided by Rotorua Hospital would warrant further comment?

I have reviewed the following documents:

- Letter of complaint to the Commissioner from [the family’s barrister], dated 30 May 2006, marked with an ‘A’. (Page 1)
- Letter of complaint to the Commissioner from [the family’s barrister] on behalf of the [family], dated 13 June 2006, marked with a ‘B’. (Page 2)
- Document submitted to the Commissioner by [Mr A] to support the [family] complaint, received 19 June 2006, marked with a ‘C’. (Pages 3 to 5)
- [A&M] clinical records relating to [Ms A], submitted by the [family], marked with a ‘D’. (pages 6 to 9)
- Rotorua Hospital clinical records relating to [Ms A], provided by Lakes DHB on 26 June 2006, marked with an ‘E’. (Pages 10 to 71)

- Response provided by [Dr C], dated 4 August 2006, marked with an 'F'. (Pages 72 to 75)
- Response from Lakes District Health Board with accompanying documentation (documents related to gynaecologist asterisked) received on 2 October 2006, marked with a 'G'. (Pages 76 to 101) [...]
- Copy of post-mortem report for [Ms A], reported by [the pathologist] marked with an 'H'. (Pages 104 to 106)
- Copy of Lakes DHB [Case Review] into the circumstances of the death of [Ms A], marked with an 'I'. (Pages 107 to 100)
- Copy of documents listing the [family] concerns about the care provided to [Ms A] by Rotorua Hospital, marked with a 'J'. (Pages 111 to 116)

Factual Summary

On [Day 1] [Ms A], aged 27 years, presented to [an Accident and Medical Clinic] with a 36 hour history of cramping abdominal pain. A MSU was taken and she was commenced on diclofenac 75mg and trimethoprim 300mg.

[Ms A] returned to [the Accident and Medical Clinic] on [Day 3] in severe pain, pale and clammy with a temperature of 35.6°C. Her pain was epigastric and shoulder tip which worsened with inspiration. A luer was sited and she was transferred to Rotorua Hospital.

[Ms A] was seen by surgical registrar [Dr I] who noted her pulse of 107 bpm, blood pressure of 118/68. She was afebrile and had oxygen saturations on 97% on room air. [Ms A] advised that she had had an IUCD fitted three years previously. He noted that her abdomen was generally tender and guarded. [Dr I] considered pelvic peritonitis secondary to salpingitis and ordered preliminary investigations with view to proceeding to a diagnostic laparoscopy.

At 2pm, consultant surgeon [Dr C] who was about to start operating, was advised by his surgical house officer, [Dr K], that [Ms A's] blood pressure had fallen suddenly and her heart rate increased. [Dr C] arranged for his registrar to continue with the operation and went immediately to see [Ms A]. When [Dr C] assessed [Ms A] he found she was in shock, short of breath and seriously unwell. He decided on immediate surgery to assess and treat what he believed was an intra-abdominal catastrophe.

[Dr C] initiated fluid resuscitation, cross matching for 3 units of packed cells and organised for [Ms A] to urgently transfer to theatre. [Dr C] advised [Ms A] and her partner of the situation. Consent was obtained.

[Ms A] arrived in theatre at 3.25pm. Her blood pressure at that time was 101/50 and her heart rate was 114bpm. Anaesthetist [Dr M] consented [Ms A] for theatre and commenced the anaesthetic at 3.40pm.

[Dr C] ordered 1.2gms of intravenous amoxicillin at the commencement of the surgery. [Dr I] assisted [Dr C]. The laparoscopy revealed established salpingitis, bilateral tubo-ovarian abscesses and extensive peritoneal soiling. [Dr C] called gynaecologist [Dr L] for advice on a treatment for [Ms A]. [Dr L] advised [Dr C] to wash the abdomen with five litres of sterile saline and commence [Ms A] on ciprofloxacin, metronidazole and doxycycline.

[Ms A] was seriously unwell post-operatively and transferred to the Intensive Care Unit (ICU). The antibiotics ciprofloxacin and metronidazole were given intravenously and the doxycycline given via a naso-gastric tube. [Ms A] remained tachycardic and breathless with a blood pressure between 89/50 and 112/60. At 2.30am [Ms A's] condition deteriorated and the ICU nursing staff called [Dr M]. [Dr M] reviewed [Ms A], sited an arterial line and ordered the resumption of assisted ventilation via CPAP mask and a neosynephrine infusion to treat her breathlessness. At 4am Dr M noted that [Ms A's] breathing was easier.

At 7.30 the nursing notes indicate that [Ms A] was deteriorating and required 'more invasive support.' Her respiration rate increased to 50. She became cyanosed and needed constant encouragement to use the CPAP mask. Anaesthetist Dr Q was advised of [Ms A's] acute deterioration. Her family were informed of her condition.

Dr Q arrived in ICU at 8.20am. House surgeon, [Dr J] noted [Ms A] was for 'full ICU care currently' and [Dr Q] would intubate and ventilate her 'shortly'. However, as [Dr Q] intubated [Ms A], she arrested. An emergency call was activated and CPR commenced.

[Ms A] was pronounced dead at 9.24am. Her family were present and spoken to by [Dr Q].

I have addressed the following questions:

Was the treatment provided to [Ms A] in light of the diagnosis of salpingitis on [Day 3] reasonable?

It is clear from the case notes that on admission it was recognised that [Ms A] was seriously ill. I am of the opinion that Dr C offered expert and appropriate management at all times. The decision to proceed to laparoscopy was sound, and given the findings he obtained a gynaecological opinion. This was the correct course of action and resulted in an antibiotic regime and abdominal lavage (washout) that was appropriate for the laparoscopic findings. Her admission for post operative care for ICU was obviously appropriate. I do not feel any other action was required.

Was gynaecologist [Dr L's] assessment and treatment plan for [Ms A] appropriate?

[Dr L] was consulted by [Dr C]. [Dr C] recorded the fact that he had sought advice and followed the antibiotic regime and the peritoneal washout as had been suggested. Given the laparoscopic diagnosis, this management is correct and standard under the circumstances. There has been some concern expressed that [Dr L] did not write in the notes. Under the circumstances this is not unusual. [Dr L] was asked for an opinion. He did not take over the care of the patient and his opinion was recorded in the notes by [Dr C]. It appears that both the surgeon and the gynaecologist concurred with the management plan. I therefore consider it reasonable that [Dr C] recorded the opinion he had sought from [Dr L].

Are there any aspects of the care provided by Rotorua Hospital that you consider warrants comment?

The death of [Ms A] was obviously a great shock for her family and friends especially as it was so sudden and unexpected. I have noted the many points raised by the family in the letter of complaint against Rotorua Hospital. While I extend my deep sympathy to them on their tragic loss, I am unable [to] find fault with the management or care that [Ms A] received at the hospital. In hindsight had the tubal infection been recognised and treated earlier, the infection may have resolved and she may in consequence not have needed admission for toxic shock.”

Additional gynaecology advice

Dr Brenner provided the following additional gynaecology advice:

“In response to your letter of 10 November, I will address the [family’s] queries under the questions submitted.

1. Why was the primary source of [Ms A’s] infection (the left tubo-ovarian abscess noted in the pathologist’s report), not found and dealt with in the surgery?

It is clear from [Dr C’s] notes that at laparoscopy there were tubo-ovarian abscess[es] on both sides — these were no doubt the primary source of infection and w[ere] not missed at the time of surgery. It is possible that [Dr B] is misunderstanding the terminology used. Appropriate treatment was in fact commenced.

2. Were appropriate antibiotics — including the timing, type, frequency and dose — administered to [Ms A]?

Again it is clear from [Dr C’s] notes that Augmentin was administered post operatively (Augmentin includes amoxicillin). This was appropriate treatment. Further antibiotics in the form of ciprofloxacin and metronidazole were administered during the operation by IV route. This was appropriate antibiotics and the correct dose was administered. Further antibiotics were given post operatively. This is considered to be appropriate and correct. Doxycycline was

administered orally and [Dr C] has indicated that the dosages were recorded in the ICU chart rather than the drug prescription chart, which is standard practice.

3. How might [Ms A's] treatment have differed had the surviving sepsis guidelines been followed?

I am of the opinion that the management was correct and appropriate. Even in hindsight, I am unsure whether any other course of action would have brought about a different outcome.”

Further gynaecology advice

Dr Brenner provided further gynaecology advice as follows:

“You have requested that I review the original opinion I provided regarding the provision of services from Rotorua Hospital for [Ms A]. I have thoroughly reviewed the documents you supplied including:

- the letter to [the Quality and Risk Manager] 1/2/2007 and the response on 2/4/2007 (pages 00097 to 00102)
- the documentation provided by [Dr B] (pages 00070 to 00096)
- the complete copy of the clinical file for [Ms A] (pages 00001 to 00069)

In particular:

1. Was the treatment provided to [Ms A], in light of the diagnosis of salpingitis, reasonable?

[Ms A] was admitted to hospital because of abdominal pain. She underwent Laparoscopy and Peritoneal washout. She had intravenous Augmentin followed by Ciproxin and Metronidazole and Doxycycline. A diagnosis of Pelvic Inflammatory Disease was made (specifically tubo-ovarian abscesses). A decision was made to treat her with antibiotics and not resect the abscess. The ultimate diagnosis as reported in the post mortem was acute peritonitis consequent upon an acute tubo-ovarian abscess. This by and large corresponds with the surgical diagnosis made at laparoscopy. A growth of Bacteroides was cultured from the abscess so the use of Metronidazole demonstrates the correct inclusion of antibiotic cover. It is my opinion once more that it was not unreasonable to treat a patient with a tubo-ovarian abscess by lavage and antibiotics. I am also of the opinion that the explanation letter provided by [the Quality and Risk Manager] following the meeting by [Drs L, C and M], provides a reasonable explanation of the many issues raised by [Dr B].

2. Was [Dr L's] assessment and treatment plan for [Ms A] appropriate?

This has largely been answered in point 1 above. [Dr L] was asked to attend the operating room. It appears he did this in a timely fashion. As recorded by [Dr C], he offered a professional opinion advising lavage, removing the IUCD and adding other antibiotics to the treatment plan. Given the eventual growth of Bacteroides, the inclusion of Metronidazole was correct and appropriate. The question of the lack of operation notes by [Dr L] personally has been addressed in a previous reply — namely the opinion provided by [Dr L] was recorded by [Dr C] and as there was concurrence of opinion it would be reasonable for the operation notes to include this opinion without requiring [Dr L] to actually write or record separate notes. From a gynaecological perspective the initial decision to manage a tubo-ovarian abscess with lavage and antibiotics is not unreasonable. Given differences in personal preferences for antibiotic cover, the dose and frequency as recommended by [Dr L] is not unreasonable or inappropriate.

[An obstetrician and gynaecologist] has provided advice to [Dr B]. It is claimed that she has reviewed the responses from [Dr B] and is in agreement with the issues raised. It is unclear to me exactly what this encompasses. I believe it would be valuable if [Dr B's advisor] would detail her opinion in writing.

In the following paragraphs I will attempt to provide a response to [Dr B's] numerous queries. This is provided from a totally independent viewpoint and is not an attempt to justify any action on behalf of any of the health professionals.

Summary of Issues

‘The overarching question ... why was there no indication given to the family of the potential seriousness of the condition.’

I believe that [Ms A's] death came as a shock and surprise to all concerned. This is articulated in [Dr C's] report.

Accuracy of information

Why did [Ms A] not receive urgent treatment and IV antibiotics?

The initial assessment was that [Ms A] was seriously ill but she was ‘in a stable condition’. Antibiotics were administered at the time of surgery. Immediate IV antibiotics on admission and prior to establishing a diagnosis would have been inappropriate.

‘The diagnostic operation was inadequate. The left tubo-ovarian abscess was missed.’

The operation notes provided by [Dr C] clearly states the presence of tubo-ovarian abscess. The pathology was not missed. (p00041).

‘Why was surgical management inadequate?’

The conservative management of tubo-ovarian abscess is a well recognised method of treatment. Intravenous antibiotics are usually very successful in containing the infection and only if there has been no response in 48 hours is a more radical approach advocated.

‘Intensive care treatment was inadequate’

At operation the severity of her condition was recognized and she was transferred to Intensive Care. I am unable to find evidence that she was not carefully monitored in ICU and given that a conservative treatment plan had been initiated, it is unclear to me what ‘more appropriate treatment’ means in this context.

Information issues that may have influenced expert opinions

Operation notes provided by [Dr C] indicate that tubo-ovarian abscesses were diagnosed. Any handwritten notes by attendants to [Dr C] would be regarded as ancillary. In any event the typed operation notes and the statement provided by [Dr C] that a diagnosis of tubo-ovarian abscess was established is credible and according to him the opinion was in concurrence with the consultant gynaecologist.

‘... Doxycycline via naso-gastric tube’

While I agree 50 mg dosage is suboptimal I do not feel that this has any substantial bearing on the situation. This is because of the administration of the other broad spectrum antibiotics (Augmentin and Ciproxin) and Flagyl (this later being the most suitable for the treatment of Bacteroides).

Doubt about antibiotic administration

The anaesthetic record and the ICU record clearly indicate the times of administration of antibiotics as prescribed.

‘Shouldn’t the source of the infection have been found and treated?’

It is clear to me based on [Dr C’s] operation notes that he had identified the source of the infection as a tubo-ovarian abscess and that he had consulted a consultant gynaecologist. The decision was made to treat with lavage and intravenous antibiotics. I do not believe this was an unreasonable plan of action. I am unable to speculate on whether surgical removal would have altered the outcome. Conservative management is an acceptable method of treatment for tubo-ovarian abscess. It is unclear to me why my opinion of this point is considered to be cursory.

Further Information Required

‘Expert opinion from the pathologist is required’

The same query arises but is worded differently. The pathologist report clearly identifies the pathology as a left tubo-ovarian abscess. There is mention of right tubal oedema and inflammation. This is salpingitis. It is part of pelvic inflammatory disease and can result in a tubo-ovarian abscess as was the case on the left side. [Dr

C's] operation notes indicate a tubo-ovarian lesion. Whether it is unilateral or bilateral is of no consequence. The tubo-ovarian abscess was identified and documented in the operation notes. Based on the finding of a tubo-ovarian abscess and the opinion of a consultant gynaecologist a decision was made to treat by lavage and antibiotics. I once more reiterate that there is no doubt that the source of the infection was noted and treated (conservatively). It is perhaps relevant to mention that footnote 3 on page 00075 introduces hearsay evidence from [Dr B's advisor] 'that the primary source of the infection was not found and treated'. Unless [Dr C's] operation notes are false (ie, he did not see a tubo-ovarian abscess but falsely added this to his notes retrospectively), then the statement attributed to [Dr B's advisor] is manifestly wrong.

Footnote 5 on the same page also relates to hearsay evidence from [Dr B's advisor] '**it is difficult to imagine complete drainage or adequate gynaecological examination could be possible ... if the patient was positioned for general surgery**'.

I find this a rather broad generalization that either reflects inexperience on the part of the opinion giver or an underestimation of the skills of an expert laparoscopic general surgeon and consultant gynaecologist who did indeed find the pathology as a tubo-ovarian abscess and elected to treat this with lavage and antibiotics. Surely an experienced laparoscopist, once a diagnosis of tubo-ovarian abscess had been established, would not have undertaken a disruptive and interfering surgical procedure irrespective of the patient's position.

'Why did [Dr L] leave no notes?'

As previously explained it is not an unusual circumstance that if a specialist is called upon to give an opinion to another specialist and both agree with the diagnosis and management plan, then it is not unreasonable for that opinion to be recorded by the requesting specialist. The important point here is that the opinion was sought, accepted and recorded by [Dr C].

'The accuracy of clinical notes ...'

The time discrepancy and other apparent note inaccuracies has been adequately dealt with by [the Quality and Risk Manager's] letter (pages 00099 to 00101).

Dr Poole's Report

I have not read Dr Poole's report and can make no comment as to the points raised here.

Dr Brenner's Report

Immediate IV antibiotics ... IV antibiotics were administered just prior to the Laparoscopy. The exact nature of the peritoneal problem had not been diagnosed and it was reasonable to start pre-op with a broad spectrum antibiotic. It would be

unusual to immediately administer potent antibiotic cover on admission as a diagnostic procedure had been planned.

Gynaecological Opinion ... in particular the consequences of the opinion

The use of Ciproxin and Flagyl in addition to the Augmentin already prescribed is considered to be satisfactory. The Doxycycline is not in my opinion of major importance and although a 50 mg dose was prescribed — even 200mg would most likely have been to no avail as the organism isolated was a Bacteroides for which the Flagyl was the appropriate antibiotic. I do concede that the frequency of administration of the Flagyl would have been better at 6 hourly rather than 12 hourly intervals.

Antibiotic regime and abdominal lavage (and not pelvic lavage)

This is a recurring issue in [Dr B's] complaint. [Dr C's] operation notes includes the words 'tubo-ovarian abscesses'. The pathologist has confirmed a left tubo-ovarian abscess. This is clearly confirming the diagnosis as was established at laparoscopy. I wonder if the oedema and inflammation noted on the right side is causing some difficulty — technically speaking there was not a tubo-ovarian abscess on the right side but a swollen and inflamed right adnexum. It can be very difficult to differentiate a tubo-ovarian abscess from a severe salpingitis and the fact that tubo-ovarian abscess was correctly diagnosed (at least on the left side) is of major relevance here. While excision and drainage of a tubo-ovarian abscess can be performed, the conservative management by IV antibiotics is NOT an incorrect method of treatment. The pelvis is part of the abdominal cavity and so reference to abdominal lavage includes also reference to the pelvis.

Response to the many points raised

A detailed response to the many points noted was not made because of the many repetitions of the same complaint and an impression that there has been a misunderstanding of terminology. As there is no documentation available from the Gynaecologist consulted by [Dr B] I am still of the opinion that there appears to be a misunderstanding of terminology. The purpose of this page by page response is to reassure the complainant that I have again examined all the supporting material in great detail. I feel comfortable with my earlier report and it covered the important issues as assessed by me. My opinion is really unchanged.

Subsequent Response

Once more the issue of discrepancy between the post mortem and [Dr C's] operation notes is raised. There appears to be an insinuation that 'the retrospective report of surgery' by [Dr C] is untrue and conflicts with the post mortem report. I am unsure how this belief is held and perpetuated.

Antibiotics as 'appropriate treatment'

The question of antibiotics has been dealt with in depth above. To reiterate: broad spectrum antibiotics including Flagyl were ordered. There is a large variety of

antibiotics available and any deviation from guidelines is generally the prerogative of the specialist treating the sepsis. It depends on many variables like experience of the consultant, availability of certain drugs and the clinical judgment of the attendees. It is my opinion that Ciproxin and Flagyl were appropriate under the circumstances. The Flagyl at 500mg 6 hourly would have been the optimal dose — it is noted that the drug was prescribed at 12 hourly intervals. I am not sure if this was of critical concern. This does not mean that other or different regimes were incorrect or inappropriate.

Surgical management

While it is true that a ruptured appendix is treated by removal, a tubo-ovarian abscess can be treated by antibiotics and lavage. Once more the issue of discrepancy between the postmortem finding and the operation notes is questioned. It is certainly not my view that [Dr C] has deliberately (tried) to confuse the issue. His operation note indicates the diagnosis of tubo-ovarian abscess(es). The hand written notes by [Dr I] and [Dr M] should be interpreted as annotations — salpingitis and tubo-ovarian abscess are part of PID (pelvic inflammatory disease). The consultant typed operation notes indicates the diagnosis was established. It is my opinion that the issues raised are ones relating to semantics rather than to substance. The post mortem indicated salpingitis and tubo-ovarian abscess. It is my understanding that the operation notes reflect fairly accurately the pathology as found at postmortem. The main issue as I see it is that severe pelvic inflammatory disease was diagnosed and a clinical decision was made to treat this with antibiotics and lavage.

[Dr R's] Report

It is my view that the comments attributed to [Dr R] indicate consistency between the clinical diagnosis and the post mortem. The points raised by [Dr B] are semantics and a paraphrasing of the previous points raised concerning discrepancy between post mortem and clinical diagnosis.

Concerns about surgical management

The management by a general surgeon experienced in laparoscopy with the clinical input of a gynaecological colleague as occurred in this case is considered to be appropriate. A decision was made to treat conservatively so the question of [Dr L] taking over [Ms A's] care at the time of him entering the operating room is really irrelevant. His opinion was to treat conservatively.

The question raised about the apparently short operating time and the implication that this somehow indicated incompetence on the part of the surgeon needs to be refuted. Operating time depends on many variables and often a highly skilled laparoscopist will perform surgery in a quicker time than a trainee or unskilled surgeon. The use of the literature in this instance is considered to be inappropriate and out of context.

Positioning for laparoscopy

This has been previously discussed. [Dr C] had diagnosed the tubo-ovarian abscess and [Dr L] attended in the operating room. To suggest that the operation was in some way compromised by the positioning of the patient seems strange as the correct diagnosis was indeed established.

LDHC guidelines

Despite guidelines the management of a tubo-ovarian abscess by conservative means is not inappropriate. A laparotomy and surgical removal of the abscess would not necessarily have changed the outcome. The antibiotics prescribed were not inappropriate.

Other issues

The use of ultrasound in [Ms A's] case is inappropriate as it may have delayed the diagnostic laparoscopy that was obviously necessary.

Antibiotics

This has previously been discussed. However it may be helpful to offer an overview of the important issue here. The organism isolated was Bacteroides. Flagyl was prescribed. The dosage was appropriate but the frequency may have been less than optimal.

Surviving Sepsis page

I am unable to offer expert opinion regarding the ICU management as this is not my area of expertise. I do however repeat comments I made earlier that I am unable to find evidence that she was not carefully monitored in ICU and given that a conservative treatment plan had been initiated, it is unclear to me what 'more appropriate treatment' means in this context.

[Ms A's] late presentation

I would like to clarify my comments previously made 'in hindsight had the tubal infection been recognized and treated earlier ...'. I was specially referring to the time prior to [Ms A's] admission to hospital. Her management prior to admission to hospital was not the subject of this report and was not part of the brief.

Information given to [Ms A] and her family

I am unable to provide comment on the communication issues alluded to by [Dr B].

Letter

In response to [Dr B's] letter to the Commissioner 11 December 2006, I would like to state that I have been in active gynaecological practice for 27 years. In no way have I had any pre-conceived ideas nor any entrenched views. I have certainly not been unwilling to investigate the issues. I hope that the more detailed current report is indicative of this. Despite my long experience in the specialty I am very much aware that there can be differences of opinions between specialists and I would be

ready to address any such differences from any colleague. To this end it would be useful to obtain a written report from [Dr B's advisor].

Appendix 3

Anaesthetic/Intensive Care advice

The following expert advice was obtained from Dr Ross Freebairn, anaesthetist/ICU specialist:

“I am Medical Director of Intensive Care Services and Consultant Intensive Care Specialist, Hawke’s Bay Hospital, Hastings. I have a MB ChB (Auckland), and am a Fellow of the Joint Faculty of Intensive Care Medicine and of the Australia and New Zealand College of Anaesthesia. I am vocationally registered in Intensive Care Medicine and in Anaesthesia and have been asked to advise the Health and Disability Commissioner about the appropriateness of care provided to [Ms A] by Rotorua Hospital.

I have read copies of the reports provided by the H&DC office and the Guidelines for Independent Advisers.

1: Was the treatment and care provided to [Ms A] by [Dr M] and [Dr Q] appropriate?

[Dr M]

[Dr M] was [Ms A’s] anaesthetist during the laparoscopy. Following the operation and [Ms A’s] transfer to the Intensive Care Unit, [Dr M] reviewed [Ms A] at about 1730. He was on-call for the unit over the night of [Day 3]. At some stage during the evening he received at least one telephone call from the unit, and prescribed fluids. He reviewed [Ms A] again at 0230 on the morning of [Day 4], and then again at 0400.

At the review at 02:30 [Dr M] inserted an arterial line. The therapy provided at that time was CPAP, this was to be restarted, using small doses of sedation/anxiolysis, adding a neosynephrine infusion, along with further Intravenous fluids.

At 0400 [Ms A’s] respiratory rate was 31 breaths per minute, (lower than previously), the oxygen saturation was 98% and the blood pressure was 110/65, indicating that the therapy was meeting the target.

Subsequent to the last review at about 0400 there was deterioration in [Ms A’s] condition, with some difficulty in maintaining oxygen saturation, at times possibly secondary to compliance with non invasive ventilation/CPAP system, a fall in the hourly urine output and a decline in the blood pressure. It is not clear whether any of these changes were conveyed to [Dr M]. However by 0745 the nursing staff were very concerned about [Ms A’s] deterioration.

[Dr M] does not seem to have been contacted again, and [Dr Q], who was rostered on for [Day 4] was called at about 0745.

Comment

The assessments, although brief in documentation, appear to be accurate, and are consistent in all the records.

The aim of the therapies was to maintain [Ms A's] blood pressure in an acceptable range, and to improve oxygenation and organ perfusion. Non-invasive ventilation techniques are useful adjunct to ventilation managements, and are often used to avoid invasive intubation. The Surviving Sepsis Guidelines suggest that non-invasive ventilation may be useful in appropriate candidates. (1) There are no contra-indication to the trial of non-invasive ventilation and when used it supported respiratory effort and oxygenation for several hours.

While earlier intubation (rather than persisting with non-invasive ventilation) may have been beneficial in resolving respiratory distress, the outcome when [Ms A] was intubated, was a cardiac arrest. It is possible that this cardiac arrest may have occurred, had intubation occurred earlier, or even if the intubation had been successfully achieved at that time, a cardiac arrest may have occurred sometime that day whilst [Ms A] was on the ventilator.

It is not clear why [Dr M] was not contacted at 0745.

Opinion

[Dr M] reviewed [Ms A's] condition three times during her stay, and on each occasion adjusted the therapy appropriately. The interventions he implemented were aimed at improving [Ms A's] physiologic parameters, in an attempt to reduce further multi-organ failure. Based on the information available to him at the time, the decision to pursue CPAP/non-invasive ventilation, and the other therapy were appropriate.

[Dr Q]

[Dr Q] was first aware of the case when he was phoned at 0745–0800am. Prior to this, it appears he had no knowledge of the case, and no direct influence on its management. When called to review the patient by the nursing staff, he was already in transit to the hospital.

At this stage the patient had been supported on non-invasive ventilation over the previous hours, which, until immediately prior to the urgent call, had sustained the oxygen levels at an acceptable level. The patient was also supported with vaso-active pressor agents and had received fluid therapy over the previous evening and early morning.

His immediate assessment was one of a desperately ill woman in respiratory distress, requiring further resuscitation. The assessment noted in his clinical notes, confirmed by the nursing record and indicated in the comments made by [Ms A's] family, was that [Ms A's] condition had deteriorated from the last medical assessment, and there was need for urgent intervention.

Vasopressors and fluid therapy had been started. After ensuring that there was skilled assistance available for the intubation, [Dr Q] proceeded to sedate [Ms A] in order to facilitate intubation to allow invasive ventilation. The induction technique chosen by [Dr M] used Ketamine at 2mg/kg which is within the recommended dosage for induction. Despite these efforts [Ms A] suffered a cardiac arrest soon after induction, from which she could not be resuscitated.

Comment

[Dr Q] did not have the advantage of first hand knowledge of [Ms A's] progress through the night, and did not have time to receive a full handover from [Dr M]. Any additional information that [Dr M] may have provided is unlikely to have changed [Dr Q's] course of action.

Sedation of patients for intubation and ventilation in such circumstances is hazardous, but unfortunately often required to optimise ongoing resuscitation. A major problem facing the staff was oxygenation and respiratory distress, along with poor renal perfusion and a falling blood pressure. Further fluid was required to increase renal and cardiac perfusion, but this is likely to worsen the respiratory distress.

In addition to the usual risk on induction of anaesthesia, critically ill patients (particularly those with septic shock) are prone to profound hypotension. Hypotension is a common occurrence following intubation and implementation of positive pressure ventilation. Factors that contribute to this hypotension are reduced venous return (of blood) to the heart, worsened by raised intrathoracic pressure and a decreased blood volume, the induction medications and lowering the carbon dioxide through ventilation. The risks of hypotension (and subsequent cardiac arrest) are increased in the critical illness (including sepsis). To reduce these risks, administration of vasopressors and fluid therapy should be considered prior to induction, and a 'rapid sequence induction' technique performed by the best available team, utilising agents less likely to induce hypotension should be used.

Phenylephrine was used as a pressor agent, and the dose was being increased in response to a falling blood pressure. While the Surviving Sepsis Guidelines recommend nor-adrenaline (norepinephrine) or dopamine there is no strong evidence supporting the use of any agent over the other. (1, 2) Indeed Phenylephrine, a potent pressor agent, is commonly used in anaesthesia and as

such, is, a drug that [Dr M] (and Dr Q) would be familiar with. The titration of the dose against the clinical effect, is appropriate.

Ketamine is less likely to cause hypotension than other induction agents, and was a reasonable choice in this setting.

The outcome from cardiac arrest, as a result of septic shock, is exceedingly poor, even in the younger, previously healthy age group.

Opinion

[Dr Q's] decision to intubate, and his actions in preparing and performing the induction and ventilation, all appear to be reasonable decisions based on the information available at the time and the urgency of the situation.

2: If not, please comment on what else [Dr M] and [Dr Q] could have done.

In any clinical setting there are a number of alternative treatment strategies available. In severe sepsis and septic shock there are a number of options available. One set of recommendations are the Surviving Sepsis Guidelines, mentioned in [Dr R's] letter. While these Guidelines provide some additional alternative therapy options — increased doses of pressors or inotropes and/or further fluid resuscitation may have avoided the catastrophic collapse, the oxygenation and respiratory difficulties appeared to be the priority for therapy, and therefore were addressed with urgency. The other treatment options may also have led to a rapid deterioration and death.

Recommendations from surviving sepsis campaign

[Dr R] comments on the Surviving Sepsis Guidelines(1). It is worth noting that the Guidelines need to be applied using clinical acumen. The Guidelines have created some controversy. (3,4). Few of the Guidelines have sufficient evidence in critically [ill] patients and available evidence remains, that the Guidelines are themselves not yet accepted as the standard of care.

Two of the recommendations from the Guidelines suggest the use of steroids and activated protein C, neither of which was given to [Ms A].

Low dose steroids

Addition of other *'Intravenous corticosteroids (hydrocortisone 200–300 mg/day, for 7 days in three or four divided doses or by continuous infusion) are recommended in patients with septic shock who, despite adequate fluid replacement, require vasopressor therapy to maintain adequate blood pressure.'* No steroids were given to [Ms A] during her ICU stay. However despite the recommendation, the use of steroids in these circumstances is not universally accepted.

The Surviving Sepsis Guidelines recommendation on low dose steroids are

based upon three pivotal European studies published in the late 90's, suggesting an improved outcome when used in patients. However, a more recent and far larger trial by Sprung et al, the results of which were announced in September 2006 (but not yet in the published literature), demonstrate no survival benefit from the use of low dose steroids. While the evidence remains unclear the role of steroids in the treatment cannot be taken as a standard of care. Thus, the omission of steroids could not be taken as a failure to deliver a proper standard of care.

Addition of Recombinant Human Activated protein C/ Drotrecogin Alfa [activated]

(rhAPC) rhAPC is recommended in patients at high risk of death (Acute Physiology and Chronic Health Evaluation II \geq 25, sepsis-induced multiple organ failure, septic shock, or sepsis-induced acute respiratory distress syndrome [ARDS]) and with no absolute contraindication related to bleeding risk or relative contraindication that outweighs the potential benefit of rhAPC. The New Zealand Guidelines for the use of Activated protein C are detailed in the paper by Liang et al. and follow these recommendations. (5) However rhAPC has an anticoagulant activity which predisposes patients to bleeding, a particular risk in postoperative patients. A delay of 12 hours post surgery is recommended to avoid these risks. Thus a decision on the use of rhAPC would not be made until after about 0500, i.e in the morning round. Even if started at 0500 it is extremely unlikely to have changed the outcome.

3: Was the overall care [Ms A] received in ICU appropriate?

The mortality from Septic Shock ranges from 20% to >70%.(6), although deaths in the younger age group with no underlying co-morbidity are less frequent they do occur despite receiving normal care. The post mortem report suggests that there was an undrained collection in the abdomen. Source control of infection is of paramount importance. Faultless and aggressive resuscitation and intensive care may be futile in the presence of an undrained collection. The care received in the Intensive Care unit was appropriate to her condition at the time, responded to her increasing needs, and as far as can be determined, timely.

It was not possible for either the nursing or medical staff in Intensive Care to determine that the ongoing problems in the sixteen hours post-operatively were not the normal course for septic shock following a successful laparoscopic washout.

4: Are there any aspects of the care provided by Rotorua Hospital that you consider warrants comment?

[Ms A's] death was a tragedy to her family, and it is clear from the communication between the family and the hospital that they have yet to find resolution of all the issues that they have raised.

The Internal Review of the Case

Clinical Morbidity & Mortality sessions and case reviews of difficult cases are common practice as quality assurance exercises within the Intensive Care Unit. While it would be desirable to have all clinicians involved in the care present at the meeting, scheduling of these meetings is difficult to organise. The intensive care management of the patient by the consultants covering the ICU ([Dr Q] and [Dr M]) and by the ICU nursing staff has been reviewed in a discussion involving the other ICU staff. The outcome of that review has been conveyed to the family. It had some recommendations which hopefully may enhance the unit's ability to provide care.

The surgical management prior to the admission to ICU and their subsequent involvement may have been discussed at a separate review (by the surgical team), but there is no evidence of the outcomes from such a review.

On-site Resident Medical Staff

Rotorua is a nominal Level Two Intensive Care unit, caring for intensive care patients from Rotorua area hospitals. There appears to be no provision for dedicated resident medical staff.

The current Joint Faculty of Intensive Care Medicine Standard (IC1) Minimum standard notes that:

2.2.4 'In addition to the attending specialist, at least one registered medical practitioner with an appropriate level of experience exclusively rostered and predominantly present in the unit at all times.' (7)

This standard is used in the intensive care service document published by the Ministry of Health (8).

Resident medical cover was not available to consultants in the Intensive Care Unit. Despite this [Dr M] attended the patient overnight when called, and responded appropriately to the clinical need. This situation is not uncommon in a number of the units in smaller cities in New Zealand with level two intensive care units, where resident cover is not universally available. [Dr M] having provided anaesthetic care during the day, had conducted two onsite reviews of [Ms A] over the night. [Dr M's] assessment and management are without

reproach, but the presence of rostered resident staff may have made monitoring and interventions less arduous, and reduced the risk of therapy being delayed.

Summary

The actions of the two medical staff at the time of the incident appear to be of an acceptable standard. While the outcome was a tragic death, there is nothing that [Dr Q] or [Dr M] could reasonably be expected to do that would have altered the outcome. There are no major deficiencies with the overall care provided to [Ms A] within the unit.

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