

A Public Hospital
House Surgeon, Dr F
Midwives, Ms C, Ms D, Ms E

A Report by the
Health and Disability Commissioner

(Case 00HDC06473)

Parties involved

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| Mr A | Complainant |
| Mrs B | Consumer |
| Ms C | Provider / Independent Midwife |
| Ms D | Provider / Independent Midwife |
| Ms E | Provider / Independent Midwife |
| Dr F | Provider / House Surgeon |
| Dr G | General Practitioner |
| Dr H | Obstetrician and Gynaecologist |
| Dr I | Infectious Diseases Physician |
| A Public Hospital | Provider |

Complaint

On 22 June 2000 the Commissioner received a complaint from Mr A on behalf of his late wife, Mrs B. The following matters were investigated:

- *Whether midwives Ms C, Ms D and Ms E should have referred Mrs B to a specialist as they knew that Mrs B suffered from hereditary spherocytosis and had no spleen.*
- *Whether Ms C and Ms E followed best practice in relation to Mrs B being prescribed Amoxil on 1 October 1998.*
- *After Mrs B gave birth to her daughter on 1 October 1998, she stayed in the public hospital until 4 October. During the time she was in the public hospital, Mrs B was not warned about the precautions that should be taken after delivery to prevent infection, even though staff were aware that Mrs B had had a splenectomy due to her hereditary spherocytosis.*
- *Whether Dr F followed best practice in relation to Mrs B being prescribed Amoxil on 1 October 1998, following the birth of her daughter.*
- *Mrs B was admitted to the public hospital with an acute pneumococcal infection on 26 November 1998. The treatment given to her did not save her life.*
- *Shortly after his wife had died, Mr A was asked whether he wanted a post-mortem to be carried out on his wife. Mr A was very distressed by recent events and refused the post-mortem, as he was not thinking logically. This request should have been made at a more appropriate time.*
- *The public hospital lost Mrs B's medical records of this admission. The records were subsequently found, but are incomplete.*

An investigation was commenced on 21 August 2000. The investigation was extended on 20 August 2001 to include Dr F and independent midwife Ms E, and on 15 October 2001 was further extended to include independent midwives Ms D and Ms C.

Information reviewed

Relevant medical and midwifery records

Advice was obtained from an independent expert in infectious diseases, an independent obstetrician and gynaecologist, and an independent midwife.

Information gathered during investigation

Mrs B was born overseas on 10 November 1969. When she was eight years old, she was diagnosed with hereditary spherocytosis. This was treated by a splenectomy (removal of the spleen) in 1977 or 1978.

The spleen is an organ in the upper abdomen that stores and cleans blood, destroying some red blood cells in the process. Spherocytosis is characterised by abnormally shaped red blood cells, which the spleen destroys more rapidly than normal red blood cells. This can result in anaemia, an enlarged spleen, and jaundice. In severe cases the spleen is removed, resulting in cure or substantial benefit for the patient. However, patients with no spleen have an increased risk of infection, and are vulnerable to a wide range of unusually severe bacterial infections. Vaccination and antibiotic cover are prophylactic treatment options. Spherocytosis is an inherited disease.

In 1993 Mrs B's gall bladder was also removed overseas. Mrs B and her husband Mr A's first child, a son, was born that year. Her son's birth was normal, although he was jaundiced. He spent a week in hospital and was subsequently diagnosed with hereditary spherocytosis. Mr A explained that after their son's birth, Mrs B was fine; she had no postnatal complications, and no warnings were given of the possibility of postnatal infection. Mr A said that, as far as he knows, Mrs B was never given any kind of vaccine or medication for people who have had a splenectomy.

Mrs B and her husband and family arrived in New Zealand from overseas in December 1995. The family general practitioner was Dr G. Dr G referred their son to a paediatrician for care regarding his hereditary spherocytosis.

Dr G advised me that in October 1997 either Mrs B or Mr A asked him about the risk of hereditary spherocytosis occurring in another child. Dr G obtained that information from a haematologist and advised Mrs B and Mr A that their next child would have an approximately 50% chance of also having hereditary spherocytosis. Dr G advised me that at no time was he asked for any further information or advice about Mrs B, or to see her formally. Dr G described Mrs B as an intelligent, educated person, who appeared to already have considerable knowledge of her condition.

Dr G advised that his first formal consultation with Mrs B was on 31 March 1998 when he confirmed that she was approximately three months pregnant. After confirming her

pregnancy, on 20 April 1998 Dr G referred her to independent midwives Ms E, Ms D and Ms C for antenatal care. Dr G stated in his referral letter:

“The Midwives

Dear Ladies,

Thank you for looking after [Mrs B] of [...]. She is G2 P1 [second pregnancy, one child] LMP [last menstrual period] 22/12/97, EDD [estimated delivery date] 29/9/98. Her fundus height corresponds to her dates. She had a normal delivery [overseas] in 1993. She had a splenectomy at eight years of age for hereditary spherocytosis and her son is also affected. I understand from [the] haematologist at Diagnostic Lab, that she is unlikely to have a problem during the pregnancy. There is always a chance that the baby could experience haemolysis and jaundice after birth. Blood test and swab results will be included when they are to hand. Heart and chest examination was normal. Her BP [blood pressure] was 110/80. I omitted to weigh her.

Yours sincerely

[Dr G].”

Dr G did not see Mrs B again until after she had given birth.

Ms E, Ms D and Ms C are independent practitioners. An independent maternity care service provider holds the funding contract for the midwifery services they provide. They advised me that Ms D was lead maternity caregiver (LMC) for Mrs B and Ms E was her back-up. (The LMC is the general practitioner, midwife or obstetric specialist who is responsible for co-ordinating and providing comprehensive maternity care, including the management of labour and birth.) Ms D was registered as LMC on 30 April 1998 and Mrs B was registered with the public hospital for delivery on 5 May 1998. However, Ms C was present at the delivery as Ms E was on leave at the time and Ms D had just finished a night shift. Ms E advised me that although Mr A did not attend any antenatal visits, and was not seen at any postnatal visits, Mrs B was very conscious of and quite knowledgeable about her condition.

Antenatal appointments with the midwives occurred regularly. No problems were noted with Mrs B's antenatal care; she was consistently recorded as being well. Mrs B was seen by Ms D on 30 April, 4 June, 13 August and 10 September. Ms E saw Mrs B on 18 June, 2 July, 22 July, and 22 September. Ms C saw Mrs B on 27 August and 17 September.

There is a note in Mrs B's maternity information booklet that she had had a splenectomy when she was eight years old, then in different ink it is written: “For spherocytosis”, and in a different ink again, “Discussed with [Dr H]”. At the top of the Antenatal Visit Information Record page, it is written “Paeds to check baby – 7 BC on cord blood”. Ms E advised that she discussed Mrs B's case specifically with obstetrician Dr H on 18 June:

“The consultation was in relation to whether any particular steps needed to be taken in regard to [Mrs B’s] antenatal care. Advice was also sought in regard to postnatal follow up for both [Mrs B] and the baby. The advice was given that the baby would need a postnatal follow up with Paediatrics and given that [Mrs B] has had a perfectly normal delivery previously, that while there was a need to monitor her, there should be no difficulties. However, if there were concerns with anything that arose at any point, he ([Dr H]) should be called.”

Dr H advised me, after checking his records, that he has no record or recollection of having seen Mrs B or of having discussed her case with the midwives, Ms E, Ms D or Ms C. Nor has Dr H any record or recollection of Mrs B’s case, or of any formal or informal discussion. He advised me that two of the midwives had also asked him whether he recalled Mrs B’s case, and he told them that he did not remember her.

In response to my provisional opinion the midwives advised me:

“The midwives have never alleged that there was any formal written consultation with [Dr H]. Nor have they stated it was a telephone conversation.

The consultation referred to was informal in person on 18 June 1998. It took place in the clinic at [...], where both the midwives and [Dr H] were holding a clinic. The midwives frequently informally referred matters to [Dr H] (and indeed other specialists with whom they work). This was not an uncommon occurrence and they would not expect him to keep notes or records unless the matter became a formal referral.

[Dr H] has said he cannot recall the particular circumstance. Given that he was questioned nearly four years after the event, that it not at all unusual or sinister.”

Mrs B was admitted to the public hospital, in labour, at 1am on 1 October 1998. It is recorded that she had been in labour since approximately 10pm and the baby was in a longitudinal lie with a cephalic presentation (head first). Mrs B’s labour was uneventful, and she used pethidine and nitrous oxide for pain relief. She was fully dilated and pushing by 6am and at 6.20am there was a spontaneous normal vaginal delivery of a female baby. The placenta and membranes were delivered at 6.28am. It was recorded that the placenta appeared healthy and the membranes were very ragged, although three vessels were present in the cord. The perineum was intact; blood loss was estimated to be 150ml; and the fundus was firm and central at the umbilicus. The delivery was effected by a student midwife, under Ms C’s supervision. The baby weighed 3045gm and was estimated to be 40 weeks mature; Apgar scores were nine and ten at one and five minutes.

The note in the medical record supplied by the public hospital, timed at 7am and signed by the student midwife, reads: “Breast fed – baby latched well, but fed only briefly.”

In the copy of the medical record supplied by the midwives, there is an additional entry at 7am. Between the end of the writing and the student midwife’s signature, the fact that IV Amoxil had been given by a doctor has been recorded by Ms C. When Ms C was asked

when the second 7am entry was made, she advised that she could only assume it had been made at that time, 7am, as that is her usual practice.

It is also recorded in the public hospital records that house surgeon Dr F prescribed 2gm of intravenous Amoxil for Mrs B shortly after the birth. This was administered by Ms C. The midwives explained to me that this was done more by way of a precaution than anything else.

Dr F advised me that Mrs B was under the care of her independent midwife, and that at no time was care transferred to the public hospital or its staff. Dr F explained that antibiotic prophylaxis at delivery is appropriate for patients who have had a splenectomy. Mrs B was noted to have ragged membranes at delivery, which is recognised as a risk factor for infection, even in normal deliveries. For this reason, he believed a prophylactic dose of an antibiotic, which carries a very low risk of complications, was appropriate.

In an earlier entry in Mrs B's records, the time of the entry has been changed. The administration of pethidine and Maxolon, and the taking of a CTG, was initially recorded as 1.30am. This has been written over to read 1.45am. The midwives advised that this entry looks like Ms C's handwriting.

The following day, Mrs B enquired about being discharged home but it is recorded that she was happy to stay in hospital until the paediatricians had reviewed her baby. The baby was jaundiced at birth and required phototherapy. Mrs B was confident with baby cares, was breast feeding independently overnight, and appeared to sleep well in between baby feeds. Her lochia was moderate and she declined pain relief.

On 2 October Ms C examined Mrs B and recorded that her fundus was firm and lochia normal. Her temperature was 36°C and her pulse 80 beats per minute. Mrs B was breast feeding well and was discharged home. As the paediatricians needed to discharge the baby before they could leave, Mrs B was a boarder in hospital from this point. The baby was discharged from hospital on 4 October 1998. Mrs B's postnatal notes record that her membranes were ragged and that signs of infection and postpartum haemorrhage had been explained to her.

On 5 October Ms D visited Mrs B at home and recorded that she was afebrile, her fundus was firm, lochia brown, perineum comfortable, breasts full, lactation was established, she was going to the toilet normally, and her condition was good. Ms D also visited Mrs B on 6 and 7 October and recorded on both these days that Mrs B was afebrile, her fundus firm, her lochia scant, her perineum comfortable, breasts full, lactation was established, she was going to the toilet normally, and her condition was good. At another visit on 9 October Mrs B's condition was unchanged except that it was recorded that she had passed a membrane – "non tender or offensive".

Ms D saw Mrs B again on 12 October, and recorded that she was afebrile, her fundus was firm, lochia scant, perineum comfortable, breasts full, lactation was established, she was going to the toilet normally, and condition was good. Ms D also recorded that Mrs B felt

her lochia was offensive but no further membranes had been passed and there was no tenderness.

On 14 October Ms E visited Mrs B and recorded that she was afebrile, her fundus was involuting, lochia scant, perineum comfortable, breasts comfortable, lactation was established, she was going to the toilet normally, and her condition was good.

The baby was recorded to be slightly jaundiced, warm, with a dry cord, normal toileting, breast feeding, and in good condition on 5, 6, 7 and 9 October. On 5 October the baby was taken to the public hospital for repeat blood tests as well as a PKU test (screening for an inherited defect of protein metabolism). On 6 and 7 October Ms D took further blood samples. On 12 October the baby was still well, was now waking for feeds, and the cord was off and the umbilical area clean. On 14 October Ms E recorded that the baby was pale but warm, the cord was off and the area clean, she was going to the toilet normally, feeding off the breast, and generally well. No postnatal visits after 14 October have been recorded, although the midwives advised me that there were 11 postnatal visits in total, and Mrs B was not discharged from their care until 31 October.

Mrs B and the baby were discharged from the midwives' postnatal care on 31 October 1998, and were referred to Plunket and Mrs B's GP, Dr G. There was to be follow-up by Dr G and a paediatrician. Mrs B was due to visit Dr G for a six-week check and discussion about contraception.

The midwives advised me that Mrs B was warned about precautions to take after the delivery to prevent infection. She was given both written and verbal advice on routine hygiene precautions to prevent infection after delivery. This included being told:

- to regularly clean her pubic area;
- the importance of regularly changing pads and clothes;
- to be aware of constipation and the need for regular elimination and associated hygiene;
- what to do if she experienced heavy bleeding;
- not to have intercourse until six weeks after the delivery, and to use condoms during intercourse.

The midwives noted that Mrs B was well and healthy when discharged from midwifery care, four weeks after giving birth. The independent maternity care service provider paid for Mrs B to see Dr G six weeks after delivery. The pregnancy, labour, delivery and puerperium (up to six weeks postpartum) were all normal. The midwives stated that Mrs B had a perfectly normal delivery with no risk factors, in particular her perineum was intact, and therefore carried no risk of infection. During postnatal visits to Mrs B at home the midwives regularly asked her about her health in terms of both bleeding and discomfort. Her fundus was firm as recorded in postnatal notes. Mrs B's lochia was scant and her perineum was noted to be comfortable. The midwives advised that after 11 postnatal visits, the last one at four weeks, Mrs B was well and there were no indications for concern about infection.

Mr A said that after returning home with the baby, Mrs B was fine. Mr A advised me that at the six-week consultation with Dr G on 17 November, Mrs B discussed stomach pain and contraception, and requested an IUD. Dr G explained to her that her abdominal pain was probably the scar from previous surgery coming back to normal after her stomach had been stretched during pregnancy, and prescribed her contraception.

Dr G advised me that the consultation on 17 November, 47 days postpartum, was a routine postnatal examination that included Mrs B's blood pressure, a vaginal examination and a cervical smear as well as a blood test. Dr G had no record of a complaint of abdominal pain at that visit.

Mr A advised me that Mrs B had been well between seeing Dr G on 17 November and her next consultation on 26 November. Mr A also commented that they had been to two parties, on 23 and 24 November. Mrs B was well and had had no problems feeding the baby.

Mr A advised me that on the evening of 25 November, Mrs B was shaky and cold and appeared to be starting to get ill. Mr A gave her some Panadol and she went to bed.

On the morning of 26 November Mrs B had a temperature. She lay on the couch and was very weak and shaky and could not do anything. She had abdominal pain, diarrhoea, and was vomiting. Mrs B was not strong enough to get to the toilet to vomit and so had a bucket beside the sofa. Mr A therefore made an appointment to see Dr G that afternoon. Before she went to see Dr G, Mrs B had a bath, which she managed herself, but she was upset as it was very difficult. Mr A said that when they went to see Dr G, Mrs B had a temperature and was suffering from abdominal pain. After examining Mrs B, Dr G gave them a blood test form and a prescription to take to the chemist. He told them to go home, and said that he would send someone to their home to do the tests.

Dr G advised me that on 26 November, Mrs B entered his consulting room complaining of epigastric pain, having had three watery bowel motions that morning and vomited three times. Her temperature was 38.4°C, she was tender over the epigastrium, and bowel sounds were present. As she said she had eaten chicken a few days earlier, Dr G thought she might have been suffering from a *Campylobacter* infection. Dr G therefore wrote out an appropriate prescription, but as Mrs B went to leave the consulting room she became unsteady on her feet and was helped to a bed. Over approximately the next ten minutes her condition deteriorated rapidly and Dr G telephoned an ambulance to take her to the public hospital.

The ambulance was despatched at 3pm, arrived at the surgery at 3.07pm, left the surgery at 3.20pm and arrived at the public hospital at 3.30pm. Mrs B was admitted acutely to the Emergency Department at 3.38pm. She was seen by surgical, medical and obstetric registrars and chest x-rays were taken. Mrs B was treated with the antibiotics ceftazidime and metronidazole, and was then transferred to the Intensive Care Unit. Her condition deteriorated rapidly and she died later in the evening of 26 November 1998. The cause of her death as stated on her death certificate was pneumococcal septicaemia.

Mrs B's public hospital medical file has subsequently been misplaced, so it has not been possible to obtain a detailed account of her treatment and disease from this point. The public hospital staff apologised for this to Mr A. They explained that all departments involved reviewed Mrs B's case to see if anything could have been done differently to prevent her death. Since this time, the public hospital has reviewed the way in which medical records are handled.

Shortly after Mrs B died, a social worker asked Mr A whether he wanted a post-mortem to be carried out. Mr A declined. He later advised me that he refused the post-mortem as he was confused and upset. Had the question been put to him a day or so later, Mr A says that he would have agreed to the post-mortem, which he believes should have been carried out.

A meeting was held on 24 March 2000 at the public hospital, to discuss Mrs B's death with Mr A. Dr I, an infectious diseases physician, a doctor from ICU, and the General Manager of Inpatient Services, were present. At the meeting, the public hospital staff apologised to Mr A for losing his wife's medical records and for the way in which he was asked about a post-mortem. Hereditary spherocytosis, splenectomy, pneumococcal disease, pneumococcal vaccine and Mrs B's treatment were also discussed.

Dr I responded to this investigation on behalf of the public hospital as follows:

- “1. Pneumococcal infection following vaginal delivery is an extremely rare occurrence even in patients at risk. There are cases that have been described in the literature, but the largest case series is very small indeed. In 1938 the world literature included 77 such cases. The topic was again reviewed in 1990 and 36 cases of delivery associated S. pneumonia infection was found. There was nothing about the labour and delivery of [Mrs B] that could have predicted the onset of pneumococcal sepsis.
2. [Mrs B] was admitted on 26 November and I was involved with her care. By the time she arrived to hospital she was severely ill and in septic shock. All efforts were made to resuscitate her but they were unsuccessful. In general it takes close to 24 hours of life support once sepsis is well established before antibiotics can be expected to be effective.
3. I can understand how it was felt that the request for the post mortem was inappropriate. At the time of the patient's death, the cause of death was blindingly clear. The usual reasons to refer cases to the coroner are when the death is as a result of a procedure or where the cause of death is not clear. Neither of these two conditions were fulfilled. In our patient population there are cultural reasons why post mortems are commonly declined. It was assumed, perhaps wrongly, that the post mortem would be refused. I believe that the clinicians caring for [Mrs B] did not believe that a post mortem would substantially add to the understanding of her death.
4. There is no excuse for losing the medical record. We have made significant changes in the way medical records are handled in our hospital, and these changes will continue with the advent of the electronic medical record. When I spoke to [Mr A]

about his wife initially, there was, and still are big holes in my understanding of exactly what happened on the night of admission. I have put the story together in my own mind from the reports of people who were caring for [Mrs B], but again, the specific level of detail that he requested I was unable to provide.

You will be aware that asplenic patients are at higher risk for infection with certain types of encapsulated organisms. Of these *S. pneumonia* is the biggest risk. The major preventive measure for these patients is a pneumococcal vaccine. There are recommendations, as [Mr A] correctly points out, that pneumococcal vaccine should be performed every 3-5 years. The Haematology Department at [the public hospital] keeps a record of patients with splenectomies that are performed in our institution and they are followed up every five years with a vaccination. This does not occur elsewhere in New Zealand and individuals [who] have had their spleen removed in other institutions are not notified to the Haematology Department. Even for asplenic patients, only a single dose of the vaccine is funded and subsequent doses cost the patient a minimum of \$75.00. The discrepancy between the recommendations of the Vaccine Advisory Committee and the Health Funding Authorities have led to a confusion among primary care providers about what the appropriate dosing schedules should be in the splenectomised patient. I have written to the Ministry of Health on this issue. If there is any positive outcome from [Mrs B's] tragic death, I would hope that it might be that pressure could be put on the funding authorities to fund subsequent doses of vaccine for these patients who might be at risk for pneumococcal sepsis. I would urge your office to bear this in mind."

Independent advice to Commissioner

Obstetric advice

The Commissioner received the following expert advice from independent obstetrician and gynaecologist Dr David Cook:

"[Mrs B] suffered from the inherited disease congenital spherocytosis, an uncommon problem in New Zealand. The estimated worldwide incidence is 1 in 1000-4500.

Due to an abnormality of the red blood cell surface membrane these cells adopt an abnormal shape (spherocytes) and are haemolysed (destroyed) by the spleen much more rapidly than normal red blood cells. This results in chronic anaemia, enlargement of the spleen and intermittent jaundice. Symptom severity varies between cases but in those significantly affected removal of the spleen (splenectomy) is warranted. In mild forms of the disease splenectomy is usually completely curative whilst in more severe forms there is a substantial benefit.

Splenectomy increases the risk of infection. The risk is highest in young children and in the immediate postoperative period. The risk in adults is poorly studied and documented. The best estimates are:

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| Serious bacterial infection | 4.5 per 100 person years |
| Fulminant bacterial infection | 0.2-0.5 per 100 person years |
| Lethal bacterial infection | 0.1 per 100 person years |

The risk of infection is also influenced by the reason for removal of the spleen:

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| Highest risk of infection after splenectomy | Thalassaemia |
| | Portal hypertension |
| | Staging for Hodgkin’s disease |
| | SPHEROCYTOSIS |
| | Transplantation operations |
| | Trauma |
| | Idiopathic thrombocytopaenic purpura |
| Lowest risk of infection after splenectomy | Incidental eg during gastrectomy procedure |

A wide range of unusually severe bacterial infections can occur in splenectomised individuals but infection with *Streptococcus pneumoniae* (the ‘Pneumococcus’) is the most commonly described serious infection. Its short incubation period, rapid progress and high mortality rate make Pneumococcal infection particularly important.

Antibiotic prophylaxis and immunisation against *Streptococcus pneumoniae* are recommended, both as a short-term, perioperative measure and, less consistently, as a long term preventive measure.

Life-long treatment with oral penicillin is recommended by some mainstream authorities (Oxford Textbook of Medicine, 3rd Edition, 1996) but not others (Harrison’s Principles of Internal Medicine, 14th Edition, 1998). Problems with this approach are:

- many disparate, possibly non-penicillin sensitive bacteria may cause post-splenectomy infection;
- some pneumococci may be or become penicillin resistant;
- poor patient compliance (Keenan et al B.J.Haematol 1999 105(2):509 found that around 60% of post-splenectomy patients did not take their antibiotic prophylaxis consistently).

Pneumococcal vaccination is almost universally recommended as a perioperative measure but long-term strategies are very poorly documented in the mainstream literature. Problems with immunisation are:

- uncertain efficacy against pneumococcus;
- reduced efficacy in high risk cases (e.g. spherocytic splenectomised individuals);
- need for re-immunisation every five years in high risk cases.

Did [the public hospital] and [Dr F] exercise reasonable care and skill in providing services to [Mrs B]? Did those services comply with legal professional ethical and other relevant standards?

[Mrs B] was under the care of an independent Midwife and at no time in the pregnancy was care transferred to [the public hospital]. The latter provided services in the form of a postnatal consultation with [Dr F] and possibly an antenatal consultation with [Dr H]. The latter is not documented and thus it is not possible to provide comment.

[Dr F] prescribed a single dose of Amoxycillin and this was administered at 0730 by [Ms C], the attending Midwife. In the absence of any documentation I surmise that [Ms C] (as the acting lead maternity carer) informed [Dr F] (presumably the duty intern at the time) of the finding of 'very ragged membranes'. This raised the possibility of retained products of conception within the uterus and a risk of persistent or heavy bleeding and the possibility of postnatal infection. It is however a very common finding and frequently associated with no adverse outcome. A conservative management would normally be instituted with close observation of the nature of the lochia (blood loss during the puerperium), the involution of the uterus and any signs of infection. Conservative management was entirely appropriate at this time.

Please comment on the administration of 2g of Amoxil following this delivery. Was this appropriate? Whose responsibility was this?

There is no compelling evidence that a single dose of antibiotic prevents infection associated with retained products of conception. The role of prophylactic single dose antibiotic therapy for the prevention of infection at the time of caesarean section and other surgery is now well accepted, however, the principle has some foundation therefore and very little risk of serious harm. In fact antibiotic therapy for [Mrs B] as a moderate to high risk splenectomised individual was entirely appropriate although this does not appear to have been the motive for antibiotic administration at this point.

In many units the midwife lead maternity carer will be authorised to prescribe antibiotic therapy. I presume that [the public hospital] require the involvement of a Registered medical practitioner hence the fleeting involvement of [Dr F] in this case.

Would it have been appropriate at any stage for [Mrs B] to have been referred to a specialist for the purpose of assessing and monitoring her hereditary spherocytosis and lack of spleen and organising long-term prophylactic care? If so, by who and to whom?

I note that the [midwives' response] letter of 3/12/98 states that '[Mrs B] was referred to a Specialist' and refers to a comment in the referral letter from [Dr G] dated 20/4/98: 'I understand from [the] Haematologist at Diagnostic Lab that she is unlikely to have a problem during the pregnancy', referring to the spherocytosis and splenectomy. There is in fact no documentary evidence that [Mrs B] was referred to or assessed directly by a Specialist. One or maybe two verbal discussions with a Specialist appear to have occurred and following neither was there any significant documentation or a clear management plan formulated.

Ideally prophylactic management for [Mrs B] would have been considered and possibly instituted at her first medical check with [Dr G] following arrival in New Zealand. However prophylaxis is not consistently highlighted in the mainstream medical literature and with the infrequency of the problem and [Mrs B's] generally good health the absence of further management is perhaps understandable.

With the advent of pregnancy it appears that [Dr G] did consult with a haematologist (it is unclear whether this was a formal or verbal consultation; [Dr G] may have some documentation to clarify this). The outcome of this consultation was that a problem was deemed unlikely. Such an opinion is supported in the scientific literature with most cases of spherocytosis and splenectomy during pregnancy being uneventful although a proportion of these might have received prophylactic management. This statement does not of course exclude the possibility of complications *sometimes* occurring.

Some hand-written pages included in the case notes (identified by [Ms E] during the interview with [the investigation officer] on 22/1/02) indicate that [Mrs B's] midwife had researched and was aware of the problems of spherocytosis and splenectomy, particularly the increased risk of infection.

The 'Guidelines for Referral to Obstetric and Related Specialist Medical Services' produced by the THA Maternity Project Team in 1997 are recommended as a best practice guide for maternity care providers and are widely used. A level three action is recommended for haemolytic anaemia conditions (e.g. spherocytosis): 'the lead maternity carer must recommend to the woman that the responsibility for her care be transferred to a specialist'. Whilst not compulsory and modified by the fact that [Mrs B] had been splenectomised, the level of concern and the gravity of the problem indicated the need for formal Specialist consultation with a letter of referral. An informal, verbal consultation with [Dr H] may have taken place (?18/6/98) but this would be unsatisfactory given the nature of the problem. An opportunity for careful elucidation of the clinical problem and some background research would be necessary. This might have entailed referral to a Clinical Haematologist or Infection Control Specialist for further expert opinion.

Ensuring adequate, documented consultation during the pregnancy was the responsibility of the lead maternity carer.

Were [the public hospital] staff responsible for giving [Mrs B] advice about postnatal care – especially concerning the prevention of infection?

[The public hospital] staff were not responsible for [Mrs B's] care as her lead maternity carer was an independent midwife.

What information should have been given to [Mrs B] concerning the prevention of infection following childbirth, as a splenectomised patient?

The general hygiene advice given to postnatal patients generally and [Mrs B] specifically has been outlined in the [midwives' response] of 3/12/01 and is entirely adequate.

Please comment on [Mrs B's] postnatal care. Was there ever cause for concern that an infection may have been developing? If so, when and why? What action, if any, should have been taken in response to this? Was there a causal link between [the baby's] birth and the infection that caused [Mrs B's] death?

The incubation period of *Streptococcus pneumoniae* is quoted as variable but usually a matter of a few days and as short as one day. The first symptoms were apparent on 25/11/98 and progressed very rapidly to death on 26/11/98, 56 days following a normal labour, delivery and postnatal course. According to the Tenth International Classification of Diseases, a maternal death is defined as: *'the death of a woman while pregnant or within 42 days of termination of pregnancy; irrespective of the duration and the site of the pregnancy; from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes'*. [Mrs B's] death would therefore be regarded as unrelated to the preceding pregnancy. Whilst there was concern about 'ragged membranes' this is a common observation and early postnatal observation failed to demonstrate any features suggestive of retained products or infection.

Pneumococci are very prevalent and often harboured in the upper respiratory tract with no ill-effect. Infections are generally respiratory; or ear, nose and throat rather than obstetric or gynaecological.

The known short incubation period, late onset of disease, uncomplicated postnatal course and type of bacterial infection support the notion that [Mrs B's] infection was fortuitous rather than deriving from the pregnancy.

Other issues raised by the supporting documentation.

(Please note that some of the following comments are of a general medical nature rather than relating to obstetric management, my area of expertise. Any significant concerns arising from these comments should be referred to a haematology or infectious diseases specialist for expert opinion.)

Prophylactic management was not considered or procured on [Mrs B's] initial medical attendances following her arrival in New Zealand.

[Mrs B's] splenectomy had been performed overseas and there was no available background documentation to prompt further management.

She was in good health, her spherocytosis was well controlled and she had a history of uncomplicated pregnancy and birth previously.

Splenectomy is relatively uncommon and the long-term management advice available to non-specialist doctors is limited and conflicting.

The advice received by [Dr G] from a haematology specialist at the beginning of the pregnancy was very general and did not apparently allude to the possibility of prophylactic management.

The advice appeared to be a verbal communication rather than a formal specialist referral and assessment. The haematologist may not have fully appreciated the nature and details of the case.

Both immunisation and antibiotic prophylaxis have limitations and potential problems. Opinion as to their exact role and value varies.

No formal specialist referral and assessment process was undertaken by the midwife lead maternity carer.

The condition of spherocytosis is considered sufficiently high risk for the 'Guidelines for Referral to Obstetric and Related Specialist Medical Services' to recommend transfer of care to an obstetric specialist rather than just consultation.

Verbal consultation with an obstetric specialist ([Dr H]) may have taken place but without a formal referral he may not have fully appreciated the nature and details of the case.

The fatal infection was fortuitous and not related to the preceding pregnancy.

Formal specialist referral and assessment at any of the above junctures might have prompted the institution of prophylactic management.

There is no guarantee that prophylactic management would have prevented infection."

Midwifery advice

The Commissioner received the following expert advice from independent midwife Ms Sue Lennox:

- “1. Would it have been appropriate for the midwives to refer [Mrs B] to a specialist during her pregnancy. If so, whose responsibility was this? Who should she have been referred to?

I would expect as an LMC to take responsibility for finding out from a specialist obstetrician whether a referral was necessary for this particular medical condition. Our referral guidelines at this time did not specify post splenectomy following diagnosis of Hereditary Spherocytosis. Medical conditions are by definition outside our scope of practice. However the midwives were initially clearly reassured by [Mrs B's] general practitioner that her condition should not pose a problem. He says he has spoken with a haematologist. I believe the midwives' response to this was a typical one and one which most responsible midwives would follow, which was phoning to double-check this medical advice with an obstetrician.

It was their responsibility as Lead Maternity Carers to refer on to an obstetrician in pregnancy if this had been their advice. In the first place a specialist obstetrician would have been the correct person followed by further referral to other physicians if the specialist deemed this necessary.

2. If [Mrs B's] case was discussed with [Dr H] on 18 June 1999 as described, was this sufficient to fill any obligation for referral?

Yes I believe such a discussion would fill the obligation for referral. Many consultations about theoretical risk are discussed in day-to-day situations between obstetricians and midwives – and this would have been one of those. The environment has recently become increasingly defensive and now often requires more formal consultations to cover unpredictable disasters like this one. [Mrs B's] midwives appear from their notes to have understood the potential risk of overwhelming infection.

3. If [Mrs B's] case was not discussed with [Dr H], was the previous discussion that [Dr G] had with [the] haematologist sufficient to fill any obligation for referral?

No, the midwives needed to have that conversation with [Dr H] to be absolutely certain there was no reason for a formal obstetrical consultation. I doubt the letter from the general practitioner to the midwives about his conversation with a haematologist constitutes adequately fulfilling referral obligations. The obstetrician offers a specialised viewpoint about the risk of this condition in obstetrics.

4. Please comment on the administration of 2g of Amoxil following this delivery. Whose responsibility was this? Was this appropriate?

Prescription of a dose of amoxicillin in this case appears to have been a reasonable precautionary action in this case – as stated in the letter [containing Ms E's response to the investigation]. It is unclear whether the midwives prescribed this on advice or from their own knowledge – but it appears that their action was appropriate. They were acting to protect [Mrs B] from potential infection in the first week and this action is supported in the letter from [Dr F]. I expect that most midwives would be acting on advice in a case such as this.

5. Would it have been appropriate at any stage for [Mrs B] to be referred to a specialist for the purpose of assessing and monitoring her hereditary spherocytosis and lack of spleen? If so, by who and to whom?

I am not appropriately qualified to answer the question about the appropriate person to assess and monitor this condition – and I believe that generally midwives would not know the answer. This is the reason why it was important to discuss the situation to determine who was the appropriate person. However, I believe that, had a specialist indicated this assessment and monitoring was appropriate when her situation was discussed with him initially, [Mrs B] would have been referred. There was no evidence of ill health or abnormal blood tests during the pregnancy, birth or post-natal care that

warranted such a referral. The midwives would have made the referral to the specialist obstetrician had there been any obvious reason to do so.

6. Was the advice [Mrs B] was given about postnatal care, especially concerning the prevention of infection, sufficient to meet her particular needs as a splenectomised patient?

[Mrs B] appears to have been told about the risks of infection. On the top of [Mrs B's] record is written 'Membranes Ragged' and 'Explained signs of infection and PPH' (postpartum haemorrhage) and this is clearly what was done because ragged membranes can pose a problem usually in the first few weeks, if they are not passed, which they were on the 9th October. The advice she received as far as the written material seems more than adequate and unusually fulsome. She was well when discharged from the midwives' care. They had no evidence that she needed any more information from them about preventing infection. Midwives are not responsible for general advice about medical conditions about which they know very little. We are responsible for consulting when there is a problem.

7. Please comment on [Mrs B's] post-natal care. Was there ever cause for concern that an infection may have been developing? If so, when and why? What action, if any, should have been taken in response to this?

There were signs of infection possibly on the 17th November but certainly on the 25th November. These dates are after the usual six weeks postpartum period. During the normal six weeks period that LMCs cover there were no signs of infection.

It is hard to know whether her abdominal pain on 17th November (at the 'six-week' check) was sinister or not. I find it unusual to have a history of abdominal discomfort at this stage, as involution of the uterus is generally complete abdominally at the latest at two weeks postpartum unless it was post-caesarean which may at times take longer. The postnatal record states [Mrs B's] uterus is involuted on the 14th October exactly 2 weeks following the birth.

The 23rd and 24th November marked a time of celebration and parties following the birth some seven weeks previously. These activities plus breastfeeding two to four hourly would have left [Mrs B] extremely tired and vulnerable to infection even if she were not asplenic. Her medical history made this likelihood even more certain. By the evening of the 25th she was 'shaky and cold' probably due to a fever that needed to be acted on immediately with intravenous antibiotics if she were to have any chance of surviving. She in fact did not see the general practitioner for 20 hours.

8. Were the records kept of [Mrs B's] case of an acceptable standard?

The records appear to be of a high standard with many references to the fact she had Hereditary Spherocytosis and had had a splenectomy years before.

9. Any other issues raised by the supporting documentation?

None.”

Further midwifery advice

In view of the apparent conflict between the advice from Ms Lennox and Dr Cook's opinion concerning the need to refer Mrs B for specialist review, Ms Lennox clarified her advice on this point as follows:

“1. Whether it would have been appropriate for a midwife lead maternity caregiver to refer [Mrs B] to a specialist during her pregnancy, given that she suffered from hereditary spherocytosis and had no spleen?

I have reconsidered this question and find no change in my advice. The THA Guidelines for Referral to Obstetric and Related Specialist Medical Services refer to haemolytic anaemia as requiring recommending transfer to a specialist (level 3). However, following her splenectomy [Mrs B] **no longer suffered** from haemolytic anaemia. Therefore a level 3 action was not indicated. In the enclosed article on intrinsic haemolytic anaemia it quite clearly states that:

‘Splenectomy is considered a permanent and curative treatment of this particular haemolytic disease’. (Leduc)

She in fact did not have any problems with her blood screening tests as far as I remember throughout her pregnancy.

The guidelines are silent about women who have had splenectomies. I would like to reiterate my original advice, which was that I believe the midwives needed to seek advice from an obstetrician. They did this despite having been reassured it was unnecessary by [Mrs B's] general practitioner.

2. If this was appropriate, was the telephone conversation that the midwives described with [Dr H] sufficient to fill the obligation for referral?

As stated in the previous answer, referral was not obligated. I believe the telephone consultation with Dr H was sufficient.

Dr Cook says a verbal consultation ‘would be unsatisfactory given the nature of the problem. An opportunity for careful elucidation of the clinical problem and some background research would be necessary’. As I stated in my original advice, issues of theoretical risk are discussed daily between obstetricians and midwives. It was legitimate to discuss whether a need for referral was necessary on the phone with [Dr H]. If an obstetrician said it was not necessary to make a formal referral and there is no obligation under the THA guidelines then they have more than fulfilled expectations.

I believe the clinical problem from which [Mrs B] died was unrelated to her pregnancy and certainly a referral to an obstetrician during her pregnancy would have been unlikely to change the outcome. She certainly carried clinical risks and both the lead maternity carers met these very adequately. As Dr Cook says, ‘the known short incubation period,

late onset of disease, uncomplicated postnatal course and type of bacterial infection support the notion that [Mrs B's] infection was fortuitous rather than deriving from the pregnancy.' The Oxford Textbook of Medicine, clearly supports the long term risk of splenectomy being overwhelming infection and the incubation period being very short. 'Death may occur within 6 h of the first symptoms. The mortality rate in patients leaving hospital alive is in excess of 30 per cent.' (pp 3595/3596.)"

In light of the responses to my provisional opinion, Ms Lennox explained that although an informal discussion about the need for referral and a simple record that the situation was discussed, such as that described and recorded, was reasonable practice in 1998 when these events took place, practice has changed and today standards are higher.

Infectious diseases advice

The Commissioner received advice from an independent expert in infectious diseases, medical microbiologist Dr Richard Doehring, as follows:

"Background

[Mrs B] was born [overseas] on 10 November 1969. As a child of eight she was diagnosed as having hereditary spherocytosis and treated by splenectomy (1977 or 1978).

[Mrs B] migrated to New Zealand in December 1995. She, and the rest of her family, accessed general practitioner medical services from [Dr G].

On 1 October 1998 [Mrs B] gave birth to her second child in the [the public hospital]. It was an uncomplicated term delivery. Care was provided by [Ms E-Ms D-Ms C], independent midwives.

On 26 November 1998 [Mrs B] developed abdominal pain and fever. She became unsteady in her GP's consulting room and was transferred by ambulance to [the public hospital], arriving at about 3:30pm. She was treated for septicaemia, but deteriorated rapidly, and died in the intensive care unit later that evening.

The admission notes provided are incomplete, the original apparently having been lost.

General Comment

In writing this opinion, the advisor would like to bring particular attention to the British Society for Haematology Guidelines for the prevention and treatment of infection in patients with an absent or dysfunctional spleen¹. These guidelines are thoroughly evidence based and authoritative, and, having been published in 1997 in one of the most widely circulated of all medical journals, the British Medical Journal, must be considered as setting the standard of practice at the time at which the events in this enquiry occurred.

The British Medical Journal is a general medical journal, and its readership is widespread through all of the medical specialities, particularly general practice.

In fact, the guidelines reflect what would have been considered good practice for some time before. It is certainly the recollection of the advisor that antibiotic and vaccine prophylaxis of pneumococcal sepsis following splenectomy was already the standard of care in the early 1980s.

The main recommendations of the British 1997 guidelines pertinent to [Mrs B's] management are:

- All splenectomised patients should receive pneumococcal immunisation.
- Documentation, communication, and reimmunisation require attention.
- Lifelong prophylactic antibiotics are recommended (oral phenoxymethylpenicillin or an alternative).
- Patients should be given an alert disc or card to alert health professionals to their risk of overwhelming infection.
- Patients developing infection despite measures must be given a systemic antibiotic and urgently admitted to hospital [that is, given the antibiotic without delay, before transfer].

Tragically, of these recommendations none was complied with in [Mrs B's] case.

Specific Matters

1. *After [Mrs B] gave birth to [the baby] on 1 October 1998 did [the public hospital] staff treat [Mrs B] appropriately? In particular, was appropriate notice taken of the fact that she had no spleen, and was therefore more susceptible to infection.*

It is not clear whether the midwifery record provided is complete, or if part of it has gone missing with other parts of the clinical record.

The coding summary sheet dated 2 October 1998 gives under Secondary Conditions: 'Spherocytosis – Splenectomy. 2g Amoxil Post Delivery'.

This note indicates that the delivery staff were aware that she had no spleen. No other secondary conditions are listed, so it is probably reasonable to assume that the absence of a spleen was the indication for giving the antibiotic.

The choice of antibiotic was appropriate. Amoxil (amoxycillin) is one of the penicillins. It has relatively narrow spectrum of activity, but one which includes most strains of *Streptococcus pneumoniae*, the organism to which people without a spleen are most susceptible. Though penicillin is a more commonly prescribed antibiotic to treat and prevent pneumococcal disease, some authors believe that the better absorption of amoxycillin makes it the better choice².

The giving of prophylactic antibiotics is an accepted method for the prevention of pneumococcal sepsis. Whether a single stat dose is appropriate is, however, questionable. British recommendations are for life-long daily oral penicillin³.

The coding sheet and the giving of amoxycillin both indicate that the [the public hospital] staff both knew that [Mrs B] had no spleen, and that she was as a result at risk of infection.

The non-standard prophylactic regime, and neglect to offer vaccination, an alert bracelet, or a starter pack of antibiotics, all suggest that the staff did not attempt to ascertain best current practice, or to consult with an appropriate specialist.

2. *Could there be a causative link between [the baby's] birth on 1 October and the pneumococcal infection that caused [Mrs B's] death on 26 November?*

It is impossible to be sure of a link between [the baby's] birth and the pneumococcal infection, but the close timing suggests it as a possibility.

The initial presentation as abdominal pain suggests that [Mrs B] had pneumococcal peritonitis. This rare presentation of pneumococcal infection is a disease almost entirely confined to women⁴, and the presumable portal of entry for the organism into the peritoneal cavity is the female genital tract⁵.

There are reports of an association between pneumococcal peritonitis and the presence of intra-uterine contraceptive devices⁶. This, while not directly relevant, lends plausibility to the idea that the trauma to the genital tract of childbirth might analogously predispose to the entry of the organism.

Any association between pneumococcal peritonitis (a very rare condition in the first place) and childbirth must, however, be considered tenuous.

Childbirth, however, may not have been the principal risk factor in itself. Rather, admission to hospital may have been. Pneumococcal disease is a proven form of hospital acquired infection⁷. The risk of acquiring it in hospital can be reduced by good infection control practice⁸.

There is no evidence in the documentation provided of conditions in the maternity unit, but any degree of overcrowding, short-staffing, or staffing with agency personnel not fully conversant with infection control principles and practice could have contributed to the risk of acquisition of the organism.

It is not inconsistent with knowledge of the epidemiology of the organism that carriage could have been acquired at the time of admission, or at a postnatal follow-up, and only manifested as invasive disease a month and a half later.

3. *Judging from the available information was the treatment given to [Mrs B] when she was admitted to [the public hospital] on 26 November 1998 of an acceptable standard?*

The emergency department notes record an instruction to give ceftazidime and metronidazole. A record of the time actually given is not available, but it can reasonably be assumed to have been within two hours of admission.

The mortality associated with overwhelming post-splenectomy infection is high. One study of 42 cases records a case mortality of 45%⁹. This is in spite of appropriate treatment.

It is probable that the infection was already too advanced for any treatment to have altered its course by the time [Mrs B] was admitted to hospital.

The treatment, therefore, was appropriate, but too late to save [Mrs B's] life.

4. *Is it possible that different treatment could have saved her life?*

It is doubtful whether different treatment after admission to hospital could have saved [Mrs B's] life. The antibiotic treatment she received was optimal, but she died before it could have any effect.

No mention is made of haemofiltration. This treatment is considered by some writers to be beneficial in fulminating sepsis of a variety of causes, including pneumococcal. It is, however, still experimental, and although considered promising¹⁰ there is no clear evidence of its efficacy¹¹.

It is, however, very possible that prompt antimicrobial treatment when [Mrs B] first felt the symptoms of infection might have saved her life. The British guidelines¹ recommend: 'amoxycillin should be kept at home (and taken on holiday) and used immediately should infective symptoms of raised temperature, malaise, or shivering develop', and also that: 'Primary care physicians attending a known asplenic patient with clinically significant infection should (provided there is no history of penicillin allergy) give an immediate dose of intramuscular or intravenous benzylpenicillin before transfer to hospital.'

5. *Any other issues raised by the supporting documentation.*

It has been alluded to before, but the fragmentation of care between the professions of medicine and midwifery, with little or no evidence of consultation between the two, could have contributed to the failure to make use of the birthing admission to institute effective preventative measures.

I do not have the credentials to make comment, but it occurs to me that it might be unwise for a woman with a significant medical history to have a maternity episode under midwifery as opposed to medical management.

Summary

This tragic case illustrates the danger of overwhelming infection faced throughout their lives by people who for whatever reason have no spleen.

This danger can in all probability never be eliminated, but it can be reduced by the combination of a number of proven methods: vaccination; prophylactic antibiotics; alert bracelets and provision of patients with a starting dose of antibiotics to take when they feel an infection developing.

All these preventative methods were well known, evaluated, and incorporated into authoritative guidelines well before the events which have led to this inquiry.

The ideal opportunity at which to have intervened with an offer of vaccination, and education on antibiotic use for prophylaxis and treatment, would have been [Mrs B's] admission for the birth of her second child. This opportunity was missed.

The fatal outcome once infection had manifested might very well have been averted had [Mrs B] had a supply of antibiotics at home and been educated to take them immediately infective symptoms developed.

She might also have had a better chance of survival had injectable antibiotics been administered immediately, before transfer to hospital. By the time she arrived in hospital it is probable that there was no reasonable chance of altering the course of this formidable disease.

References

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10. Bellomo R, Ronco C. Continuous haemofiltration in the intensive care unit. *Crit Care*. 2000; 4(6):339-45.
11. Kellum JA, Bellomo R. Hemofiltration in sepsis: where do we go from here? *Crit Care*. 2000;4(2):69- 71.”

Further infectious diseases advice

Dr Doehring subsequently clarified his advice in relation to the administration of Amoxil to Mrs B postnatally as follows:

“It was reasonable to give [Mrs B] amoxicillin (Amoxil). Where I see this as not complying with good practice is insofar as only a single dose was given, when the consensus view is that prolonged, even lifelong, antibiotic prophylaxis should be given. This has some bearing on choice of drug as well, in that amoxicillin is a good agent for short term use, but penicillin is to be preferred for long term use because of its narrower spectrum of activity.

I fear that my initial advice may have been misconstrued. Antibiotic prophylaxis was appropriate, and amoxicillin was an appropriate choice. Where the stat administration deviates from best practice is in that it was not followed through into, or combined with, a life-long regimen of daily oral penicillin.”

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.*
- ...
- 5) *Every consumer has the right to co-operation among providers to ensure quality and continuity of services.*

RIGHT 6

Right to be Fully Informed

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

Other Relevant Standards

Transitional Health Authority Maternity Project: Guidelines for Referral to Obstetric and Related Specialist Medical Services (July 1997)

“Purpose of Guidelines

This document provides guidelines for best practice based on a consensus of expert opinion and available evidence. It is expected that in time these criteria will be validated or amended to represent best practice that is evidence based. This process will be dependent on the development and appropriate analysis of the data in perinatal information systems as well as local and international research.

These guidelines have been developed in consultation with the Royal College of Obstetric and Gynaecological Specialists (RNZCOG), the New Zealand College of Midwives (NZCOM), the Royal New Zealand College of General Practitioners (RNZCGP), the New Zealand Medical Association (NZMA) and the Paediatric Society of NZ. It has been agreed that these same organisations will be involved in a review of these guidelines after one year.

It is the THA’s intention that the criteria be used to guide practice and to give confidence to providers and women and their families.

...

Circumstances Where Guidelines May be Varied

The THA does not intend the guidelines to be restrictive to good clinical practice and therefore recognises that there are at least five ways in which there may be some flexibility in the use of these criteria:

1. The THA recognises the need for the practitioner to make clinical judgements depending on each situation and some situations may require a course of action which differs from these guidelines. The practitioner will need to be able to justify his/her actions should he/she be required to do so by their professional body.

It is expected that the principles of informed consent will be followed with regard to these criteria. If a woman elects not to follow the recommended course of action it is expected that the practitioner would take the usual appropriate actions such as seeking advice, documenting discussions and exercising wise judgement as to the ongoing provision of care.

...

Timing of Referrals

Referral to a specialist should occur as soon as a problem is suspected or identified.

The Referral Process

Referral for most of the criteria will be to an Obstetrician and, for those listed under Services Following Birth, to a Paediatrician. However in some instances, particularly those criteria involving associated medical conditions, a referral to another Specialist such as a Physician, Anaesthetist, Surgeon, Paediatrician, Infectious Diseases Specialist or Psychiatrist, may also be appropriate or be more appropriate. For some situations a multidisciplinary team will be necessary. Many of the criteria under Labour and Birth Services will require both Obstetrician and Paediatrician.

It is recognised that referral to a woman's usual GP may be appropriate in some circumstances. However these guidelines refer specifically to medical Specialists as on the New Zealand Medical Specialist Register.

These Guidelines for Referral define three levels of referral and consequent action:

1. the Lead Maternity Carer may recommend to the woman (or parents in the case of the baby) that a consultation with a specialist is warranted given that her pregnancy, labour, birth or puerperium (or the baby) is or may be affected by the condition. The specialist will not automatically assume responsibility for ongoing care. This will depend on the clinical situation and the wishes of the individual woman.
2. the Lead Maternity Carer must recommend to the woman (or parents in the case of the baby) that a consultation with a specialist is warranted given that her pregnancy, labour, birth or puerperium (or the baby) is or may be affected by the condition. The specialist will not automatically assume responsibility for ongoing care. This will depend on the clinical situation and the wishes of the individual woman.
3. the Lead Maternity Carer must recommend to the woman (or parents in the case of the baby) that the responsibility for her care be transferred to a specialist given that her pregnancy, labour, birth or puerperium (or the baby) is or may be affected by the condition. In most circumstances the specialist will assume ongoing responsibility and the role of the primary practitioner will be agreed between those involved. This should include discussion about timing of transfer back to the primary practitioner.

...

The Guidelines

Maternity Assessment – Medical Condition

...

| Code | Condition Heading | Measure of Severity | Level of Action |
|------|---------------------|---------------------------------------|-----------------|
| 1024 | Haemolytic Anaemias | Autoimmune disease (fetal effects) | 3 |

...”

No further action – The Public Hospital

Post-mortem

Mr A was concerned that the public hospital staff made an insensitive request to perform a post-mortem on his wife very soon after she had died, at a time when he was not thinking straight. With hindsight, Mr A believes that had he been asked at a more appropriate time, he would have agreed to the post-mortem.

Mr A had a meeting with the public hospital after his wife’s death to discuss the circumstances surrounding it. At this meeting, the public hospital apologised to Mr A for the insensitivity of the post-mortem request and advised that procedures had been changed to avoid the possibility of this happening again. I do not intend to take any further action in relation to this matter.

Medical records

Mr A was also concerned that the public hospital lost his wife’s medical records. The public hospital advised me that it has apologised to Mr A for this, and has changed its medical record-keeping system.

I am concerned that the public hospital was unable to locate Mrs B’s medical records. I intend to take no further action in relation to this matter, but to refer a copy of this report to the Privacy Commissioner for consideration.

Opinion: No breach – The Public Hospital

Right 4(1)

Treatment of pneumococcal infection

Mr A was concerned that the treatment given to his wife on 26 November 1998 did not save her life. However, I am satisfied that the public hospital staff treated Mrs B with reasonable care and skill and that there was little else that could have been done to save her.

My obstetric advisor explained that the incubation period of *Streptococcus pneumoniae* is usually quite short and often a matter of one or two days. Mrs B's first clear symptoms were apparent on 25 November and she died very quickly after this, 56 days after giving birth. My obstetric advisor stated that the known short incubation period of the disease, its late onset, the uncomplicated postnatal course and the type of bacterial infection suggest that Mrs B's infection was fortuitous rather than deriving from her pregnancy. My infectious diseases advisor concurred. He stated that although it was possible that there was a link between the baby's birth and the subsequent infection that took Mrs B's life, it was not likely.

My infectious diseases advisor noted that treatment given to Mrs B when admitted to the public hospital on 26 November was appropriate but was probably too late to save her life. He pointed out that there is a high mortality rate associated with post-splenectomy overwhelming infection, in spite of appropriate treatment. It is probable that by the time Mrs B was admitted to hospital the infection was already too advanced for any treatment to save her life. It is doubtful whether different treatment after admission to hospital could have changed the outcome. The antibiotic treatment she did receive was optimal, but she died before it could take effect.

In my opinion, the public hospital and its staff treated Mrs B with reasonable care and skill when she was admitted to hospital with a pneumococcal infection on 26 November 1998. There is no evidence to suggest that her treatment should have been managed any differently. Accordingly, the public hospital did not breach Right 4(1) of the Code.

Opinion: No breach – The Public Hospital, Dr F and Ms C

Right 4(1)

Treatment to prevent postnatal infection

Under Right 4(1) of the Code, Mrs B had the right to have services provided to her with reasonable care and skill. Mr A was concerned that his wife was not given adequate treatment to prevent postnatal infection.

I note that Mrs B's care was never passed to the public hospital or its staff. The public hospital staff were therefore not responsible for Mrs B's care at any stage. Mrs B was under the care of the independent midwives until six weeks postpartum when her care was transferred back to Dr G.

Mrs B was given 2gm of Amoxil intravenously, shortly after giving birth. This was prescribed by the public hospital's Dr F, and administered by midwife Ms C. Concern was raised as to whether this was an appropriate course of action in the circumstances. I note that Mrs B had retained part of the placenta, which would have put her at increased risk of postpartum infection.

My obstetric advisor noted that although there is no compelling evidence that a single dose of antibiotics will prevent infection associated with retained products of conception, a prophylactic single dose antibiotic, for the prevention of infection at the time of surgery, is well accepted. As the principle has some foundation and very little risk of serious harm, and Mrs B was a moderate to high risk splenectomised individual, giving her antibiotics was entirely appropriate.

My midwifery advisor stated that the prescription of Amoxil in this case was a reasonable precautionary action, appropriate in order to prevent infection developing in the first week following the birth.

My infectious diseases advisor also reviewed this case. He advised that the choice of Amoxil was appropriate to try to prevent infection, although it would have been ideal to have initiated a daily prophylactic dose of antibiotics instead.

In my opinion, Dr F and the public hospital treated Mrs B with reasonable care and skill and did not breach Right 4(1) of the Code in prescribing a single dose of Amoxil.

I am satisfied that Ms C treated Mrs B with reasonable care and skill with regard to the possibility of postnatal infection. Although Ms D was Mrs B's LMC and held overall responsibility for her care, Ms C was covering at the labour and delivery, and was therefore responsible for this and for the immediate postpartum period. Administering Amoxil was a reasonable precautionary action in the circumstances and, in doing so, Ms C did not breach Right 4(1) of the Code.

Opinion: No breach – Ms D, Ms E and Ms C**Right 6(1)(a) and (b)***Advice about prevention of postnatal infection*

Under Right 6 of the Code, Mrs B had the right to receive the information that a reasonable consumer in her circumstances would expect to receive, including an explanation of her condition and any expected risks or side effects.

Mr A was concerned that his wife had not been given adequate warning about the possibility of, and measures to prevent, postnatal infection.

The midwives advised me that Mrs B was given routine postnatal advice and an advice folder concerning hygiene and prevention of infection. It is also recorded that the signs of infection, postpartum haemorrhage and the ragged state of her membranes were discussed with her.

As Mrs B was never under the care of Dr F or the public hospital staff, they were not responsible for giving her postnatal advice. All three midwives held some responsibility for Mrs B's care; Ms D as LMC, Ms E as her back-up, and Ms C as the midwife present at the labour and delivery and the immediate postpartum period.

My midwifery advisor stated that the information given to Mrs B by the midwives was "more than adequate and unusually fulsome". She also commented that there was no evidence available to the midwives, when Mrs B was discharged from their care, that she needed any further information about infection prevention. My obstetric advisor also commented on the general hygiene advice given to postnatal patients by the midwives, and concluded that the advice was entirely adequate.

Accordingly, I am satisfied that Mrs B was given the information that a reasonable consumer in her circumstances would expect to receive with regard to the risk and prevention of postnatal infection, and that Ms D, Ms E and Ms C did not breach Right 6(1) of the Code.

Rights 4(2) and 4(5)

Under Right 4(2) of the Code, Mrs B had the right to receive services that complied with relevant professional standards. Right 4(5) of the Code obliges providers to co-operate to ensure quality and continuity of care.

During the investigation, the question arose whether Mrs B should have been referred to a specialist for care during her pregnancy, rather than have a midwife as her lead maternity caregiver. The midwives advised me that they were reassured by Dr G's statement that he had consulted with a haematologist, who had advised him that Mrs B was unlikely to have a problem during pregnancy. The midwives also advised me that they discussed Mrs B's case with an obstetrician and gynaecologist, Dr H, who also advised them that Mrs B was unlikely to have a problem. This discussion was informal and in person during a regular

clinic. The midwives advised that they would not expect records of this discussion to have been kept by Dr H. Dr H has no recollection or record of any consultation either with or about Mrs B.

I note that the Transitional Health Authority Guidelines for Referral to Obstetric and Related Specialist Medical Services (THA Guidelines), which were current at the time of Mrs B's pregnancy, were recommended as a best practice guide for maternity care providers. For conditions such as haemolytic anaemia, of which spherocytosis is one, the lead maternity care must recommend to the woman that the responsibility for her care be transferred to a specialist.

My obstetric advisor explained that while referral of Mrs B was not obligatory, and was modified by the fact that she had been splenectomised (which is curative of the spherocytosis, but increases susceptibility to infection), a level three action is indicative of a level of concern commensurate with formal specialist consultation. An informal verbal consultation would be unsatisfactory in these circumstances, as the situation required more in-depth consideration. My obstetric advisor considered that a formal specialist consultation was necessary at this point, as an opportunity for careful elucidation of the clinical problem and possibly referral to a haematologist or infection control specialist for further expert opinion.

My midwifery advisor disagreed and explained that as Mrs B had had a splenectomy (considered a cure for hereditary spherocytosis), she no longer suffered from a haemolytic anaemia, and a level three action was therefore no longer indicated.

My midwifery advisor stated that she would expect an LMC to take responsibility for finding out from a specialist obstetrician whether a referral was necessary for Mrs B's medical condition. It is the midwife's responsibility as LMC to refer care to an obstetrician when appropriate.

My midwifery advisor noted that if the midwives did discuss Mrs B's case with Dr H as described, such a discussion would fulfil the midwives' obligation to consider referral. Many consultations about theoretical risk are discussed in day-to-day situations between obstetricians and midwives, rather than becoming the subject of more formal consultations.

My midwifery advisor stated that if Mrs B's case was not discussed with Dr H as described, then the previous discussion between Dr G and the haematologist was not sufficient to fulfil the midwives' obligation for referral. A letter from a general practitioner about a discussion with a haematologist does not constitute adequately fulfilling midwifery referral obligations.

Assuming the informal discussion with Dr H did take place as described, and accepting that Mrs B's condition did not strictly meet THA criteria for obstetric referral, I nonetheless consider that it would have been prudent for the midwives to consult formally concerning Mrs B's care, given the rarity of her condition and the severity of the potential consequences should she develop an infection.

It would also have been prudent for the midwives to keep more comprehensive records of any such discussion. The notation "d/w [Dr H]" is not sufficient to communicate to any subsequent caregiver the content of the discussion or any changes to the management plan that may have resulted. In a shared care situation like this, when the LMC is not conducting the delivery, accurate and comprehensive records of any such discussions are especially important to ensure continuity of care.

However, I am guided by my expert midwifery advice that although an informal discussion about the need for referral and a simple record was reasonable practice in 1998 when these events took place, practice has now changed. Today, standards are higher and more formal discussion and more comprehensive records would be expected.

It must also be acknowledged that the infection that took Mrs B's life was in all likelihood not related to her recent pregnancy or childbirth. In my opinion, although it would have been prudent to refer Mrs B for specialist advice concerning her hereditary spherocytosis and splenectomy during her pregnancy, the actions taken by midwives Ms D, Ms E and Ms C represented a reasonable standard of practice in 1998. Accordingly, the midwives did not breach Rights 4(2) and 4(5) of the Code.

Actions

- Copies of this report will be sent to the Minister of Health, the Medical Council of New Zealand, the Nursing Council of New Zealand, the New Zealand College of Midwives, and the Privacy Commissioner.
 - Further copies of this report, with identifying features removed, will be sent to the Ministry of Health (for forwarding to the Chief Medical Advisor of each District Health Board), the Deputy Director-General, Clinical Services, the New Zealand College of Midwives, and the Maternity Services Consumer Council, and will be placed on the Health and Disability Commissioner's website, www.hdc.org.nz, for educational purposes.
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Other comment

Prophylactic regimes for splenectomised patients

Mr A was very concerned that his wife was not given appropriate advice from the health professionals involved in her care with regard to preventing the pneumococcal infection that tragically took her life. Splenectomised patients are susceptible to pneumococcal infection and need to take precautions. My infectious diseases advisor has referred to the 1997 British Society for Haematology 'Guidelines for the Prevention and Treatment of Infection

in *Patients with Absent or Dysfunctional Spleen* as a best practice guide. The main recommendations are that:

- All splenectomised patients should receive pneumococcal immunisation;
- Documentation, communication, and reimmunisation require attention;
- Lifelong prophylactic antibiotics are recommended;
- Patients should be given a disc or card to alert health professionals to their risk of overwhelming infection; and
- Patients developing infection despite the above measures must be given a systemic antibiotic and urgently admitted to hospital.

I do not consider it reasonable to expect midwives and a house surgeon to be conversant with specialist recommendations of this nature. I note my obstetric advisor's comments about the inconsistent recommendations about lifelong antibiotic prophylaxis, and the issues surrounding pneumococcal vaccination, and Dr I's comments concerning the need for wider and more consistent access to the pneumococcal vaccine in New Zealand, and my infectious diseases advisor's endorsement of her opinion.

I also note the results of a study published in the *New Zealand Medical Journal* in July 2001, 'Pneumococcal bacteraemia and opportunities for prevention' (NZMJ, 114, 326-328). The study observed that although most patients who contract pneumococcal bacteraemia have underlying medical conditions for which vaccination is recommended, very few of these patients actually receive a pneumococcal vaccine. Strong epidemiological evidence and substantial clinical benefit support the use of the pneumococcal vaccine in patients with, among other conditions, functional or anatomic asplenia (no spleen). The study concluded that in spite of the evidence supporting the need for and benefits of increased use of the pneumococcal vaccine, this vaccine is currently under-utilised in New Zealand. Greater use of this vaccine will probably require a change in its funding to make it more readily available to potential beneficiaries.

I have decided to send copies of this report to the Ministry of Health for forwarding to all District Health Boards for educational purposes. In light of the funding implications of increased use of pneumococcal vaccine, I will also send a copy of my report to the Minister of Health.

Retrospective record keeping

I note that the copy of Mrs B's medical records supplied to me by the midwives contains entries that are not contained in the copy of the same records supplied by the public hospital. The question of retrospective record keeping therefore arises. I will refer this matter, and copies of the relevant records, to the New Zealand College of Midwives and the Nursing Council of New Zealand, for their consideration.