

Waitaki District Health Service Limited
Fellow in Rural Hospital Medicine, Dr B
Registered Nurse, RN D
Registered Nurse, RN E

A Report by the
Deputy Health and Disability Commissioner

(Case 20HDC00826)



Health and Disability Commissioner
Te Toihou Hauora, Hauātanga

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Executive summary

1. This report concerns the care provided to a baby in a rural hospital, and the process in place for the transfer of a critically ill baby. The case highlights the responsibility of services to provide staff with necessary equipment and tools, and robust guidance to assist decision-making.
2. In 2019 the baby presented to the rural hospital with vomiting and a fever. An Emergency Department medical officer diagnosed probable meningococcal disease or meningitis and recognised that the baby was very ill and needed to be transferred to a larger hospital. Sadly, despite treatment and transfer, the baby deteriorated and died from meningococcal sepsis.

Findings

3. The Deputy Commissioner considered that Waitaki District Health Service Limited failed to provide services with reasonable care and skill. A PEWS chart was not used to document vital signs appropriately, there was no guidance in place for adequate objective observations or criteria to support decision-making on the mode of transfer, and staff communication was inadequate. The Deputy Commissioner found Waitaki District Health Service Limited in breach of Right 4(1) of the Code. The Deputy Commissioner also criticised the lack of equipment at the hospital.
4. The Deputy Commissioner considered that the medical officer did not provide services with reasonable care and skill because he failed to reassess the baby's response to treatment and provide further treatment, his decision on the mode of transfer between hospitals was inappropriate, and his documentation was inadequate. The Deputy Commissioner found the doctor in breach of Right 4(1) of the Code. The Deputy Commissioner also criticised the doctor's handover discussion with the receiving hospital.
5. The Deputy Commissioner found a nurse in breach of Right 4(1) of the Code for failing to calculate a PEWS score and for not providing adequate documentation, including adequate information on the ambulance request form.
6. The Deputy Commissioner found a second nurse in breach of Right 4(1) of the Code for failing to monitor and document the baby's vital signs during transfer and failing to recognise the baby's worsening condition and seek support, and for inadequate documentation.
7. The Deputy Commissioner made educational comment about the quality of communication by a medical officer at the second hospital.

Recommendations

8. The Deputy Commissioner recommended that Waitaki District Health Service Limited adopt the PEWS chart, incorporate training on the information to be provided to the ambulance service (including when it is appropriate to call a road ambulance versus retrieval by helicopter) into staff induction, ensure that the urgent retrieval information sheet is located

in the area where an ambulance is called, and undertake an audit of paediatric monitoring equipment.

9. The Deputy Commissioner noted that this case highlights the responsibility of services to provide staff with necessary equipment and tools to be effective in their jobs, with robust guidance to assist in their decision-making.
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Complaint and investigation

10. The Health and Disability Commissioner (HDC) received a complaint from Mrs A about the services provided by Waitaki District Health Services Limited (WDHSL) to Master A. The following issues were identified for investigation:

- *Whether Waitaki District Health Services Limited (trading as Oamaru Hospital) provided Master A with an appropriate standard of care in 2019.*
- *Whether Dr B provided Master A with an appropriate standard of care in 2019.*
- *Whether RN D provided Master A with an appropriate standard of care in 2019.*
- *Whether RN E provided Master A with an appropriate standard of care in 2019.*

11. This report is the opinion of Deputy Commissioner Vanessa Caldwell and is made in accordance with the power delegated to her by the Commissioner.

12. The parties directly involved in the investigation were:

Mrs A	Complainant
WDHSL	Provider
Dr B	Provider/fellow in rural hospital medicine and locum doctor for Oamaru Hospital

13. Further information was received from:

District Health Board	Provider
Dr C	Paediatric registrar at Hospital 2
RN D	Registered nurse at Oamaru Hospital
RN E	Registered nurse at Oamaru Hospital
Ms F	Healthcare assistant at Oamaru Hospital
Ambulance service	

14. Independent advice was obtained from a fellow in general practice and rural hospital medicine, Dr Johan Peters (Appendix A), and Nurse Practitioner (NP) Fay Tomlin (Appendix B).

Information gathered during investigation

Introduction

15. In 2019, Master A, aged 13 months at the time of events, developed a slight fever, which was the first symptom of meningococcal sepsis.¹ Sadly, Master A passed away.
16. This report concerns the care provided to Master A, and the process in place at Oamaru Hospital for the transfer of a critically ill baby.

Oamaru Hospital

17. WDHSL is a registered company that owns and operates Oamaru Hospital and provides health services in the Waitaki district. The company is owned by the Waitaki District Council as a Council-Controlled Organisation under the Local Government Act 2002. Te Whatu Ora² contracts WDHSL to provide rural hospital medical and surgical services, which includes Oamaru Hospital.
18. Oamaru Hospital is a rural hospital, and the only hospital providing secondary-level healthcare services in the Waitaki district, with a catchment population of approximately 22,000 and an area of approximately 8,990 square kilometres. Oamaru Hospital offers inpatient services and emergency, maternity, and radiology services, and is approximately 1.5 hours' drive from Hospital 2.
19. In relation to rural hospital medicine, the Medical Council of New Zealand (MCNZ)³ states:

“Rural hospital medicine is determined by its social context, the rural environment, the demands of which include professional and geographic isolation, limited resources and special cultural and sociological factors. It is invariabl[y] practised at a distance from comprehensive specialist medical and surgical services and investigations.

A broad generalist set of skills, knowledge and attitudes are needed to deliver optimum patient outcomes in rural hospitals. Unlike rural general practice, rural hospital medicine is orientated to secondary care and is responsive rather than anticipatory and does not continue over time.”

¹ Meningococcal disease can lead to serious infections, including meningitis (inflammation of the brain membranes) and sepsis (blood poisoning or septicaemia). These illnesses can develop quickly and can cause serious disability or death.

² On 1 July 2022, the Pae Ora (Healthy Futures) Act 2022 came into force, which disestablished all district health boards. Their functions and liabilities were merged into Te Whatu Ora | Health New Zealand. All references in this report to the DHB now refer to Te Whatu Ora.

³ <https://www.mcnz.org.nz/registration/scopes-of-practice/vocational-and-provisional-vocational/types-of-vocational-scope/rural-hospital-medicine/>.

20. On the day of these events, the staff working in Oamaru Hospital's Emergency Department (ED) included Dr B (a fellow in rural hospital medicine⁴ and a locum⁵ doctor for Oamaru Hospital), RN D,⁶ RN E, and healthcare assistant (HCA) Ms F. At the time of Master A's presentation, Dr B was in the night doctors' rest room, and there were no other patients in the ED.
21. Dr B ordinarily works in another centre and is employed in a level 3 rural hospital. He told HDC that on the previous two days he worked two 15-hour shifts, and his shift at Oamaru Hospital was his third shift.
22. WDHSL told HDC that at the time of events, the majority of medical officers at Oamaru Hospital were locum appointments.

Presentation to ED at Oamaru Hospital

Triage

23. Master A presented to the ED at Oamaru Hospital at 2.05am, with vomiting and fever. RN D and RN E triaged⁷ Master A immediately and allocated a triage score of three (to be seen within 30 minutes).
24. RN E examined Master A, and within minutes identified a rash and three dots on the back of his neck. WDHSL told HDC that RN D recognised that Master A's triage score was higher than three and that Dr B needed to see Master A straight away, but she did not document the change of triage code.⁸
25. Master A's triage observations showed a temperature of 39.0°C (a fever), a pulse of 209 beats per minute (bpm) (considerably above the normal range for children one to three years old), a respiratory rate of 50 breaths per minute (well above the normal range), and an oxygen saturation of 96% (within the normal range).
26. Master A's Paediatric Early Warning System (PEWS) score was not calculated. The PEWS identifies patients at risk of clinical deterioration. It is calculated from objective vital sign measures such as respiratory rate, respiratory distress, oxygen saturations, oxygen requirements, heart rate, blood pressure, and capillary refill time. The more abnormal the vital signs, the higher the score. WDHSL told HDC that it had been using a PEWS scoring chart for "some time",⁹ and since the events has adopted Paediatric Early Warning Score

⁴ The division of Rural Hospital Medicine is part of the Royal New Zealand College of General Practitioners. The division commenced in 2008 to deliver the vocational scope for doctors working within rural hospitals.

⁵ A temporary doctor.

⁶ RN D was the shift leader and the most senior nurse on duty.

⁷ New Zealand EDs use the Australasian triage scale, which has five triage categories. For each triage category there is a specified maximum clinically appropriate time within which medical assessment and treatment should commence.

⁸ Whilst the increase in triage score was identified, the documentation was not updated to reflect this.

⁹ WDHSL referred to the use of PEWS when Master A had presented to WDHSL previously.

Guidelines. RN E told HDC that during her time at Oamaru Hospital she had never used PEWS, nor was she oriented to the use of PEWS.

Medical review

27. RN D called Dr B and asked him to attend, and Dr B arrived within a minute. Dr B told HDC that he assessed Master A rapidly and noticed that he had a widespread non-blanching¹⁰ rash. Dr B stated that he was immediately concerned that Master A had meningococcal disease¹¹ or meningitis,¹² and Master A's observations confirmed that Master A was dehydrated and experiencing septic shock.¹³ Dr B said that despite Master A's triage code of three, he was acutely aware of how sick Master A was, and immediately identified that Master A required transfer to another hospital (Hospital 2), but his initial focus was to treat and stabilise him.
28. WDHSL told HDC that Master A was placed on continuous electronic monitoring, including pulse oximetry,¹⁴ and was monitored constantly by nursing staff and Dr B.
29. After his assessment, Dr B ordered blood tests¹⁵ and gained intravenous access to rehydrate Master A using a fluid bolus of 10ml/kg intravenous 0.9% sodium chloride.
30. Dr B told HDC that once intravenous access had been established, he referred to the Starship Hospital Guidelines for meningococcal septicaemia and administered an antibiotic¹⁶ in line with these guidelines.
31. By 3am, Master A's temperature had reduced slightly to 38.8°C, his pulse had reduced to 191bpm, his respiratory rate had reduced to 47 breaths per minute, and his oxygen saturation had increased to 100%.
32. At 3.20am, Master A was administered 26ml of 10% dextrose¹⁷ to correct his low blood sugar.¹⁸ Dr B told HDC that normal paediatric maintenance fluid¹⁹ of 0.9% sodium chloride with 5% glucose (as per Starship Hospital Guidelines) was not available,²⁰ so he used 24ml per hour of normal saline (0.9% sodium chloride) as maintenance fluid.
33. RN D and RN E told HDC that Dr B undertook all the above actions very quickly.

¹⁰ Not disappearing with pressure.

¹¹ A serious bacterial illness.

¹² Infection and inflammation of the fluid and membranes surrounding the brain and spinal cord.

¹³ A response to infection that causes a dramatic drop in blood pressure, which can damage the lungs, kidneys, liver, and other organs.

¹⁴ Measurement of the oxygen level (oxygen saturation) of the blood.

¹⁵ A full blood count, urea and electrolytes, C-reactive protein and blood cultures.

¹⁶ Ceftriaxone¹⁶ 50mg/kg (650mg).

¹⁷ Sugar used in intravenous solutions to raise blood sugar levels.

¹⁸ Hypoglycaemia.

¹⁹ Maintenance fluid generally consists of water, glucose, sodium, and potassium.

²⁰ At the time of Master A's presentation, Oamaru Hospital did not stock 0.9% saline with 5% glucose (the fluid recommended in the Starship Hospital guidelines).

34. At 3.25am, Master A's temperature was still 38.8°C, his pulse had risen to 220bpm, his respiratory rate had risen to 68 breaths per minute, and his oxygen saturation remained at 100%.

Information provided to Mrs A

35. Mrs A stated that Dr B told her that he believed Master A had meningitis but did not explain how serious or life-threatening it was. She said that before they left Oamaru Hospital for Hospital 2, the nurse told her not to worry and that Master A would probably sleep on the way to Hospital 2.

Referral to Hospital 2

36. Dr B told HDC that he was comfortable that Master A had received early antibiotics and fluid resuscitation, and that his situation had stabilised. Dr B then considered Master A's move to Hospital 2 and telephoned the paediatric registrar at Hospital 2 to inform the registrar that Master A required transfer.
37. Dr B told HDC that he remembers telling the registrar that Master A was floppy and had an elevated body temperature and a widespread petechial rash.²¹ Dr B said that he would have informed the registrar of Master A's presenting observations and the treatment provided, as this is his normal practice for telephone handovers. He remembers talking about the available fluids in Oamaru Hospital and seeking advice about ongoing fluid management. He said that he cannot recall whether he told the registrar that he was concerned that Master A had meningococcal disease, but he definitely provided the full clinical picture.
38. Dr C, the paediatric registrar at Hospital 2, recalled that Dr B described Master A's observations and said that Master A had a widespread rash and borderline low blood sugar levels. Dr C recalled that in relation to ongoing fluid management, it was suggested that Master A receive a dextrose bolus, and that as Oamaru Hospital did not have a paediatric mix of fluids for the transfer, to use fluid with the highest amount of dextrose available.
39. Neither Dr B nor Dr C recorded their conversation, and there is no documentation to confirm when the telephone call occurred. However, as Dr C recalls advising Dr B to administer a dextrose bolus, and one was administered at 3.20am, this suggests that the call may have occurred before this time.
40. Dr B told HDC that he was under the impression that the process for referring patients from Oamaru Hospital was to discuss it with the receiving hospital's registrar, who would inform the senior medical officer (SMO) and ED. Dr B said that because this was his understanding, he thought that Dr C would inform the SMO and ED, as he had not been directed to telephone either.
41. Dr C accepted Master A's referral to Hospital 2. Dr C cannot remember whether the ED was informed that Master A would be arriving but stated that it was usual practice to inform the ED about the arrival of patients who had been accepted for referral. Te Whatu Ora told HDC

²¹ Tiny spots of bleeding under the skin.

that its usual practice is to notify the ED of impending arrivals, and if patients are anticipated to be seriously unwell, the senior ED doctor is also notified. The Clinical Director stated that Hospital 2 ED had not expected Master A to be so unwell on presentation, or that he would deteriorate significantly during his transfer.

Mode of transfer decision

42. Dr B told HDC that the most appropriate action was to transfer Master A by road, as Master A's condition had stabilised, and he had already received treatment in accordance with Starship Hospital guidelines. Dr B said that the drive to Hospital 2 from Oamaru Hospital was approximately 75 minutes, and a transfer by helicopter would have taken longer (approximately 65 minutes plus travel time for helicopter crew from home to the airport). This calculation was based on the following:
- The out-of-hours helicopter crew had to travel to the airport and ready the helicopter.
 - The flight time to Hospital 2 (to pick up a retrieval team) is approximately 15 minutes.
 - The flight time from Hospital 2 to Oamaru Hospital is approximately 25 minutes.
43. Dr B told HDC that he is aware that the National Ambulance Sector Office contract stipulates that 90% of urgent inter-hospital transfers should be within 60 minutes to pick up at the hospital helipad.
44. Ms F stated that more than once she asked Dr B why Master A was being transferred by road and not air, and Dr B said: "We don't need it." RN D told WDHSL that she wondered why Master A was not being transferred by air, and Dr B told her that it was because they had "done all the cares" and because Master A had not deteriorated and was still alert.
45. The Clinical Director at Hospital 2 told HDC that while the transfer by air would not have been quicker, Master A would have received monitoring en route, and would have been admitted directly to the Intensive Care Unit. As such, he would have received a higher level of care earlier, as he would have bypassed going to ED. In response to the provisional opinion, Te Whatu Ora stated that, with respect, this opinion is speculative and presumes that Master A's condition was deteriorating between Oamaru and Hospital 2 and that any change in his condition would have been recognised by the paramedics. Te Whatu Ora said that the comment also presumes that Master A would then have been redirected for direct admission to ICU, which can occur but is not always the case.
46. WDHSL told HDC that the decision regarding whether to transfer a patient by ambulance or helicopter is the referring SMO's responsibility, in this case Dr B. WDHSL said that its guidelines for the transfer of patients are based on the DHB's Emergency Transport of Patients guidelines. WDHSL stated that it expected that an SMO would be familiar with the DHB guidelines. The DHB policy stated that the medical officer was to arrange the appropriate destination and method of transfer in conjunction with the Coordinator or Duty ED nurse and notify the Hospital 2 ED triage nurse of the transfer.

Nurse accompanying Master A during transfer

47. WDHSL told HDC that RN D decided that RN E would accompany Master A in the ambulance. RN E said that she knew Master A's transfer was urgent, and she agreed to go because a helicopter was not an option.
48. RN E said that she had completed a few transfers to Hospital 2, but none had involved the transfer of a child. She stated that had she known how ill Master A was, she would not have agreed to transfer him, but she felt reassured because he had improved after the antibiotics and fluids, and she had heard Dr B tell Mrs A that Master A would be "okay" on the transfer.
49. Dr B told HDC that he clarified several times whether RN E felt confident that she was suitably trained to be able to handle Master A's transfer. Dr B stated that RN D told him that RN E was confident that she was suitably trained to handle the transfer, and that she had done many international air transfers of sick patients and would be able to manage Master A's condition. In contrast, RN E told HDC that she did not have international transfer experience and did not know the basis for such a comment. RN D told HDC that she cannot recall making this comment.
50. Dr B stated that RN E was aware that if there were any changes in Master A's condition, she could telephone him immediately. He said that the transfer pack contained 10% glucose and fluid for resuscitation if either were needed. RN E told HDC that although she does not usually transfer patients who have the potential to deteriorate, she knew she could telephone the ED for advice.
51. The Adverse Event Report (discussed further below) found that RN E had no specific paediatric training and was not briefed on the potential deterioration or requirements during transfer. In response to the provisional opinion, RN E stated that the orientation she had was that any patient who is transferred by road should be stable enough for the entire journey, and the transfer nurse only needed to stop halfway during the journey to take observations. Her understanding was that if the doctor required continuous monitoring, this had to be ordered specifically and discussed with the transfer nurse — which did not happen in Master A's case.

Ambulance request (patient transfer vs critical urgent retrieval)

52. Dr B told HDC that he asked the nursing staff to request an ambulance, and that the nurses were fully aware of the seriousness of Master A's condition.
53. RN D completed the transfer booking request and faxed it to the ambulance service at 2.40am. RN D wrote: "? Meningitis" and "ASAP" but did not state "meningococcal septicaemia" and did not tick any of the boxes for monitoring or oxygen or an IV pole, or outline that it was an urgent transfer request.
54. The ambulance service told HDC that at 3.06am Oamaru Hospital telephoned and requested an urgent patient transfer to Hospital 2. The ambulance service call taker documented: "[N]urse escort, family rider, query meningitis, ASAP requested."

Dispatch of ambulance

55. The ambulance service told HDC that there is only one frontline ambulance in Oamaru. This is dispatched for transfers only if the helicopter is unavailable or unable to get to Oamaru due to weather, or if the hospital outlines that the severity of the patient necessitates an urgent retrieval or transfer. The ambulance service said that if a transfer is considered to be an acute medical emergency and ambulance transport is required urgently, the ambulance service will provide an ambulance as quickly as possible and endeavour to respond within 30 minutes.
56. The ambulance service told HDC that it was informed that Master A had meningitis and, whilst meningitis is time sensitive, it is not as time critical as meningococcal septicaemia. The ambulance service said that duty staff members were contacted straight away to ask if they would undertake a transfer. The ambulance service also said that most patient transfers are labelled ASAP, and as there was no request for a helicopter and no further communication around the condition of the patient, it considered that the allocation of the transfer ambulance on this occasion was appropriate.
57. WDHSL told HDC that Oamaru Hospital staff are expected to bring monitoring equipment during patient transfers because transfer ambulances do not have the same equipment as emergency ambulance vehicles.

Ambulance arrival at Oamaru Hospital

58. At 3.41am, 35 minutes after the telephone request, a transfer ambulance arrived at Oamaru Hospital. The ambulance had one patient transfer officer qualified at First Responder (FR) practice level.²² The ambulance service told HDC that if a patient requires clinical intervention during the transportation, a registered nurse is required to accompany the patient on the transfer, and the patient remains under the clinical care of WDHSL.
59. RN E told HDC that the portable oxygen saturation monitor that was going to be taken was broken and was not reading with the paediatric probes. RN D looked for another paediatric portable oxygen saturation monitor but could not find one. Therefore, she and RN E tested the regular portable oxygen saturation monitor, which worked when it was kept still and held in place for some time. Neither RN D nor RN E documented the type of portable oxygen saturation monitor (ear clip or finger probe) that RN E took on the transfer and did not document whether it was tested on Master A.
60. RN E stated that Master A appeared brighter when they left Oamaru Hospital, but his vital signs were similar to the ones taken on presentation.

²² Ambulance officers practising at this level have undergone a comprehensive first aid course, as well as a specialist module specific to their environment (ambulance, events or communications). First responders with no ATP (authority to practise) cannot administer prescription medicines independently.

Transfer to Hospital 2

61. The transfer ambulance departed Oamaru Hospital at 4.01am. In response to the provisional opinion, Master A's family stated that Master A was completely covered by the rash before they left in the ambulance.
62. WDHSL told HDC that RN E stated that during the transfer, she sat in the back of the ambulance near Master A's head (Master A was on the stretcher and Mrs A was sitting beside him), and she checked on him throughout the journey.
63. Mrs A stated that she was the only one watching Master A in the ambulance, and that RN E was sitting at Master A's head. In response to the provisional opinion, Mrs A stated that the light was very dim. RN E said that Master A was alert and was playing with his IV line, and his condition and breathing did not change during the trip, but his rash was spreading.
64. WDHSL told HDC that the ambulance stopped en route²³ and RN E attempted to take Master A's observations, but the oximeter did not work, and she could not use the ambulance monitor because it was for adults.
65. RN E stated that she attempted to get a reading a few times, and discussed the situation with the ambulance driver, and they decided to keep driving to Hospital 2. RN E told HDC that she took Master A's respiratory rate and temperature manually (with a watch and a thermometer) and wrote these on the photocopied notes she had with her. She said that normally she would document these observations on the patient transfer form, but it was not included in the paperwork she had. Mrs A recalled that when Master A's observations were completed at their stop, they indicated that he had not deteriorated. She also recalled that Master A looked as if he was trying to sleep. In response to the provisional opinion, Mrs A stated that she "now knows that [Master A] was in and out of consciousness, not sleeping".
66. RN E stated that for the remainder of the journey she continued regular checks of Master A, and she did not notice any change in his physical condition. However, in her contemporaneous notes she documented that she did "on and off" visual checks and that Mrs A kept an eye on Master A throughout the journey.
67. RN E stated that Master A's physical condition remained the same during the journey, but when they arrived at Hospital 2, he was alert but floppy before becoming lethargic, with pale lips and a rash. RN E said that as Master A's condition changed only once they had arrived at Hospital 2, there had been no reason to telephone ten minutes before they arrived. In response to the provisional opinion, Mrs A stated that she does not know how RN E could confirm that Master A's condition was not deteriorating when his observations and blood sugar levels were not tested when they stopped.
68. The ambulance service told HDC that it did not radio Hospital 2 ED to let staff know that the ambulance was near because, as per the contract with Oamaru Hospital, the ambulance service's responsibility is to provide transport only. The ambulance service stated that the

²³ During a transfer, this is the usual destination at which the ambulance stops to take observations.

hospital retains clinical accountability for patient treatment, and it is not ambulance staff's responsibility to inform the ED of the patient's condition without direction from the clinical staff on board the ambulance. The ambulance service stated that at no point in the transfer did it assume clinical control or accountability of Master A.

Hospital 2

69. Master A arrived at Hospital 2 at 5.25am. RN E stated that she went to speak to the triage nurse immediately and gave her Master A's notes. RN E said that she was surprised that the nurse was not expecting Master A.
70. Te Whatu Ora told HDC that the ED Charge Nurse Manager confirmed²⁴ that Master A was not expected at the ED, and that Master A was not included in the "patient expects" list on the ED information system, which would have alerted the ED to Master A's arrival. Te Whatu Ora also stated that it was documented²⁵ that Dr C had told the ED Associate Charge Nurse Manager that they had forgotten to pass on that Master A was expected.
71. RN E told HDC that she explained to the ED staff that the paediatric registrar was aware that they would be arriving, and the triage nurse telephoned the registrar. RN E stated that at about this time Mrs A said that Master A's colour had changed, and she went to see him and could see that Master A was lethargic and his lips were pale.

Subsequent events

72. An ED registrar attended. The registrar documented²⁶ that on arrival Master A was hypoglycaemic and in a collapsed state with signs of shock, poor circulation, a rapid pulse, and a widespread rash suggestive of meningococcal sepsis. His PEWS was calculated as >8 (for repeat PEWS in 20 minutes, vital signs every hour, immediate paediatric response, and possible transfer to the Paediatric Intensive Care Unit (PICU)), and he was triaged as category one (immediately life-threatening — immediate simultaneous triage and treatment).
73. By 5.40am Master A's temperature had decreased to 38.5°C, his pulse was 207bpm, and his respiratory rate was 26 breaths per minute. Resuscitation was commenced with further intravenous fluids, additional antibiotics, and three doses of intravenous glucose, and further assistance was requested (ED consultants, a consultant interventionist and paediatric consultants). Master A had some response to the initial measures.
74. Master A was transferred to the ICU for further resuscitation. Blood tests showed severe septic shock and multiple organ failure, with disseminated intravascular coagulation²⁷ and

²⁴ In the course of the DHB's investigation.

²⁵ Te Whatu Ora has not provided evidence of that documentation to HDC.

²⁶ In the ED clinical sheet.

²⁷ A rare but serious condition that causes abnormal blood clotting throughout the body's blood vessels.

purpura fulminans,²⁸ likely secondary to meningococcal sepsis. Arrangements were made for Master A's transfer to a children's hospital.

Children's hospital

75. Master A was flown to the children's hospital and remained very unstable despite the administration of four inotropes²⁹ and further fluid resuscitation.³⁰ He was weaned off inotropic and ventilator support and sedation after four days, but he developed seizure activity, and a CT scan showed "bilateral ischaemic changes with the pattern of border zone involvement indicati[ng] a global hypoxic ischaemic mechanism³¹". After six days, a decision was made to redirect care to palliation.
76. Sadly, Master A passed away.

Further information

Te Whatu Ora — Adverse Event Review (AER)

77. Te Whatu Ora conducted an investigation into the care provided to Master A at both Oamaru Hospital and Hospital 2.³² WDHSL stated that the staff involved participated in Te Whatu Ora's formal investigation process.
78. Te Whatu Ora said that there was an initial oversight and delays in undertaking the investigation, and a lack of communication with Mrs A. Te Whatu Ora acknowledged that this was not acceptable and did not meet with its values as an organisation, and it apologised for this.
79. The AER identified the following issues in the care provided to Master A:
- The degree of shock and illness was not recognised at Oamaru Hospital.
 - A PEWS identification form was not used at Oamaru Hospital.
 - Fluid resuscitation was below the level suggested by current Advanced Paediatric Life Support guidelines.
 - The decision was made to transfer Master A from Oamaru Hospital to Hospital 2 by ambulance as opposed to helicopter.
 - The request for an ambulance was noted as an "ASAP inter-hospital transfer" not an "emergency transfer", which resulted in a delay of 40 minutes.³³
 - A junior nurse was tasked with escorting the patient to Hospital 2 in the ambulance, and she was unfamiliar with the monitoring equipment. She was also given an inappropriate

²⁸ A disorder in which the skin bleeds and dies rapidly.

²⁹ Medication that changes the force of the heart's contractions.

³⁰ 50ml/kg, giving a total of around 200ml/kg in the first 24 hours.

³¹ Brain damage caused by insufficient oxygen to the tissues.

³² WDHSL stated that it was not provided with an opportunity to sight, review, or comment on the DHB's investigation report before it was circulated. However, WDHSL did not provide any further comment to HDC.

³³ The ambulance arrived one hour after the faxed request.

monitor for paediatric assessment, and therefore was unable to monitor Master A's vital signs adequately during transfer.

- Hospital 2 ED had not been notified by Oamaru Hospital or the registrar at Hospital 2 who accepted the referral that Master A was en route, and therefore his arrival was unexpected.

80. WDHSL told HDC that the treatment initiated and given to Master A at Oamaru Hospital was aligned with the Starship Hospital guidelines, and it considers that the request for an ambulance certainly indicates that the staff appreciated that Master A needed immediate medical intervention.
81. WDHSL noted that as meningococcal disease is an infective disease, staff should have used appropriate personal protective equipment (PPE) when caring for Master A. WDHSL accepted that this was not done but did not provide a reason why.

Dr B

82. Dr B provided his sincerest condolences. He stated that whilst he stands by his decision to use the ambulance service, in future he will factor into his decision-making the severity of the case and the management capability of the ambulance service versus air ambulance and will ensure that he speaks to the paediatric SMO on call no matter where he is working, to ensure that he understands the local protocols.
83. Dr B said that whilst managing Master A he was very reliant on his recurrent clinical assessments, but he does not specifically remember constantly checking the observation chart. He stated that although he was happy that Master A had improved significantly since his arrival, he may have missed a trend of a slowly worsening picture, and, if he had noticed this trend, it may have triggered him to give another fluid bolus or more glucose.

Responses to provisional opinion

Dr B

84. Dr B was given the opportunity to respond to the relevant section of the provisional opinion. Dr B's representative stated that they are not in total agreement with all the conclusions reached, but Dr B accepted the outcome.

Mr and Mrs A

85. Mr and Mrs A were provided with an opportunity to comment on the "information gathered" section of the provisional opinion, and their comments have been included in this report where relevant.
86. Mr and Mrs A stated that reading the provisional opinion brought to light more mistakes than they had been aware of initially, which was difficult for them. They said that it felt "that the odds were against [Master A] at every level of care", and it reminded them "of Swiss cheese — there were so many holes and we fell through every single one".

87. Mr and Mrs A said that the thought of having to go back to Oamaru Hospital for their other two children sends them into “a complete panic” and they would rather drive to Hospital 2. They stated:

“Our lives have been completely shattered with the loss of our son [Master A] and we will forever live with the pain of knowing that he suffered a tremendous amount more than what he needed to. We will also always wonder if he [woul]d still be here if it was n[o]t for the comedy of errors the team at Oamaru [H]ospital made that night — that [i]s not something that [i]s easy to live with I can assure you.”

Waitaki District Health Service Limited

88. Waitaki District Health Service Limited was given the opportunity to respond to the relevant sections of the provisional opinion and accepted the breach finding. Its Chief Executive Officer stated:

“On behalf of WDHS I wish to reiterate our deep sympathy to [Mrs A] and her family for the very sad loss of [Master A]. We recognise that this process will have been very difficult for [Mrs A] and her family, and we want to assure her that we have taken the matters raised in her complaint very seriously and that we are committed to continuing to improve the health services that we provide.”

RN D

89. RN D was provided with the opportunity to respond to the sections of the provisional opinion relevant to the care she provided. An extension of time to respond was also provided as requested, but no comment was forthcoming.

RN E

90. RN E was provided with the opportunity to respond to the sections of the provisional opinion related to the care she provided, and her comments have been incorporated into this report where relevant.

Te Whatu Ora and Dr C

91. Te Whatu Ora and Dr C were given the opportunity to respond to the relevant sections of the provisional opinion and their comments have been incorporated where relevant. In addition, Te Whatu Ora noted that the management of acutely sick patients who present “remotely” is particularly difficult and complex, and, at the time of events, Dr C was a junior paediatric trainee.

Opinion: introduction

92. At the outset, I offer my sincere condolences to Mr and Mrs A and their family for the loss of their precious son in such tragic, unexpected circumstances. As noted by my independent rural hospital medicine advisor, Dr Johan Peters, Master A was unfortunate enough to have a rapidly progressive and unforgiving disease that has a high level of mortality even with the

highest level of care. It is therefore unknown whether further intervention and/or a different course of action would have prevented the sad outcome for Master A.

93. WDHSL was responsible for the operation of its clinical services and carries responsibility for its service failures. WDHSL had a duty to ensure that the services Master A received were provided with reasonable care and skill.
94. In addition to Dr Peters' advice, I obtained nursing advice from NP Fay Tomlin. I have carefully considered the extent to which the deficiencies in Master A's care occurred as a result of individual staff action or inaction, as opposed to systems or organisational issues.

Opinion: Waitaki District Health Service Limited — breach

Mode of transfer decision

95. At the time of events, the decision regarding whether to transfer a patient by ambulance or helicopter was the responsibility of the referring SMO, in this case Dr B. WDHSL's transfer of patients guidelines stated that the medical officer was to arrange the appropriate destination and method of transfer in conjunction with the Coordinator or Duty Nurse.
96. Dr Peters advised that the mode of transfer decision depended disproportionately on Dr B's judgement regarding the stability of the patient, and the skill set of the attending clinical staff. Dr Peters stated that there appears to have been little use of triage scoring, PEWS scoring, or use of the observations reflecting the lack of stability of the patient, to make an objective judgement regarding the best mode of transport for Master A. Dr Peters considered that this was a moderate departure from accepted practice.
97. I accept Dr Peters' advice. I consider that overarching guidance for clinicians on the mode of transfer, based on diagnosis, PEWS, or observations would have supported Dr B to make his decision on the mode of transfer.
98. RN D and Ms F said that they questioned Dr B's decision to transfer Master A by road not air, and he replied, "[W]e don't need it," and that they had "done all the cares" and Master A had not deteriorated and was still alert.
99. I am concerned that staff queried Dr B's decision to transfer Master A by road rather than air, but the system at Oamaru Hospital disproportionately relied on Dr B's individual judgement. It appears that by querying the decision, other members of the clinical team were trying to influence Dr B's decision, but, unfortunately, they were not supported by WDHSL's policies, which stated that it was the referring SMO's (Dr B's) responsibility.
100. I consider that the system at Oamaru Hospital should enable clinicians to make an objective judgement about the best mode of transport based on triage scoring, PEWS, observations and patient stability. Whilst I appreciate that someone has to make the final decision, I also

consider it important for any individual in a team to be able to challenge decisions, and for Oamaru Hospital to encourage such a culture. If all members of the clinical team work together to accomplish a common goal, patient safety will improve.

Communication

Ambulance request

101. Dr B considered that Master A should be transferred by ambulance to Hospital 2 and that this would take approximately 75 minutes. Dr B told HDC that he asked the nursing staff to request an ambulance, and the nurses were fully aware of the seriousness of Master A's condition.
102. At 2.40am RN D faxed a transfer booking request to the ambulance service, in which she stated: "? Meningitis" and "ASAP". RN D did not mention "meningococcal septicaemia" and did not tick any of the boxes for requirements for monitoring, oxygen, or an IV pole, and did not outline that it was an urgent transfer request.
103. At the beginning of Master A's presentation, everyone knew that it was an emergency. However, at some point during Master A's presentation, this clear understanding changed. In my view, the fact that RN D did not request an "urgent" ambulance suggests a possible miscommunication, or lack of adequate communication, between staff about the seriousness of Master A's condition. It is apparent that there was a breakdown in communication regarding the urgency of the matter.

Nurse accompanying Master A during transfer

104. RN D decided that RN E would accompany Master A in the ambulance. RN E had worked in New Zealand for three months, and the AER stated that RN E had no specific paediatric training. The AER concluded that RN E was not briefed on the potential deterioration or requirements during transfer.
105. RN E stated that she had completed a few transfers to Hospital 2, but none had involved the transfer of a child, and usually she did not transfer patients who had the potential to deteriorate. She said that she knew that Master A's transfer was urgent, and she "agreed to go" because a helicopter was not an option. RN E stated that had she known how ill Master A was, she would not have agreed to transfer him. She said she had felt reassured because Master A had improved after the antibiotics and fluids, and she had heard Dr B tell Mrs A that Master A would be "okay" during the transfer.
106. Dr B told HDC that RN D told him that she was confident that RN E was suitably trained to handle the transfer, and that she had done many international air transfers of sick patients and would be able to manage Master A's condition. RN E told HDC that she did not have international transfer experience and did not know the basis for such a comment. However, RN D does not recall making this comment. Dr B also recalled that he clarified several times whether RN E felt confident that she was suitably trained to handle Master A's transfer.

107. I am unable to determine exactly what information RN D conveyed to Dr B. However, it is clear that there was a divergence in understanding of RN E's capability and experience to transfer Master A. This indicates a lack of meaningful communication between staff.

Portable oxygen saturation monitor

108. The portable oxygen saturation monitor that RN E was intending to take was found to be broken and was not reading with paediatric probes. Neither RN E nor RN D informed Dr B that the portable oxygen saturation monitor was not working. This indicates a lack of communication between staff about the availability of specific equipment for Master A's transfer.
109. Had RN E or RN D informed Dr B about the broken oxygen saturation monitor, this may have provided him with an opportunity to make alternative arrangements for Master A's safe transfer.

Documentation of vital signs

110. During his presentation at Oamaru Hospital, only three measurements of Master A's vital signs (observations) were documented, and no PEWS was calculated. WDHSL told HDC that it had been using a PEWS scoring chart for "some time", and that since the events, WDHSL has adopted Paediatric Early Warning Score Guidelines, and any child presenting with a triage 1–3 category has a PEWS calculated.
111. Dr Peters advised that standard of care would include a set of observations following the first intervention, followed by further aggressive treatment, or normalisation of physiological observations. Dr Peters said that he would expect frequent reassessments and recording of the observations and action in response to these. He considers the failure to do so a departure from the standard of care. Further, NP Tomlin advised that vital signs should be documented on arrival and then repeated at regular intervals depending on the patient's condition. She noted that a PEWS chart was not used to record Master A's ongoing vital signs and stated that this provides more information regarding the severity of a paediatric patient's condition. NP Tomlin said that resuscitation is a team effort, and it would be common practice for the senior nurse (in this case RN D) to ensure that correct documentation and processes were being followed. NP Tomlin considers that the failure to document the trend in vital signs on a PEWS chart was a departure from the standard of care.
112. I acknowledge this advice. It is not possible to assess whether calculating Master A's PEWS scores would have led to a change in circumstances. However, as noted by Dr B, it may have assisted him to identify subtle changes in Master A's condition and additional intervention opportunities. I note that Te Whatu Ora's AER identified that the absence of a PEWS chart was an issue in Master A's care at Oamaru Hospital.
113. NP Tomlin advised that the same level of nursing care should be provided to a patient during the transport journey as the patient had received during the immediately preceding time in the ED — eg, continuous monitoring with vital signs documented in the same way on the

same chart (which should have been a PEWS) — to allow the clinician to observe the trend. Master A’s vital signs were not monitored and documented continuously during the transport journey, and a PEWS chart was not used.

114. I acknowledge that it was RN D’s responsibility to ensure that the correct processes were being followed, such as using a PEWS chart during Master A’s ED presentation and transfer, as discussed below. The fact that Master A’s vital signs were not documented on a PEWS chart by the staff at Oamaru Hospital highlights that WDHSL did not have in place adequate processes to ensure that staff were documenting vital signs appropriately. I also note RN E’s comment that during the three months she had worked in the ED at the time, she was not orientated to the use of a PEWS chart, and she had never used PEWS.

Conclusion

115. I consider that the service provided to Master A by WDHSL was suboptimal in the following respects:
- A PEWS chart was not used to document Master A’s vital signs appropriately.
 - No guidance was in place for adequate objective observations or criteria to support decision-making on the mode of transfer to be used.
 - Communication between staff was inadequate.
116. While individual staff members hold some degree of responsibility for their failings (discussed in further detail below), I consider that the deficiencies outlined above indicate a service-level breakdown at WDHSL, for which it bears responsibility at an organisational level. Accordingly, I find that WDHSL failed to provide services to Master A with reasonable care and skill and breached Right 4(1) of the Code of Health and Disability Services Consumers’ Rights (the Code).

Lack of equipment — adverse comment

117. At the time of events, Oamaru Hospital did not stock 0.9% saline with 5% glucose. Oamaru Hospital now maintains a stock of paediatric fluids. Oamaru Hospital also did not have a portable oxygen saturation monitor with working paediatric probes.
118. Dr Peters stated that the absence of 0.9% saline with 5% dextrose solution was not a deviation from accepted practice, and the absence of dextrose saline did not affect the outcome.
119. NP Tomlin stated:
- “Sadly it is not unusual for equipment to be occasionally unavailable when working in a hospital and it requires alternative arrangements to be made e.g. borrowing from another department (paediatric ward, theatre suite, or using the ambulance equipment during a transfer).”

120. I acknowledge this statement. It is not possible to determine whether the unavailability of the regular portable oxygen saturation monitor contributed to the outcome. Nonetheless, it is unfortunate that the intended portable oxygen saturation monitor was not reading with paediatric probes, and that staff could not find another paediatric portable oxygen saturation monitor. It would be a reasonable expectation from staff that if equipment is available, it is in working order.
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Opinion: Dr B — breach

Treatment

121. Dr B rehydrated Master A with a fluid bolus of 10ml/kg intravenous 0.9% sodium chloride (normal saline) and used 24ml per hour of normal saline as maintenance fluid. The documented observations indicate that Master A was still under-perfused and still in shock just prior to departure in the ambulance.
122. My independent advisor, Dr Peters, considers that Dr B's initial awareness of the illness, and his ability to achieve intravenous access, undertake initial testing, and deliver initial treatment, were considerable achievements that not all rural doctors would be able to achieve adequately.
123. Dr Peters advised that after the initial treatment, there seems to have been a sense of relief that treatment had been started, without maintaining the sense of urgency for assessing and reassessing Master A's response to treatment. Dr Peters considers that there was considerable room for administering further fluid boluses, for redoing basic observations, and for rechecking blood glucose and delivering further boluses of dextrose. He advised that Dr B's fluid resuscitation regimen was inadequate, and he would have expected Dr B to have given larger volumes of fluid, and to have reassessed Master A's response frequently. Dr Peters said that there was some reassessment, but it was incomplete, and he considers this to have been a moderate deviation from accepted practice.
124. I accept this advice. It is apparent that Master A should have received further fluids, and Dr B has acknowledged that he may have missed the trend of a slowly worsening picture. He said that whilst being happy that after the initial treatment Master A was significantly better than he had been on arrival, if he had noticed the trend then it may have triggered him to give another fluid bolus or more glucose.

Decision to transfer Master A by ambulance

125. Dr B decided to transfer Master A to Hospital 2 by ambulance rather than by helicopter. Dr B explained his reasoning based on the time it would take to complete the transfer (as outlined at paragraph 42). RN E told HDC that she knew that Master A's transfer was urgent, and she agreed to accompany Master A because a helicopter was not an option. She said that she had completed a few transfers to Hospital 2, but none had involved the transfer of

a child. She stated that if she had known how ill Master A was, she would not have agreed to transfer him, but she felt reassured because he had improved after the antibiotics and fluids, and she had heard Dr B tell Mrs A that Master A would be “okay” during the transfer.

126. Dr B told HDC that he clarified several times whether RN E felt confident that she was suitably trained to handle Master A’s transfer. Dr B stated that RN D told him that RN E was confident that she was suitably trained to handle the transfer, and that she had done many international air transfers of sick patients and would be able to manage Master A’s condition. RN D told HDC that she cannot recall making this comment, and RN E told HDC that she did not have international air transfer experience.
127. Dr Peters advised that prior to Master A’s departure from Oamaru Hospital he was still under-perfused and still in shock. Dr Peters considers that Dr B’s decision to transport Master A to Hospital 2 by ambulance was a poor decision and resulted in a significant step down in care. Dr Peters stated that in terms of overall time to a higher level of care, there was not much to choose between road transport and helicopter retrieval, but that ignored the fact that once Master A left on his road journey with only a driver and a nurse who was inexperienced in the care of paediatric sepsis, it would be extremely difficult to provide adequate care.
128. Dr Peters stated that Master A would have been better served remaining in Oamaru Hospital under the resuscitative care of Dr B, while the helicopter team was mobilised with a retrieval team who could have assisted in stabilising Master A prior to transfer, and minimised the actual time of transit, during which it is very difficult to manage acute serious illness. Dr Peters considers that Dr B’s decision to transport Master A by ambulance was a moderate departure from the expected level of care.
129. As discussed above, Dr Peters also advised that the decision regarding the mode of transfer depended disproportionately on the SMO’s judgement regarding the stability of the patient, and the skill set of the attending clinical staff. Dr Peters stated that it was not helpful that Oamaru Hospital seems not to have had a clearly structured approach to safety of transfer based on vital signs and diagnosis, which may have led to a more restrictive approach to how Master A could have been transferred.
130. I accept this advice. It is difficult to manage acute serious illness in transit, and transferring Master A by air ambulance would have provided him with a shorter transit time.
131. However, I consider that various communication issues affected Dr B’s decision-making. First, Dr B believed that RN E was more experienced than she was. Secondly, it is unclear whether RN D and RN E informed Dr B that the paediatric portable oxygen saturation monitor was not working, and Dr B may not have known that RN D’s ambulance request was for a non-urgent patient transfer.
132. I also acknowledge Dr Peters’ point that Oamaru Hospital did not have a clear structure for modes of transport based on vital signs and diagnosis to assist Dr B in his decision-making.

Documentation

133. Dr Peters stated that Dr B's documentation was minimal for such a severe illness, but there is sufficient documentation to convey that Master A was seriously ill. Dr Peters advised that the documentation was a minor departure from the accepted standard of care. I accept this advice.

Conclusion

134. Dr B was the most senior clinician on site during Master A's presentation, and he bears the responsibility for significant clinical decisions.
135. In summary, I am critical of the following:
- Dr B did not reassess Master A's response to treatment (including re-doing basic observations and re-checking Master A's blood glucose) and, as a result, did not provide further treatment, including further fluid and dextrose.
 - Dr B's decision on the mode of transfer was inappropriate.
 - Dr B did not document sufficient information.
136. Taking into account these deficiencies, in my opinion Dr B did not provide services to Master A with reasonable care and skill. Accordingly, I find that Dr B breached Right 4(1)³⁴ of the Code.

Handover discussion with Hospital 2 — adverse comment

137. After providing initial treatment, Dr B telephoned the paediatric registrar at Hospital 2 to inform the registrar that Master A required transfer. Dr B recalls that he provided Master A's full clinical picture, including that Master A was floppy and had an elevated body temperature and a widespread petechial rash. Dr B stated that he would have informed the registrar of Master A's presenting observations and the treatment provided, as this is his normal practice for telephone handovers. Dr B remembers advising the registrar of what fluids were available in Oamaru Hospital and seeking advice about ongoing fluid management. Dr B cannot recall whether he said that he was concerned that Master A had meningococcal disease.
138. Dr C told HDC that it was suggested to Dr B that Master A receive a dextrose bolus. Dr C recalls that Dr B said that Oamaru Hospital did not have mixed paediatric fluids for the transfer, so he was told to use the fluid with the highest amount of dextrose that was available. Neither Dr B nor Dr C recorded their conversation.
139. Dr Peters advised that in the conversation with Hospital 2, he would have expected Dr B to have noted Master A's observations and overall condition, and this should have led to a discussion in which it became obvious that ICU care would be needed in Hospital 2, and that a high level of care would be needed during Master A's transfer. Dr Peters advised that Dr

³⁴ Right 4(1) states: "Every consumer has the right to have services provided with reasonable care and skill."

B's discussion with the paediatric service in Hospital 2 did not serve Dr B well and did not seem to create much alarm or an expectation of ICU level of care, and the referral should have led to an SMO-to-SMO discussion in which this could have been addressed.

140. Dr Peters advised that it is reasonable to expect such a discussion to raise the need for more aggressive resuscitation, the need for a higher level of care and minimisation of time in transport, and the need for a high level of care on arrival in Hospital 2. It is not possible to ascertain whether the reason this did not occur was because Dr B did not reflect the severity of Master A's condition to the Hospital 2 paediatric service accurately, or whether the recipient service failed to ask for specific observations of Master A's condition and did not advise on further treatment.
141. Because of the absence of any contemporaneous records documenting what Dr B and Dr C discussed, and the lack of clear recollections by Dr B and Dr C, I cannot establish why this conversation did not lead to Master A receiving a high level of care during transport, and immediate ICU care on arrival at Hospital 2. In my view, the handover call should have led to a discussion in which it became obvious that Master A required a high level of care during transport, and that ICU care would be required on arrival at Hospital 2.
142. I remind Dr B of the importance of thorough documentation.

Opinion: RN D — breach

Documentation of vital signs

143. During his presentation at Oamaru Hospital, Master A was monitored continuously electronically, and his vital signs were documented on three occasions (at triage, at 3am and at 3.20am).
144. My nursing advisor, NP Tomlin, outlined that in serious situations, usual practice is to document the readings of the oxygen saturation monitoring every five to 15 minutes. NP Tomlin said that PEWS charts have been used across New Zealand for some years now, and their use is common and standard practice. She advised that a PEWS chart is far superior to an ED chart as it provides more information to the clinicians involved regarding the severity of the condition of the paediatric patient and allows for parameters to be age appropriate. NP Tomlin stated that a PEWS chart provides a much clearer at-a-glance trend of the patient's condition by highlighting the PEWS score in colour. She said that a PEWS score cannot be calculated for Master A retrospectively because Master A's blood pressure reading is not documented and is necessary to calculate a PEWS total.
145. NP Tomlin advised that resuscitation is a team effort, and that as the senior nurse, it was RN D's responsibility to ensure that the correct documentation and processes were being followed. NP Tomlin pointed out gaps in the documentation of the required vital signs, for example Master A's blood pressure was not documented and his blood glucose level was

recorded only once (before fluid resuscitation) and not after treatment. NP Tomlin advised that the failure to document the trend of vital signs on a PEWS chart, as per the continuous oxygen saturation monitoring, was a severe departure from the expected level of care.

146. I accept this advice. However, in my view, as discussed above, RN D was not supported adequately by WDHSL processes regarding PEWS.

Hospital transfer form

147. RN D completed the ambulance request documentation and stated “?meningitis”, but did not document the other working diagnosis of meningococcal septicaemia, and did not tick any of the boxes for monitoring, oxygen or IV pole requirements.
148. NP Tomlin advised that the omission of details in the documentation was a minor departure from the usual standard of practice. I accept this advice.
149. NP Tomlin said that if the alternative working diagnosis had been included in the transfer form, it may have raised alarm bells with ambulance service communication staff, which may have led to a front-line ambulance being dispatched instead of the patient transfer service ambulance.

Documentation

150. During Master A’s two-hour presentation to Oamaru Hospital, other than co-signing the administration of medications and fluids, RN D did not document any contemporaneous notes in Master A’s records.³⁵ On arrival, Master A was triaged as category three, but after examination it was decided that his triage score was higher, but the score was not amended in his records. Dr B said that despite Master A’s triage code of three, he was acutely aware of how sick Master A was.
151. NP Tomlin advised that it is standard practice that nursing staff make contemporaneous notes during any ED attendance, and it is especially important in a serious illness or resuscitation case such as Master A’s. NP Tomlin said that even if RN E was the named or responsible nurse for Master A, the shift leader should oversee that documentation (of vital signs and the decision-making process and care provided) is recorded adequately. NP Tomlin advised that the documentation of nursing care was a moderate deviation from the expected standard of care.
152. I accept this advice. I remind RN D of the importance of thorough documentation.

Adult portable oxygen saturation monitor

153. RN E told HDC that the portable oxygen saturation monitor that was going to be taken was broken and was not reading with the paediatric probes. RN D looked for another paediatric portable oxygen saturation monitor but could not find one. Therefore, she and RN E tested

³⁵ RN E made a single entry in the notes.

the regular portable oxygen saturation monitor, which worked when it was kept still and held in place for some time.

154. Neither RN D nor RN E documented the type of portable oxygen saturation monitor (ear clip or finger probe) that RN E was taking on the transfer, and nor did they document whether it was tested on Master A.
155. NP Tomlin advised that an adult pulse oximeter with a sensor probe like an ear clip can be used effectively on a child, but that the finger of a young child under three to four years old would not be long enough to fit within the peg-like probe to reach the light sensor at the far end to get an accurate or consistent reading. NP Tomlin said that an ear clip would have been adequate and safe, but a finger probe designed for an adult was not adequate or safe. NP Tomlin advised that the oxygen saturation monitor should have been tested by attempting to use it concurrently with the hospital resuscitation monitoring to compare findings prior to leaving the hospital. NP Tomlin advised that neither registered nurse documented whether this was done, which was a moderate deviation from common practice.
156. I accept this advice.

Conclusion

157. In summary, I am critical that RN D did not undertake the following:
- Calculate Master A's PEWS score;
 - Communicate Master A's alternative working diagnosis of possible meningococcal septicaemia on the ambulance request form;
 - Document adequate contemporaneous notes in Master A's hospital records; and
 - Document the testing of the portable oxygen saturation monitor.
158. Taking into account these deficiencies cumulatively, in my opinion RN D did not provide services to Master A with reasonable care and skill. Accordingly, I find that RN D breached Right 4(1) of the Code.

Opinion: RN E — breach

159. RN E accompanied Master A in the ambulance during his transfer from Oamaru Hospital to Hospital 2. RN E took the regular portable oxygen saturation monitor (with adult probes) because the paediatric probes for the portable oxygen saturation monitor did not work. Dr B told HDC that he clarified several times whether RN E felt confident that she was suitably trained to handle Master A's transfer. Dr B stated that RN D told him that RN E was confident that she was suitably trained to handle the transfer, and that she had done many international air transfers of sick patients and would be able to manage Master A's

condition. In contrast, RN E told HDC that she did not have international transfer experience and did not know the basis for such a comment. RN D told HDC that she cannot recall making this comment.

160. Dr B stated that RN E was aware that if there were any changes in Master A's condition, she could telephone him immediately. He stated that the transfer pack contained 10% glucose and fluid for resuscitation if either were needed. RN E told HDC that although she does not usually transfer patients who have the potential to deteriorate, she knew she could telephone the ED for advice.
161. During the transfer, RN E checked on Master A throughout the journey. She recalled that Master A's rash was spreading, but he was alert and playing with his IV line, and his condition and breathing did not change. RN E did not telephone Dr B or Hospital 2 to inform either that Master A's rash was spreading. RN E told HDC that normally she would document these observations on the patient transfer form, but it was not included in the paperwork she had.
162. The ambulance stopped half-way through the journey, and RN E attempted to take Master A's observations. However, the oximeter did not work, and she could not use the ambulance oxygen saturation monitor because it was for adults. RN E stated that she attempted to get a reading a few times and discussed the situation with the ambulance driver, and they decided to keep driving to Hospital 2. RN E said that she took Master A's respiratory rate and temperature manually (with a watch and a thermometer) and wrote these on the photocopied notes she had with her. She stated that for the remainder of the journey she continued regular checks of Master A, and she did not notice any change in his physical condition.
163. NP Tomlin advised that it is common practice to assume that the same level of nursing care would be provided to the patient during the journey as they had received during the immediate preceding time in ED, for example, monitoring the patient's vital signs continuously and to document them in the same way and on the same chart (which in this case should have been a PEWS chart, with observations recorded at five- to fifteen-minute intervals) to allow the clinicians to observe the trend and potentially changes in level of acuity — ie, whether the patient is getting more sick, or improving, or remaining stable. In response to the provisional opinion, RN E noted that during her three months of work at the ED at the relevant time she never used PEWS and was not orientated to the use of a PEWS chart. She stated that the orientation she had was that any patient who is transferred by road should be stable enough for the entire journey, and the transfer nurse only needed to stop halfway during the journey to do observations. She said her understanding was that if the doctor required continuous monitoring, this had to be ordered specifically and discussed with the transfer nurse — which did not happen in Master A's case.
164. In addition, she stated that she was given an adult finger probe to take during the ambulance transfer, as a child finger probe was not available, and continuous monitoring became impossible with the adult finger probe.

165. RN E stated that for the remainder of the journey she continued regular checks of Master A, and she did not notice any change in his physical condition. However, in her contemporaneous notes she documented that she did “on and off” visual checks and that Mrs A kept an eye on Master A throughout the journey.
166. RN E stated that when they arrived at Hospital 2, Master A was alert but floppy with a rash, before becoming lethargic with pale lips.
167. NP Tomlin advised that she asked a selection of her peers, and all agreed that if concerns had developed, such as further rash or a drop in blood sugar levels, they would have contacted the base doctor or telephoned or radioed the receiving hospital once they were 20 minutes or less away from the hospital, so that the patient could be met by the paediatric team within ED.
168. NP Tomlin advised that RN E’s care of Master A during the transfer was a severe departure from the expected level of care during such a transfer of a seriously unwell baby.
169. I accept this advice. Although RN E asserts that Master A did not deteriorate until they arrived at Hospital 2, she also states that she noticed the rash spreading. This suggests instead that RN E did not appreciate the significance of the rash relative to his condition. RN E did not take Master A’s observations regularly throughout the transfer and document them on a PEWS chart, but she was aware that his condition was changing with the rash spreading, and this should have prompted a call to the receiving hospital at least.

Adult portable oxygen saturation monitor

170. RN E told HDC that the portable oxygen saturation monitor that was going to be taken was broken and was not reading with the paediatric probes. RN D looked for another paediatric portable oxygen saturation monitor but could not find one. Therefore, she and RN E tested the regular portable oxygen saturation monitor, which worked when it was kept still and held in place for some time.
171. Neither RN D nor RN E documented the type of portable oxygen saturation monitor (ear clip or finger probe) that RN E was taking on the transfer, and nor did they document whether it was tested on Master A.
172. NP Tomlin advised that an adult pulse oximeter with a sensor probe like an ear clip can be used effectively on a child, but with a young child under three to four years old, their finger would not be long enough to fit within the peg-like probe to reach the light sensor at the far end to get an accurate or consistent reading. NP Tomlin said that an ear clip would be adequate and safe, but a finger probe designed for an adult would not be adequate or safe. NP Tomlin advised that prior to leaving the hospital, the device should have been tested by attempting to use it concurrently with the hospital resuscitation monitoring to compare the findings. She said that neither registered nurse documented whether this was done, which was a moderate deviation from common practice.
173. I accept this advice.

Conclusion

174. I acknowledge that at the time of events RN E had worked in New Zealand for only three months. Notwithstanding this, I consider that RN E did not provide Master A with reasonable care and skill during the transfer, as she did not:
- Monitor Master A’s vital signs every five to fifteen minutes and document Master A’s vital signs on a PEWS chart or any other chart in order to identify any deterioration in his condition;
 - Recognise that the spread of Master A’s rash was a worsening sign of his condition and seek support and direction from Dr B or telephone Hospital 2 to inform staff of any changes during the transfer; or
 - Document the testing of the portable oxygen saturation monitor.
175. Accordingly, for the reasons set out above, I conclude that RN E breached Right 4(1) of the Code.³⁶

Opinion: Dr C — educational comment

176. Dr B telephoned Dr C at Hospital 2 to inform Dr C that Master A required transfer. Dr B recalls that he provided Master A’s full clinical picture, including that Master A was floppy and had an elevated body temperature and a widespread petechial rash. Dr B stated that he would have informed the registrar of Master A’s presenting observations and the treatment provided, as this was his normal practice for telephone handovers. He remembers advising the registrar about the fluids that were available in Oamaru Hospital and seeking advice about ongoing fluid management. Dr B cannot recall whether he said that he was concerned that Master A had meningococcal disease.
177. Dr C told HDC that it was suggested to Dr B that Master A receive a dextrose bolus. Dr C recalls that Dr B said that Oamaru Hospital did not have a paediatric mix of fluids for the transfer, and he was told to use the fluid with the highest amount of dextrose that was available. Neither Dr B nor Dr C recorded their conversation.
178. Dr Peters advised that in the conversation with Hospital 2, he would have expected Dr B to have noted Master A’s observations and overall condition, and this should have led to a discussion during which it became obvious that a high level of care would be needed during Master A’s transfer, and that ICU care would be needed in Hospital 2. Dr Peters advised that Dr B’s discussion with the paediatric service in Hospital 2 did not serve Master A well, as it did not seem to create much alarm (which may have led to asking Dr B to review his care),

³⁶ Right 4(1) provides: “Every consumer has the right to have services provided with reasonable care and skill.”

or the expectation of ICU level of care, and the referral should have led to an SMO-to-SMO discussion in which this could have been addressed.

179. Dr Peters advised that it is reasonable to expect such a discussion to raise the need for more aggressive resuscitation, the need for a higher level of care and minimisation of time in transport, and the need for a high level of care on arrival in Hospital 2. It is not possible to ascertain that this did not occur because Dr B did not reflect the severity of Master A's condition to the Hospital 2 paediatric service accurately, or because the recipient service failed to ask for specific observations of Master A's condition and did not advise further treatment. In response to the provisional opinion, Dr C stated that it is usual practice to ask for specific observations for all patients for whom a referral is being received. Dr C noted that at the time the referral was received, appropriate treatment had already been started, including fluid resuscitation and antibiotics, and further treatment was advised, including a dextrose bolus and maintenance fluid for transfer.
180. Owing to the absence of any contemporaneous records documenting the information that was discussed, and the lack of clear recollections of Dr B and Dr C, I cannot establish why this conversation did not lead to the decision that Master A required a high level of care during transport, and ICU care on arrival. I remind Dr C of the importance of thorough documentation.
181. Dr C accepted the referral of Master A but did not inform the ED of his impending arrival. Dr C said that usual practice is to inform the ED of patients who have been accepted for referral. However, Te Whatu Ora documented that Dr C told the ED Associate Charge Nurse Manager that Dr C had forgotten to pass on that Master A was expected. As a result, Master A's arrival at ED was unexpected. I consider that Dr C should have followed the usual practice and informed the ED of Master A's arrival, to support continuity of care. I remind Dr C of the importance of communication.
-

Changes made

182. WDHSL stated that it has taken the oversights in care provided to Master A very seriously and has worked hard to improve its systems and processes as follows:
- It maintains a stock of paediatric fluids (0.9% saline with 5% glucose).
 - It coordinated with the ambulance service to deliver further training to Oamaru staff on what information to provide when requesting an ambulance, and guidance on when to call a road ambulance and when to request urgent retrieval by helicopter.
 - It provided a paediatric study day for staff members.
 - It delivered training to staff members regarding the use of observation equipment during transfer.

- It improved the patient transfer form and devised an ambulance transfer flowchart.
- It re-trained all staff members on infection control practices and PPE.
- It introduced increased structured clinical governance and management through monthly morbidity and mortality meetings that report to clinical governance, with independent involvement in clinical governance from the DHB and a local Oamaru GP.
- It reduced its reliance on, and use of, locum doctors.
- It introduced mandatory competencies for transfer nurses.

183. The DHB told HDC that it undertook the following:

- Worked on communication between senior medical officer teams at Oamaru Hospital and Hospital 2, including an escalation protocol to ensure that staff can contact more senior members of the team to facilitate safe and timely transfer if it is not readily available.
- Devised a flow chart for emergency management of paediatric patients, which outlines that the paediatric senior medical officer at Hospital 2 will be contacted for advice about acutely unwell children and/or those who are deteriorating (including triage 1 and 2 children).
- An experienced paediatrician will assist regional centres in making decisions regarding mode of transfer.
- It introduced the use of PEWS charts in outlying regional centres, including Oamaru Hospital.
- It introduced the use of electronic progress notes to document conversations between referrers and the child health team in Hospital 2.
- It uses a written resident medical officer handover sheet for patients admitted to the inpatient service.
- It implemented a review of the ED tracking screen for paediatric patients at handover each morning.

184. Dr B told HDC that he:

- Ensures that he speaks directly to the paediatrics senior medical officer to ensure that he understands what the protocols are;
- Factors into his decision-making the severity of the case and the management capability of the road ambulance versus the air ambulance;
- Completed and passed the “New Zealand Resuscitation Council (NZRC) CORE Advanced Rescuer Course (Certificate of Resuscitation and Emergency Care)”, “Emergency Trauma Management Course” and “Advanced Paediatric Life Support Course” (done previously in 2015);

- Completed the “Advanced Emergency Medicine Ultrasound Course (PoCUS)” through the Australian Institute of Ultrasound;
- Attended multiple simulation days for adult and paediatric resuscitation scenarios; and
- Enrolled in the Australasian College of Emergency Medicine advanced diploma.

185. WDHSL told HDC that RN D was asked to complete the following HealthLearn modules relating to paediatric management:

- Paediatric EWS;
- Paediatric fluid and electrolyte management; and
- Nursing transfer competency assessment.

186. In response to the provisional opinion, RN D advised that she has completed the above training, and she provided evidence of this to HDC.

187. WDHSL told HDC that RN E has completed a nursing transfer competency assessment and has been asked to complete the following HealthLearn modules relating to paediatric management:

- Paediatric EWS; and
- Paediatric fluid and electrolyte management.

188. The ambulance service has offered to run an information session at Oamaru Hospital to supplement memos about the Patient Transfer Service, in particular the parameters of service delivery and where responsibilities lie.

Recommendations

189. In response to the provisional recommendations, WDHSL provided HDC with the following information:

- a) Training on the information to be provided to the ambulance service, and when it is appropriate to call a road ambulance versus urgent retrieval by helicopter, has been incorporated into induction materials for all new emergency nursing staff. Copies of the orientation checklist and education competencies for ED were provided to HDC.
- b) A flowchart that outlines when an urgent retrieval or transfer of a patient with severe acuity is required is located in the area where an ambulance is called. The flowchart was provided to HDC. In addition, WDHSL told HDC that a portal is now available for ordering ambulances, and it is training staff on its use. WDHSL told HDC that this will replace the need for a scan to the ambulance service, and that all the information required will be entered via the portal. WDHSL stated that both the hospital and ambulance service staff

enter timely information into the portal, which both organisations can then see, and that both will be able to see information about the request for an ambulance, whether an ambulance can attend, and how long it will be, which will allow the hospital staff to make a decision on transporting the patient. WDHSL stated that this information will also be available electronically so that the request and decisions made will be documented. WDHSL said that information about the portal will be added to the flowchart.

- c) The Clinical Director sent an email to remind both nursing and medical staff that documentation regarding any direction of an ambulance is to be included in the progress notes and on the discharge form.
- d) On 29 May 2023, WDHSL undertook an audit of all paediatric monitoring equipment, including portable monitoring units, paediatric blood pressure cuffs, and paediatric probes, including oxygen saturation sensors and thermometers. The audit was provided to HDC and showed that the equipment was compliant and functioning. WDHSL told HDC that currently it conducts daily checks of all monitoring equipment in ED to ensure that it is functional. WDHSL provided HDC with the monitoring checklist.
- e) WDHSL gave consideration to amending the paediatric patient transfer policy to include that an SMO-to-SMO discussion should occur prior to transfer. WDHSL told HDC that while this would be the ideal situation, it will not always be possible. WDHSL noted that it is outside its ability to ensure that a paediatric SMO at one of the larger public hospitals would be available.

190. I acknowledge the changes made by WDHSL and note that it has taken seriously the responsibility it has to provide all staff, but particularly newly arrived staff, the necessary equipment and robust guidance to assist their decision-making. I recommend that in addition, WDHSL:

- a) Adapt the PEWS chart to include space for an initial or signature of the person responsible for communicating the PEWS to the reviewing clinician. In response to my recommendation in the provisional opinion, WDHSL told HDC that recently Te Tāhū Hauora|Health Quality & Safety Commission (HQSC) instigated a working party to implement nationwide PEWS charts, and WDHSL was involved in the working group through Te Whatu Ora to implement these at WDHSL. Part of this is a change to escalation, and these forms will be introduced at WDHSL as soon as they are printed. WDHSL said that staff have been trained in their use and are utilising the resource available from the HQSC. Evidence that the above has been done is to be sent to HDC within six months of the date of this report.
- b) Provide HDC with a copy of the flowchart outlined in paragraph 189(b) once updated. An update on progress of the flowchart, or a copy of the completed flowchart, is to be provided to HDC within six months of the date of this report.
- c) Undertake an audit of paediatric monitoring equipment available for all potential patient transfers, including for all ages and acuity, and the functionality of the equipment. While I acknowledge the audit outlined above at paragraph 189(d), I note

that this was an audit of paediatric monitoring equipment in the ED as opposed to equipment available for transfer. Evidence that this has been done is to be sent to HDC within three months of the date of this report.

191. As part of its response to the provisional opinion, WDHSL noted Dr Peters' independent advice, which acknowledged the impact on Master A's care arising from an absence of a National Transfer Desk. Dr Peters noted that the lack of such a transfer desk has been an ongoing issue for rural hospitals, and he commented on the critical difference such a service would have for patient outcomes. WDHSL told HDC that it strongly supports and endorses Dr Peters' comments on the urgent need to establish a National Transfer Desk. I recommend that Te Whatu Ora consider this suggestion and report back to HDC on the outcome of its consideration, within six months of the date of this report.
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Follow-up actions

192. A copy of this report with details identifying the parties removed, except Waitaki District Health Service Limited, Oamaru Hospital, and the independent advisors on this case, will be sent to the Medical Council of New Zealand, and it will be advised of Dr B's name.
193. A copy of this report with details identifying the parties removed, except Waitaki District Health Service Limited, Oamaru Hospital, and the independent advisors on this case, will be sent to the Nursing Council of New Zealand, and it will be advised of RN D's and RN E's names.
194. A copy of this report with details identifying the parties removed, except Waitaki District Health Service Limited, Oamaru Hospital, and the independent advisors on this case, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent clinical advice to Commissioner

The following independent advice was obtained from Dr Johan Peters:

“I have been asked to provide an opinion to the Commissioner on the above case. I have read and agree to follow the Commissioner’s Guidelines for Independent Advisors. I am not aware of any conflicts of interest.

I graduated MB, ChB from the University of Otago in 1983, and hold Fellowships in general practice and rural hospital medicine (FRNZCGP and FDRHM), a diploma in Obstetrics (Auckland) and associate Fellowship from the Australasian College of medical administrators. I am currently employed at Hauora Tairāwhiti in Gisborne, working clinically as a senior medical officer in the emergency department, and as clinical director for surgical and emergency services. I have worked for many years in secondary and rural hospitals in New Zealand, Australia, and the Pacific. I am currently with ATLS, ACLS7, and APLS.

I have been asked to comment on Oamaru Hospital

1. Whether it was acceptable to not have stocked 0.9% saline with 5% dextrose glucose at the time of these events.
2. The adequacy of the process in place at Oamaru Hospital for patient transfers to bigger hospitals via ambulance.
3. The adequacy of the documentation by Oamaru Hospital staff.
4. Any other comments you may wish to make on the care provided by Oamaru Hospital.

[Dr B]

1. The adequacy of care provided to [Master A] when he presented to the Oamaru Hospital including the adequacy of the fluid resuscitation given.
2. The adequacy of the handover from Oamaru Hospital to [Hospital 2] at the time of discussing the referral with [Hospital 2] staff.
3. The adequacy of the decision making in regards to organising the [ambulance service] transfer for [Master A].
4. The adequacy of the communication provided to [Mrs A] by [Dr B] about [Master A’s] condition and potential treatment options.
5. The adequacy of [Dr B’s] documentation.
6. Any other comments you may wish to make on the care provided to [Master A] by [Dr B].

I have been provided with the following information.

1. Letter of complaint 11 May 2020 and attachments.
2. Oamaru Hospital response 23 June 2020 and attachments.
3. [The DHB's] response 1 July 2020 and attachments, including adverse event report.
4. [The ambulance service's] response 23 July 2020 and attachments.
5. [Dr B's] response 26 March 2021
6. Clinical records from Oamaru Hospital.
7. Clinical records from [the children's hospital].

I have not viewed any other records, nor have I communicated with any parties to this complaint.

I have guided my clinical comments by 'Advanced Paediatric Life Support' sixth edition, referred to as APLS, a widely used text used in the APLS course, and the 'Starship Clinical Guidelines' updated in March 2019. APLS is a scenario based course, which New Zealand practitioners who are not necessarily paediatric specialists, attend in order to maintain competence, and standardize the care of the acutely ill child. Starship guidelines should be thought of as the standard of care that applies to New Zealand practitioners involved in the care of children.

I would like to give a summary of the timeline of [Master A's] illness, as I have seen recorded in the documentation provided to me.

[2019] [Master A] noted to be ill during the day. Vomit and fever at 1600.

[Following day]

0205 [Mrs A] had noted a rash during a nappy change, and presented to Oamaru Hospital emergency department. Triage 3 implying a need to be seen within 30 minutes. Immediately called [Dr B], assessment and treatment commenced within minutes.

Temp 39.0 heart rate 209, respiratory rate 50, oxygen saturation 96 room air, blood sugar 3.2. Child quiet and floppy and widespread non blanching rash.

0240 ambulance request faxed to [the ambulance service].

0250 130ml 0.9% saline given (10ml/kg)

0300 temp 38.8, HR 191, RR 47, O₂ sat 100 on room air, GCS 15.

0305 ceftriaxone 650mg given [50mg/kg].

0305 phone consultation with paediatric registrar at [Hospital 2]

0320 26ml 10% dextrose, 2ml/kg given, with 24 ml n/saline.

0325 temp 38.8, HR 220, RR 68, O₂ 100.

0341 Ambulance arrives Oamaru Hospital.

0401 Ambulance departs Oamaru Hospital.

0528 Ambulance arrival at [Hospital 2] ED.

0540 [Hospital 2] ED, temp 38.5, HR 207, capillary return >5s RR 2

0605 bp 83/46, blood sugar unrecordable [low] and oxygen saturation unrecordable.

AVPU scale (response range from alert to voice response to pain response to unresponsive) is U, PEWS scale >8.

HDC questions regarding Oamaru Hospital.

1. Absence of 0.9% saline 5% dextrose solution. This is a maintenance intravenous fluid, and the issue for [Master A] was that he did not improve in response to initial bolus doses of resuscitative fluids, and this was not recognized. The use of dextrose saline as a resuscitative solution has risks of its own, and its absence in this situation did not affect the outcome. I do not regard this as a deviation from accepted practice.
2. The process in place at Oamaru Hospital for ambulance transfer of patients required accurate triage scoring. [Master A] was scored as 3, but in fact was at least 2 (Australasian triage scales: circulatory compromise, suspected sepsis, decreased responsiveness). It appears from the documentation that is available to me that the decision regarding the mode of transfer depended disproportionately on [Dr B's] judgment regarding the stability of the patient, and the skill set of the attending clinical staff. There appeared to be little use of triage scoring, PEWS scoring, or use of the observations reflecting the lack of stability of the patient, to make an objective judgement regarding the best mode of transport for [Master A]. I consider this a moderate departure from accepted practice. I would expect that in response to [Master A's] death that a system requiring objective stratification of the patient's condition is adopted for patient transfers from Oamaru, in conjunction with [another public hospital], and [the ambulance service].
3. Regarding the adequacy of documentation of Oamaru staff of [Master A's] condition, I note that there are only 3 measurements of vital signs during his stay in ED. This may reflect that there was continuous electronic monitoring, and that this was observed during his stay, but I would have at least expected a set of observations following treatment, and noting a lack of response to treatment, for there to be further interventions and further observations. Consideration could be given to the general workload in the department, but there were several nurses present, and this infant was shocked, septic, and critically ill, and I would consider it

highly likely that [Master A] was the most critically ill patient in the department at the time. A usual standard of care would include a set of observations following the first intervention, followed by further aggressive treatment, or normalization of his physiological observations. This should be considered a moderate departure of care.

4. Other comments regarding Oamaru Hospital care. It should be remembered that this child presented with a rapidly progressive severe illness with a high risk of death from the outset, to a non specialist department, that did well in initially recognising the illness as meningococcal sepsis, though discharge states meningitis, which is less severe, achieving intravenous access rapidly, performing appropriate blood testing, providing appropriate antibiotic treatment, but suboptimal fluid resuscitative treatment. It should be noted that the initial iv access and recognition is probably ahead of what could be expected in most small rural centres. However, there was a lack of recognition that the child remained shocked, that there was inadequate recognition and documentation of a lack of response to treatment, and that the decision regarding mode of transfer was not supported by adequate objective observations or criteria for appropriate transfer, and this should be considered a moderate departure from the standard of care.

[Dr B's] care

1. [Dr B] recognised that [Master A] was seriously ill, although he was not explicit in differentiating meningococcal sepsis from meningitis, this could have contributed to underestimating the seriousness of [Master A's] illness. [Master A's] antibiotic management was appropriate. Starship guidelines indicate cefotaxime as an initial antibiotic, but ceftriaxone is a reasonable alternative, and is included in guidelines as an alternative. His fluid resuscitation regime was inadequate. Starship guidelines under sepsis clearly state 'Push fluid boluses of 20ml/kg 0.9% saline or Plasma-lyte148 until heart rate/perfusion improves/shock reversed. May need 40–60ml/kg in the first 30 minutes, then 4% albumen or blood products'. Similarly the APLS manual recommends, under shock caused by sepsis 'initial resuscitation of hypovolaemic shock begins with boluses of up to 20ml/kg crystalloid over 5–10 minutes titrated to reversing hypotension, increasing urine output, and attaining normal capillary refill, peripheral pulses, and level of consciousness'. It is reasonable to have expected [Dr B] to have given larger volumes of fluid, and frequently reassessed [Master A's] response. The documented observations indicate that [Master A] was still underperfused, and therefore still in shock just prior to departure in the ambulance.
2. Regarding the handover from [Dr B] to the paediatric registrar in [Hospital 2] I am unable to comment, as there are no records of this conversation, and normally no contemporaneous record would be made. However I would have expected [Dr B] to have noted the observations and overall condition, and this should have led to a discussion where it became obvious that ICU care was going to be needed in [Hospital 2], and that a high level of care during the transport of [Master A] would be needed. It is reasonable to expect to arise from such a discussion the need for

more aggressive resuscitation, the need for a higher level of care and minimisation of time in transport, and the need for a high level of care on arrival in [Hospital 2]. It is not possible to ascertain that this did not occur because [Dr B] did not accurately reflect the severity of [Master A's] condition to the [Hospital 2] paediatric service, or if the recipient service failed to ask for specific observations of [Master A's] condition, and did not advise further treatment.

3. Regarding the decision to transport [Master A] to [Hospital 2] by ambulance, this was a poor decision. It is correct that in terms of overall time to a higher level of care that there was not much to choose between road transport and helicopter retrieval, but this ignores the fact that once [Master A] left on his road journey with only a driver and nurse inexperienced in the care of paediatric sepsis, it was going to be extremely difficult to provide adequate care. He would have been better served by remaining in Oamaru under the resuscitative care of [Dr B], while the helicopter team was mobilized with a retrieval team which could have assisted in stabilizing [Master A] prior to transfer, and minimized the actual time of transit which is a very difficult place to manage acute serious illness. I would consider this to be a moderate departure from the expected level of care.
4. As far as [Dr B's] communication with [Mrs A] is concerned I am unable to comment, as there is very little documentation. However, we are dealing with a small team in a highly pressured situation, and I would not necessarily regard the documentation of such communication as the highest priority, and I would expect it to be very difficult for all the participants to remember accurately what was and what wasn't communicated at the time. It seems from subsequent documentation that [Mrs A] did not fully grasp the severity of the situation, but this could be due to multiple causes, and with the best of communication it can take time for the reality of the situation to sink in. No comment on standard of care.
5. [Dr B's] documentation was minimal for such a severe illness, however, there is sufficient information in the documentation that exists to be able to say that [Master A] was seriously ill. This is a minor departure from expected care.
6. The remaining comment would be that [Dr B] was faced with what is a nightmare scenario for a lone generalist rural doctor, a septic, shocked, acidotic infant in a peripheral hospital. It is worth reiterating that the initial awareness of the illness, and the ability to achieve intravenous access, to do initial testing, and to deliver initial treatment, are considerable achievements, that not all rural doctors would be able to adequately achieve. However, from there on, there seems to have been a sense of relief that treatment was started, without the sense of urgency of assessing and re assessing response to treatment, as there was considerable room for further fluid boluses, for re doing basic observations, for rechecking blood glucose, and delivering further boluses of dextrose. It is understandable that [Dr B] would have wanted to get [Master A] moving towards [Hospital 2] as soon as possible but putting him in an ambulance where essentially no further care was possible was a

poor one, and resulted in a significant step down in care. It should also be noted, however, that [Dr B's] discussion with the paediatric service in [Hospital 2] did not serve him well, it did not seem to create much alarm that could lead to asking [Dr B] to review his care, or the expectation of ICU level of care, and the referral should have led to an SMO to SMO discussion where this could have been addressed. It is also not helpful that there did not seem to be a clearly structured approach to safety of transfer based on vital signs and diagnosis, at Oamaru Hospital, which might have led to a more restrictive approach to how [Master A] might have been transferred. We should also not forget that [Master A] was unfortunate enough to have a rapidly progressive and unforgiving disease that has a high level of mortality (probably about 25%) even with the highest level of care.

Unfortunately it is not possible to download electronic copies of the guidelines and texts quoted, so I have attached paper copies of the below references, highlighting the most appropriate sections.

1. Starship guidelines intravenous fluids.
2. Starship guidelines sepsis.
3. ACEM guidelines in the implementation of triage guideline in emergency departments
4. APLS section 6.4 approach to the child in shock.
5. APLS section 6.8 approach to the child with septic shock.

Johan Peters”

The following further advice was obtained from Dr Peters, dated 10 January 2022:

“Regarding issues:

1. I would consider this a technicality. Meningococcal sepsis was the diagnosis, rather than meningitis, it does have implications for prognosis, but in terms of initial treatment for sepsis vs meningitis, they are the same. I consider this a minor issue.
2. Regarding the reassessment of response to treatment, there was some reassessment, but it was incomplete. I regard this as a moderate deviation from practice. [Dr B's] peers would expect frequent reassessments, and recording of observations, and acting in response to these. The frequency of observations and required responses are laid out both in the Starship guidelines, available on line, and APLS guidelines. It would be useful for these guidelines to be made available, perhaps in printed form, in the department, as part of resuscitation trolleys. Perhaps a 'guide for rural locums to Oamaru ED' could be produced locally, which could make this expectation explicit, and make the guidelines available as part of the document. I am also not aware if Oamaru uses a EWS (early warning system) for its patients; such a system, which is available with corrected physiological parameters for the paediatric age groups, has a requirement for re-

checking observations if they are found to be out of the normal range, and to escalate care. If such a system is not in use, it might be useful to encourage its adoption.

3. I also consider that when [Dr B] referred the patient to the paediatric service at [Hospital 2], there was a reasonable expectation that the receiving service asked for an up to date set of observations, and if still outside the normal for age that the specialist paediatric service at that stage gave an instruction regarding further resuscitation and a time interval for further review. I suspect a review has been done by the receiving service, but it may be useful to encourage the [Hospital 2] paediatric service to develop a shared document with its referring rural hospitals, which stipulates minimum information required, and requires a recommendation from [Hospital 2] regarding further acute resuscitative actions or mode of transport.

I hope that this helps, Johan”

The following further advice was obtained from Dr Peters dated 16 October 2022:

“Thank you for giving me the opportunity to review Oamaru Hospital’s, and [Dr B’s] responses to my report. Regarding your questions:

1. Triage scoring. I accept that while the initial triage score was 3, the patient was treated within the parameters required of a patient with a triage score of 2 which would have been the correct score. This issue therefore did not affect the outcome for this patient.

2. Monitoring. I accept that this patient was electronically continuously monitored, and this was information not available to me in the documentation that I initially received, although my report alludes to the possibility of this. This to some extent ameliorates my criticism of a lack of monitoring, however, I would still have expected a formal set of written observations following resuscitative interventions, such as fluid boluses.

3. Lack of PEWS scoring is noted. This is a system of recorded physiological observations, which when deviating from an agreed standard of normal for that patient, requires, and empowers, an escalation of care. The PEWS system was not used in this situation, and its use in New Zealand emergency departments has to be said to be variable, and that this person was already receiving the maximal seniority of treatment available in Oamaru at that time. However, it could have led to a review of resuscitation management at that point.

Regarding [Dr B’s] response, I note that he accepts that in future, he would use the Starship Guidelines, to more aggressively resuscitate this patient, and that he would request an ICU helicopter transfer, in order to minimise the period of exposure to minimal medical support for this patient. [Dr B] and myself appear to be agreed in these issues, and that they are the critical decision making points, and also that this is where the required learning and reflection has already occurred.

In order to assist the HDC I would like to elaborate on substantial systems contexts within which [Dr B] and Oamaru Hospital were operating, which are:

1. In New Zealand, we do not have a centralised and standardised 'transfer desk'. Each region has its own practices and systems, within localities, and often with each medical specialty, with transfer requirements and capacities widely variable. These are often not explicit within organisations, so that locum doctors in particular, when faced with a transfer, are often led to multiple phone calls, and uncertainty with what degree of assertiveness they can pursue demands for transfers. It is my experience, working in both my own hospital and other small hospitals, that this is a repeated cause of poor patient outcomes. It is hoped that with a national health authority, Te Whatu Ora, this is an issue they are in a position to address, and it has been brought to their attention.

2. While [Dr B] had responsibility for this patient, once a referral by phone to [Hospital 2] paediatric service, it is expected that the receiving service would offer some sort of advice on the immediate treatment of the patient, and participate at least in equal part, in the decision regarding the mode of transfer. It is unlikely that either participant in that phone discussion will remember exactly what was said, but it appears to me, from the outcome of that discussion, that [Dr B] was not adequately supported in either his clinical supportive care for the patient, or the mode of transfer decision. It is also accepted from the [Hospital 2] review of this patient's care, that [Hospital 2] is aware of this, and have reviewed their practice. I referred to this issue in my initial report.

3. I accept that [Dr B] was in a situation of significant overload, that he was responsible for the immediate resuscitation and treatment of his patient, in a highly charged emotional context of a seriously ill young child and family, with a very small team of support nurses, whose experience and knowledge levels he could not know, while also arranging a transfer in unfamiliar circumstances. However, this is also at the core of rural hospital training, as a specialty.

I provide the above as a further context to my report, without altering that there was a deviation in standard of care regarding the level of resuscitation provided, and the decision regarding the mode of transfer, and the level of medical care during transfer that this implied. I also note that the [Hospital 2] report, the Oamaru Hospital report, and [Dr B's] own reflections, come to much the same conclusions, and this suggests that the required learning and practice changes have occurred.

Lastly I would point out that substantial time has elapsed in providing all parties with a decision, and that this is in itself very difficult for all parties involved, in particular, the mother of this unfortunate child, as well as all the health providers involved. It would be helpful to all parties to expedite the HDC decision.

Many thanks for giving me an opportunity to respond,

Dr Johan Peters''

Appendix B: Independent clinical advice to Commissioner

The following independent advice was obtained from NP Fay Tomlin, dated 18 November 2022:

“I have been asked to provide an opinion to the Commissioner on case number 20HDC00826. I have read and agree to follow the Guidelines for Independent Advisors (Office of the Health and Disability Commissioner, 2019). I am not aware of any conflicts of interest.

I am a Nurse Practitioner (NP) working in a rural New Zealand Emergency Department since 2016, I previously worked in a Primary Care clinic 2014–16 and as a Nurse Manager of an Accident and Medical department in New Zealand (2012–14). Prior to emigrating I was Matron of a large Urgent Care Centre in the UK from 2006–2012. My qualifications include a MSc in Advanced Clinical Healthcare Practice, Bachelor (Hons) of Nursing and Bachelor (Hons) of Midwifery and various post-graduate diplomas and relevant advanced clinical skills courses. I have written numerous guidelines and policies around the subject area of triage, vital signs and clinical observations within an urgent, or unscheduled and the emergency care environment. I spent 7 years serving in the UK military as a flight nurse, this regularly included transfer by land (road ambulance) as part of the patient journey between hospitals. I regularly mentor and provide clinical supervision to Nurse Practitioner Interns, post-graduate Registered Nurses and undergraduate student nurses in a variety of clinical settings, including emergency departments.

I believe I have the relevant experience and qualifications to be able to provide my opinion and compile a report on the nursing care provided to [Master A]. I am aware of hindsight bias and endeavour to review the facts and base my opinions on those facts and clearly articulate and reason how I reach my opinions.

My instructions from the Commissioner are as follows:

Review the documentation and advise whether you consider the nursing care provided to [Master A] was reasonable in the circumstances, and why.

RN D

1. The adequacy of the care provided to [Master A] in particular, please comment on whether you would have expected any further action in relation to the calculation of [Master A's] PEWS.
2. The adequacy of [RN D's] ambulance transfer request.
3. The adequacy of [RN D's] decision that [RN E] would accompany [Master A] in the transfer ambulance. Please consider [RN E's] qualifications and experience.
4. The adequacy of [RN D's] decision that [RN E] take [Master A's] observations with an adult portable oxygen machine.

5. Any matters in regards to the care [RN D] provided that you consider warrant comment.

[RN E]

Whether you would have expected any further actions from [RN E] whilst she was in the ambulance with [Master A].

Any other matters in regards to the care [RN E] provided that you consider warrant comment

For each question, advise:

What is the standard of care/accepted practice?

- a) If there has been a departure from the standard of care or accepted practice, how significant a departure (mild, moderate or severe) do you consider this to be?
- b) How would it be reviewed by your peers?
- c) Recommendations for improvement that may help to prevent a similar occurrence in the future.

Sources of information

1. Letter of complaint dated 11 May 2020 and attachments
2. Oamaru Hospital's response dated 23 June 2020 and attachment
3. Clinical records from Oamaru Hospital
4. Waitaki District Health Services response dated 3 August 2022
5. [Ambulance service's] response dated 23 July 2020
6. [Dr B's] response dated 28 September 2022

Brief factual summary

[In] 2019, [Master A] became unwell and his mother took him to Oamaru Hospital. [Master A] had a non-blanching rash on his body. [Dr B] decided [Master A] had either meningitis or meningococcal septicaemia. He was treated with fluid resuscitation and antibiotics.

In the early hours of [the following morning], [Master A] was referred to [Hospital 2] by an Oamaru Hospital Senior Medical Officer. This referral was accepted by a Paediatric Registrar at [Hospital 2], however they did not inform the ED of [Master A's] pending arrival.

[RN D] faxed an ambulance transfer booking request to [the ambulance service] at 2.40am and wrote: '?Meningitis' and 'ASAP' in the request.

[RN D] decided that [RN E] would accompany [Master A] to [Hospital 2]. The portable oxygen machine at Oamaru was not reading with the paediatric probes and [RN D] could not find another paediatric portable oxygen machine therefore she gave [RN E] a

portable oxygen machine for adults. The oxygen machine failed and [RN E] told HDC that she took [Master A's] respiratory rate and temperature manually (with a watch and thermometer).

[Master A] deteriorated during transfer and arrived at [Hospital 2's] ED very unwell, at 5.28am. He was transferred to ICU for resuscitation, however he did not show improvement and a decision was made for him to be retrieved by helicopter from [Hospital 2] and admitted to [the children's hospital].

[Master A] subsequently passed away on [date].

My expert advice regarding:

[RN D] (shift leader/senior nurse)

1.a Vital signs (also known as observations) include temperature, pulse, respiration rate, blood pressure, oxygen saturation levels, blood glucose (sugar) levels, level of consciousness (using Glasgow Coma Scale — GCS, or AVPU scale) should be documented on arrival as part of the triage process and then depending on the perceived urgency of the situation, repeated at regular intervals. Repeat recordings can range from continuous monitoring to hourly or 2–4 hourly recordings whilst in the emergency clinical setting and the frequency can be increased or decreased depending on the patient's condition and the trend of the figures e.g. if worsening the recordings become more frequent and once perceived to be stable they may become more infrequent.

In [Dr B's] report he says that [Master A] was on continuous monitoring throughout his time in the Emergency Department (ED) and that both nurses were aware of the seriousness of the situation. A Paediatric Early Warning Score (PEWS) chart appears not to have been used to record [Master A's] ongoing vital signs, three recordings of vital signs were handwritten (presumably by either of the two nurses or HCA present) on the ED chart. These recordings show a trend of over 1 hour 20 minutes of an overall increase in pulse and respiration rates, this is concerning as the first recording was already abnormally high and so the subsequent trend is worse. GCS was recorded twice as 15/15.

Some continuous monitoring machines have a printout function which can allow all recordings to be downloaded and printed in graph or table of figures format — or alternatively it's common practice for nursing staff to transcribe the numbers onto a paper chart of some kind — usual practice is to document these every 5–15 mins in serious situations whilst noting that continuous (or cardiac) monitoring is in place.

It is unclear (as written entries on the form are not initialled or signed by [RN D]) if [RN D] wrote on the ED chart herself, there is no space next to the vital signs for an initial or signature of the clinician writing in the figures. PEWS charts are available for different age ranges e.g. 0–3 months, 3–12 months, 1–3 years etc. The document provided for

this review is for a 0–3 month aged infant. [The Clinical Director] calculated and documented on the ED chart, clearly noted as post-dated Oct 30th 2019, that the PEWS score on admission would have been 2+3+1 but this is incomplete as a blood pressure reading is not documented on the ED chart and is necessary to calculate a PEWS total.

A PEWS chart is far superior to the ED chart used as it provides more information to the clinicians involved regarding the severity of the condition of the paediatric patient. PEWS charts allow for parameters to be age appropriate. The parameters also include an adapted GCS and AVPU (for level on consciousness) when caring for a non-verbal infant/child. Another example is the range of normal pulse rate range of an infant or child, the resting pulse (heart rate) generally decreases as the infant/child age increases. A PEWS provides a much clearer at a glance trend of the patient's condition by highlighting in colour the PEWS score. In this case [Master A] would have triggered a high PEWS throughout the time spent in ED.

Whilst there are two Registered Nurses providing care at the same time for [Master A], and it's widely acknowledged that resuscitation is very much a team effort, as the senior nurse it would be commonly expected that [RN D] would ensure that the correct documentation and processes were being followed. Whilst I acknowledge that continuous monitoring was in place, I cannot confirm if all the required vital signs were recorded e.g. blood pressure is omitted from the documentation and blood glucose level was only recorded once (very low at 3.2) before fluid resuscitation and not recorded subsequent to treatment.

1.b &c As explained above there has been a departure from the standard level of care in such a serious resuscitation case. I believe my peers would also agree that failing to document the trend of vital signs provided by the continuous monitoring machines on a PEWS is a severe departure from the expected level of care. PEWS charts have been used across New Zealand for some years now (and also have been adapted/available for use in maternity and adult cases) and their use is common and standard practice.

1.d I can see that [RN D] has subsequently completed a HealthLearn module relating to paediatric management in 2020 which covered PEWS, fluid and electrolyte management, this is appropriate education.

My only other recommendation is that there should be space for an initial/signature on the column of the PEWS so it's clear who documented those figures and would be responsible for accelerating the score to the reviewing clinician (Senior Medical Officer in this case, especially important if he/she was not present and reading the figures on the monitor).

2.a [RN D's] ambulance transfer request documentation is mostly complete. I suggest the 'IHT' (inter-hospital transfer) box should have been ticked rather than the 'GP Admit' box but I don't envisage that this would make any difference to the timings of events. It is common practice for urgent transfer to have ASAP written in the pick-up time boxes. The question mark written in front of the patient diagnosis of meningitis

didn't include the alternative working diagnosis of possible meningococcal septicaemia — possibly due to lack of space for this on the diagnosis part of the form, however there is additional space available in the 'list any infections' section and an 'any other information' section. It is common practice for a '?' symbol to be written in front of the working diagnosis/diagnoses. The section relating to 'special requirements' didn't have any of the boxes ticked for monitoring, oxygen, IV pole. I presume the monitoring and other anticipated equipment would be provided by the transferring hospital rather than [the ambulance service]. Alternatively this may also be interpreted by [the ambulance service] communication centre staff as an indication that the patient was stable and didn't need monitoring or oxygen or have IV fluids in progress.

2.b&c I believe there has been mild departure from the usual standard of practice in this document with some omission of details as highlighted above. In a paragraph of Oamaru Hospital's response document relating to [RN D], it is written that she 'did wonder why he wasn't going by air' (helicopter transfer) and was reassured by the doctor that the patient was now stable 'had all cares done, not deteriorated, still alert', so I can understand why it was not highlighted on the transfer request form that this was a critically urgent transfer. If the other working diagnosis had been documented on the request form it may have raised alarm bells with [the ambulance service's] communication centre staff regarding the acuity as they allude to in the Territory manager's report. [Ambulance service] staff may have chosen to dispatch the frontline ambulance instead of the Patient Transfer Service (PTS) ambulance which is understood to be transport/driver only. The form didn't allow for [RN D] to choose between a frontline or PTS type of ambulance.

It is clear in the documents that [Dr B] made the decision for an urgent road transfer rather than a helicopter transfer, it is not known if [Dr B] was aware of the two road transport options. I cannot comment on whether a frontline ambulance in Oamaru is a paramedic or technician, double or a single crewed vehicle and whether this would have made any difference to the clinical control or accountability between [the ambulance service's] staff and the transfer nurse (and transferring hospital doctor). It is highlighted on the transfer request form that if it's an urgent booking to call an 0800 number, the form was faxed and phoned through (as confirmed in the [the ambulance service] medical report writer's letter dated 5 March 2020). Speaking with the control centre may or may not have influenced a different choice of what ambulance/crew was dispatched depending on the language/words used by [RN D] and questions asked by the communication centre staff (transcript of conversation not provided or requested by myself).

I believe my peers would have considered this booking to be urgent and would have phoned the 0800 number as well as faxing to the designated centre and this supported by [the DHB's] Emergency Transport of Patients document (2005), Section 2 Algorithm for secondary (inter-hospital) transport. Following this algorithm, if [Dr B] believed [Master A's] problems did not have time critical or skill critical elements, and as this was discussed and accepted by the speciality team (paediatric registrar in this case) calling

Clinical Control Centre via 0800 number (or in this case the [the ambulance service] communications centre via a different 0800 number as detailed on the hospitals transfer request form) to discuss and request transport was an appropriate action by [RN D]. This action is also documented as the process in Oamaru/Waitaki District Health Service Inter-hospital transfers policy (2002).

2.d My recommendation (if this has not already occurred as per offer from [the ambulance service] Territory Manager in his letter dated 23 July 2020) would be for rural hospitals, such as Oamaru, to provide education sessions for their ED medical and nursing staff regarding inter-hospital transfers with regards to the parameters of service delivery (what the options are) and clinical responsibilities and the differences between PTS and frontline ambulance transfers in their area.

Emailed request forms should be used (more secure and reliable than fax) and a follow-up call to [the national ambulance] communications centre in urgent transfer/transport cases should be highlighted to nursing staff as standard practice.

3.a As the senior nurse on shift, it is acknowledged as [RN D's] decision as to who is the nurse escort during a road inter-hospital transfer. Whilst [RN E] was relatively new to Oamaru (employed four months previously), it is noted in the Chief Executive Officer's (CEO's) report (dated 23 June 2020) that [RN D] informed [Dr B] that [RN E] felt confident and was suitably trained to be able to handle such a transfer, however it is noted that [RN D] cannot subsequently recall making this comment.

It is common practice for a senior nurse (or duty nurse manager) to have a conversation with the RN who may do a transfer and discuss the case so a mutual decision can be made as to whether the RN does indeed feel confident and competent to undertake the task. [RN E] had an advantage that she had already provided triage/resuscitation care alongside [RN D] so had not come into the situation 'cold' at a later time. The handwritten triage note and co-signing of medications '[initials]' which I presume belong to [RN E] as well as '[initials]' being [RN D]. I would suggest that [RN E] was aware, as also [Dr B] believed, that she was aware of the seriousness of the case. Although [Master A] had received fluid resuscitation and intravenous antibiotics and [Dr B] anticipated that he was stable enough for transfer, it was made clear the escort nurse could contact him during the journey if concerns developed (according to [Dr B's] report).

No record of any disagreement/concerns/escalated management conversations between the nursing staff is provided. It is acknowledged that if [RN D] had disagreed with [Dr B's] decision not to ask for air transfer she could have phoned the duty executive for further advice, no such phone call was made according to the CEO's report.

The CEO's report does not include any previous employment history or clinical experience or additional vocational qualifications for [RN E]. Therefore I can only surmise that either she believed she was competent to go or she felt unable to say that she wasn't because there is no evidence to the contrary and ultimately she did go on

the transfer and was the Registered Nurse (RN) responsible for [Master A's] care until they reached [Hospital 2] and care was handed over. I am unable to give my opinion on whether she was qualified or competent to manage [Master A] if he deteriorated on this journey.

A senior nurse does not have immediate access to every RN colleague's curriculum vitae or list of their professional qualifications, therefore there is an accepted level of professional mutual trust that as a RN you will work within your scope of practice and as detailed in Principle 4 of our Code of Conduct (Nursing Council of New Zealand, 2012). A RN should inform colleagues when things are at their scope limit or about to extend beyond. Principle 4 — Maintain health consumer trust by providing safe and competent care. Principle 4.4 expands to say 'work within the limits of your competence and your scope of practice'.

I believe [RN D] was correct in making the decision to ask/allow [RN E] to be the transfer nurse, there was no deviation from common practice of trusting another RN's abilities if they say/appear confident and competent in their own scope of practice. One would hope that [RN D] would have some insight into [RN E's] abilities, especially in comparison to a locum doctor ([Dr B] in this case) who wouldn't have the benefit of the previous experience of working together. I am presuming [RN D] would have only asked [RN E] if she herself had no reason to question [RN E's] capabilities to undertake the role of transfer escort nurse.

3.b Not necessary as no deviation from standard practice.

3.c I believe my nursing peers would agree with my opinions and reasonings as outlined in 3.a. Those of us that work in smaller rural EDs tend to know each other's professional capabilities better as we work more often closely together than RN colleagues in a larger department. When there are more staff on the roster it would naturally mean that you would not work so regularly or closely as we do as part of a smaller cohort of nursing staff.

3.d Nil recommendations to add.

4.a&c The Commissioner's question stipulates an 'adult portable oxygen machine' in relation to it being used on [Master A] and whether it was adequate to do so. I am presuming the Commissioner means an oxygen saturation pulse oximeter. Essentially this is a small battery operated (therefore portable) electronic device that is used to measure the oxygen saturation levels via a peripheral light sensor probe. The sensor part of the device can be a peg-like structure that holds onto a co-operative patient's finger or a soft clip on a lead that's placed on an ear lobe of a co-operative patient or an adhesive tape probe that's secured around a foot or hand. The reading is either displayed in the top of the finger sensor or on a small handheld unit. The adhesive tape type is most commonly used in paediatric cases as children tend to wiggle more and well children often will try and pull them off. Most pulse oximeters provide a wave form

set of lights (indicating the quality of the reading) and display an ever changing figure for the heart rate (pulse in beats per minute) and oxygen saturation level as a percentage. It is commonly accepted that an oxygen saturation level of 92% or greater is deemed adequate in a paediatric case, this confirms adequate levels and supplementary oxygen via nasal prongs or a face mask is not required.

Sadly it is not unusual for equipment to be occasionally unavailable when working in a hospital and it requires alternative arrangements to be made e.g. borrowing from another department (paediatric ward, theatre suite, or using the ambulance equipment during a transfer). In my experience, and also that of my peers — I approached them on our secure work chat app and several of the senior/experienced RNs kindly responded to me individually answering the question ‘have you had to use an adult oxygen saturation probe on a child or baby? If so, do you feel it worked effectively?’ We are all in agreement that yes you can use an adult pulse oximeter with a sensor probe like an ear clip effectively on a child but everyone also agreed that with a young child under 3–4 years old their finger would not be long enough to fit within the peg like probe to reach the light sensor at the far end to get an accurate or consistent reading.

4.b I am unable to comment in this case which type of probe was used on [Master A], therefore, I can suggest in the case of an ear clip it would be considered an adequate and safe compromise as no paediatric specific sensor probe was available. However, if it was a finger probe designed for an adult, I (and my peers concur) very much doubt this would have worked and provided effective monitoring (either for intermittent or constant heart rate and oxygen saturation level recordings). Therefore I suggest it would not be an adequate or safe decision to take an adult finger sensor pulse oximeter probe on the transfer. I suggest this should have been realised (by attempting to use it concurrently with the hospital resuscitation monitoring to compare findings) prior to departing the hospital, it is not documented if this was done by either RN which is a moderate deviation from common practice.

4.d My recommendations would be that there should be regular checks to ensure that there is adequate monitoring equipment available for all potential patient transfers — covering all ages and levels of acuity. If a senior nurse or transfer nurse elects to take alternative equipment in cases where the preferred equipment is not available — they should be aware to document the steps taken to try and reduce risk of compromised care to that patient and find a safe alternative and demonstrate in their documentation that the substitute equipment was deemed adequate for the job.

5.a Documentation, in narrative form, of the interventions and events during the 1.5–2 hours that [Master A] was being cared for in the ED is limited to a single entry by [RN E], no additional notes are provided that were written by [RN D] aside from co-signatures on medications and fluids administered. It is standard practice that contemporaneous notes are recorded by nursing staff during any ED attendance and it’s especially important in a serious illness/resuscitation case such as this. Even if [RN E] was the named/responsible nurse for [Master A] it is expected that the shift leader

would oversee that documentation (of vital signs and the decision making process and care provided) is adequately recorded whether in handwritten format or electronically recorded.

5.b I believe, if there are no other pieces of documentation that were recorded at the time and therefore not provided for this review, that there is a moderate deviation from the expected standard of care regarding documentation of nursing care in this case.

5.c All RNs should be aware of our Code of Conduct as mentioned previously and Principle 4.8 says 'keep clear and accurate records' and goes on to explain these should include the discussions you have, the assessments you make, the care and medicines you give and how effective these have been (Nursing Council of New Zealand, 2012). One example of a glaring omission on the ED chart is no subsequent blood glucose levels have been documented post intravenous administration of the dextrose (type of sugar) fluid at 03:20.

5.d Auditing of nursing records and vital sign charts e.g. PEWS should be fed back to nursing teams to highlight deficiencies in documentation of the care provided so everyone is aware of the level expected in conjunction with guidelines for Early Warning Score calculation and subsequent processes.

My expert advice regarding:

[RN E] (ED and transfer escort nurse)

1.a It is documented in the Waitaki District Health service report by [the CEO] that the following actions were undertaken by [RN E] whilst in the ambulance with [Master A]:

[RN E] repositioned the IV line (at some point during the journey).

[RN E] attempted to record some vital signs at the half-way point of the journey 'which is when she realised there were issues with the saturation reading', so she observed his respiration rate 'that was unchanged'.

[RN E] observed that [Master A] was the same 'except for the rash that was spreading pretty quickly' however it doesn't say when she made that observation of the changing rash during the journey.

[RN E] reported that [Master A's] mother was sitting with him and that [Master A] 'was playing with his IV line'.

[RN E] subsequently reported 'it was as they were arriving into the Emergency Department that [Master A] became lethargic, pale and floppy with a spreading rash'.

It is not explained in the report where [RN E] was sat within the confines of the ambulance and whether she had continuous direct line of sight of [Master A] secured

in his car seat as I would anticipate should have happened so she could observe changes in his condition including breathing rate and effort, level of activity/consciousness. It is not clear if [RN E] made any written notes or charted any of the vital signs during the journey (the ED clinical chart's last set of vital signs were documented at 03:25). It is common practice to assume that the same level of nursing care would be provided to a patient during the journey as they had received during the immediate preceding time in the ED e.g. continuous monitoring with vital signs documented in the same way on the same chart (which should have been a PEWS in this case and between 5–15 minute intervals) which would allow the clinician to observe the trend — potentially changes in level of acuity — getting more sick/or improving/or remaining stable.

The [ambulance service's] report states the ambulance driver arrived at Oamaru Hospital at 03:41 and they all departed at 04:01 and arrived at [Hospital 2] at 05:25. This is a journey time of 1 hr 24 minutes by my calculations. It is also written in the [ambulance service] report that it is not the position of their Patient Transport Service driver (a qualified First Responder — therefore not a paramedic or technician) to unilaterally decide to radio the receiving ED about the patient's condition without direction from the clinical staff onboard the ambulance ([RN E] in this case). I cannot ascertain if [RN E] made the driver aware of [Master A's] worsening condition or not as there are no documents provided or such contemporaneous notes mentioned by [RN E] in the CEO's report.

I cannot ascertain what [RN E] meant by 'repositioning the IV line' it could mean re-siting a cannula in another part of [Master A's] body to ensure the IV fluids (if there were any in progress?) continued to flow or could at the other extreme mean she adjusted and covered the cannula with a dressing/bandage, as previously mentioned children can fiddle with equipment.

If [RN E] noted the rapidly spreading rash at the half-way stop in the journey then that should have rung alarm bells in her head that he was deteriorating even if respiration rate and activity level were the same at that time. Either [RN E] didn't recognise the worsening signs and implications of [Master A's] rash at the half-way stop or it all occurred in the last few moments of the journey — either situation is possible, with the first scenario considered the more concerning from a professional perspective. It is recognised that infants and young children are more prone to rapid physiological deterioration than older children and adults. Regular measurement and documentation of clinical (physiological) vital signs is essential for patient assessment and early recognition of clinical deterioration (Starship Clinical Guidelines, 2022).

[RN E] could have manually recorded a central capillary refill time (by pressing her finger down on his chest then releasing and counting the seconds for the flush of colour to return) with adequate lighting this is an easy additional vital sign indicator when there is no electronic equipment available. Respiration rate and effort, heart rate and capillary refill time should have been recorded as a minimum I suggest and at intervals of a minimum of 5–10 minutes.

1.b It is clear to me with the lack of documented vital signs and narrative of the transfer journey that [RN E] may not have provided the level of nursing care that [Master A] required. The alternative is documentation of vital signs and narrative of the journey were done by [RN E] but not mentioned in the report or provided as part of this review. I am also concluding that [RN E] did not seek to get additional medical support (e.g. by telephoning [Dr B] back in Oamaru or contacting, via ambulance radio, the receiving hospital) when she noted or could have noted the first signs in the deterioration of [Master A] at any point during the 1 hour 24 minute journey. Whilst it is not for me to comment if clinically this would have made any difference to the ultimately unsuccessful resuscitation of [Master A] at [Hospital 2], I can say that it is a severe departure from the expected level of care during such a transfer of a seriously unwell baby.

1.c As mentioned previously I did canvas opinion from my senior ED nurse colleagues (experienced transfer nurses of 2 years and 6 years, Associate Charge Nurse of ED for 1 year, Duty Nurse Manager of 1 year, experienced ED nurse of 25 years) regarding frequency and documentation of vital signs during such a case (no case details were divulged during this peer consultation). Unanimously the responses were that there should be continuous monitoring (heart rate and oxygen saturation levels) in line of sight of the transfer nurse when looking at the patient and that they would write down and document these figures every 5–15 minutes. They all also stated that they would phone back to the base doctor for clinical advice if concerns developed (eg developing rash, drop in blood sugar level) or phone/radio ahead to the receiving hospital once they were within 20 minutes or less travel time so that their arrival would be met by the receiving paediatric team with the ED team within ED.

1.d It is reassuring to read that the Registered Nurses involved have both received additional training with regards to spotting and caring for a deteriorating patient including paediatric specific and transfer specific education. I suggest that all ED nurses should continue to regularly update their skills and knowledge base in all aspects of their clinical care, whilst we cannot all be experts in everything, it is important to be aware of limits of knowledge and competency and seek to improve or maintain these as much as possible.

2.a Another matter in regard to the care [RN E] provided is the same as I have previously mentioned for [RN D] in section 5 above regarding documentation and lack thereof.

2.b,c & d being the same points as previously raised in 5.b,c & d.

Date 18/11/2022

Fay Tomlin, Nurse Practitioner, NCNZ 176935

References

Nursing Council of New Zealand (2012) Code of Conduct, Wellington, Pg 6
[https://www.nursingcouncil.org.nz/Public/Nursing/Code of Conduct/NCNZ/nursing-section/Code of Conduct.aspx](https://www.nursingcouncil.org.nz/Public/Nursing/Code_of_Conduct/NCNZ/nursing-section/Code_of_Conduct.aspx) accessed 18.11.22

Starship Clinical Guidelines (2022) Observation and monitoring of an infant, child or young person. <https://starship.org.nz/guidelines/observation-and-monitoring-of-an-infant-child-or-young-person/> accessed 18.11.22”

Appendix C: Relevant standards:

The Nursing Council of New Zealand publication *Code of Conduct for Nurses* (June 2012) states:

“Standards

...

4.8 Keep clear and accurate records (see Guidance: Documentation)”