Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

A Decision by the Deputy Health and Disability Commissioner

(Case 23HDC01305)

Introduction

1. This opinion of Rose Wall, Deputy Health and Disability Commissioner, is made in accordance with the power delegated to her by the Commissioner.

2. The report discusses the care provided to Ms A by an ambulance service.

3. On 13 January 2023, Ms A experienced an anaphylactic reaction. An ambulance attended with a paramedic and an emergency medical technician (EMT). An initial dose of adrenaline was administered by the paramedic via nebuliser,[1] and a second dose of adrenaline was administered intramuscularly (IM)[2] by Ms A's friend (an off-duty nurse). A subsequent third dose of adrenaline was administered intravenously (IV) by the EMT, without the awareness of the paramedic. Subsequently, Ms A deteriorated and suffered a cardiac arrest. Following resuscitation and defibrillation, her heart rhythm returned.

[1] A device that turns medication into a fine mist. This is breathed in through a mask or a mouthpiece.
[2] Into a muscle.

4. The following issue was identified for investigation:

- *Whether the ambulance service provided Ms A with an appropriate standard of care on 13 January 2023.*

5. Having reviewed all the information on file, I decided to include the following issues in my investigation.

- *Whether Paramedic Officer Ms B provided Ms A with an appropriate standard of care on 13 January 2023.*
- *Whether Emergency Medical Technician Ms C provided Ms A with an appropriate standard of care on 13 January 2023.*

6. The parties directly involved in the investigation were:

Ms A	Consumer
Ambulance service	Provider
Ms B	Paramedic officer
Ms C	Emergency medical technician

7. Further information was received from:

Ms D	Off-duty nurse/Ms A's neighbour
Ms A's husband	

8. Ms A, the ambulance service, Ms B, and Ms C were given an opportunity to comment on the relevant sections of the provisional opinion. Their responses have been incorporated into the report where appropriate.

Acknowledgement

9. First, I wish to express my condolences to Ms A and her husband for the stress and trauma they experienced because of this incident. I acknowledge the impact of this on Ms A and the long-lasting effects on her wellbeing. Ms A has told HDC that she understands that the ambulance officers did not intend any harm, but she would like to make sure that an incident such as this does not happen to anyone else. I thank Ms A for bringing her concerns to this Office and acknowledge that it has not been easy to do so.

Relevant background information

Attending ambulance officers

10. Paramedic Officer Ms B and EMT Officer Ms C attended to Ms A on the night of 13 January 2023.

Paramedic Ms B

11. Paramedics are degree-qualified, registered health professionals with the knowledge, skills, and experience to assess and treat a wide range of clinical conditions, from relatively minor

concerns to life-threatening illness. Paramedics are senior officers, and EMTs are under their supervision. Paramedics have a higher level of 'authority to practise' (outlined further below), which means that they can administer medicine and treat patients in ways not permitted to EMTs (for example, intravenous administration of certain medicine).

12. At the time of the incident, Ms B had worked for the ambulance service for many years, having completed the National Certificate as an ambulance officer and the paramedic vocational training for 'authority to practise'.

Ms C

13. EMTs are clinically qualified ambulance personnel who have been trained to assess, treat, and transport patients as required. EMTs can administer a range of treatments (for example, oral and IM medicines).

14. Ms C received her 'authority to practise' nine months before the events in question occurred.

Adverse event investigation

15. In May 2023, the ambulance service completed its internal review of the events, finding that '[w]hile the scene was complex, the error that occurred under the oversight of the Paramedic, was a significant departure from the expected standard' as follows:

> 'The treatment for anaphylactic reaction was not accordant with the clinical procedures and guidelines (CPGs) because nebulised adrenaline should not have been considered as part of treatment in the first instance. Intramuscular (IM) adrenaline should have been administered first.
>
> The adrenaline administered through the IV site was not accordant with the CPGs and directly contributed to patient experiencing a cardiac arrest.
>
> The Paramedic did not provide clear instructions to the EMT regarding the medication and dose that was in the syringe and the required route of administration.
>
> The EMT did not confirm with the Paramedic the medication and dose that was in the syringe, and the required route for administration.
>
> Administration of IV medications was not within the scope of an EMT.
>
> Furthermore, the clinical documentation completed is not accurate because:
>
> The administration of adrenaline (4 mgs) while intended for the nebuliser route, was not recorded, because the Paramedic had assumed [the] deterioration to cardiac arrest occurred before it was given. Accordingly, the adrenaline administered that precipitated the cardiac arrest, was not documented.
>
> The timing of the cardiac arrest was most likely within a minute of the administration of adrenaline via the IV route, not some 14 minutes afterwards.'

Standards

Ambulance service Clinical Practice Guidelines (CPGs) — the standards

16. The CPGs are the standards to which ambulance service personnel must adhere. The CPGs direct the standard of clinical care to be provided to patients, including treatment pathways and medicine administration. These are the primary standards I have used to assess this matter and form my opinion.

Other standards

17. Where relevant, reference is also made to the Paramedic Council of New Zealand Code of Conduct [3] and the Paramedic Council of NZ Standard of Cultural Safety and Clinical Competence.[4]

Authority to practise (ATP) and scope to administer adrenaline

18. The Authority to Practise (ATP) is the authorisation by the Medical Director to use the CPGs to supply and administer medicine within an officer's scope of practice.

19. The CPGs specify that the ATP is 'granted at a specified practice level' with each practice level having a delegated scope of practice that clearly defines the medicines and interventions that personnel may administer when treating patients.

20. In relation to this case and the administration of adrenaline, the ATP scope of practice outlines that paramedics and EMTs can administer adrenaline intranasally, intramuscularly, and via nebulised or topical application.

21. EMTs are not authorised to administer *any* medicine intravenously.

22. Administration of IV adrenaline can be performed or authorised only by an Intensive Care Paramedic (ICP), unless the patient is in cardiac arrest, in which case paramedics may be permitted/supervised to administer IV adrenaline.

23. The CPGs do permit treatment to be administered that is outside the scope of practice for the person administering it, 'when instructed to do so as a result of seeking clinical advice'.[5]

24. The CPGs outline that in relation to adrenaline, IV infusion is preferred over IV boluses[6] because this reduces the risk of adverse effects of surges of adrenaline.

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[3] See: https://Paramediccouncil.org.nz/common/Uploaded%20files/Standards/220422%20Code%20of%20Conduct%20A5%20Spread%20-%20Website.pdf

[4] See: https://Paramediccouncil.org.nz/common/Uploaded%20files/Standards/A5%20Standards%20Booklet%20Final.pdf

[5] 'When the treatment is not within the delegated scope of practice of the person administering it.'

[6] A single relatively large dose.

First dose of adrenaline

5mg nebuliser mask 9.01pm

25. An ambulance was dispatched to Ms A's house after her husband called 111 reporting that she was experiencing an allergic reaction and her throat was swollen. The job was classified as a 'red response' — immediately life-threatening. Ms D, Ms A's neighbour and an off-duty nurse, was also at the house.

26. Ms B told HDC that on arrival, Ms A could be heard coughing and making gagging noises. Ms D told HDC that she was on the phone to her husband, a doctor, who had suggested that Ms A take prednisone[7] tablets. On arrival, the ambulance officers observed Ms A to be gagging on the tablets in an attempt to swallow.

27. Ms B told HDC:

> '[Ms C and I] gathered a quick history of events that had happened. They had a sandwich and then ate a fruit mince pie, after which she could feel swelling in her throat and developed difficulty breathing. On quick auscultation,[8] we decided to go with the nebulised adrenaline first as I could see a bit of swelling in the back of the tongue and throat but not the front of the tongue so much … I have seen a number of very unwell anaphylaxis and in this case, she was unwell but not very bad hence the option of going with nebulised adrenaline.'

28. The adverse event report recorded that on arrival and assessment, Ms A was observed to be struggling to breathe and swallow, had swelling of her tongue, noisy respirations, and an increased heart and respiratory rate.

29. Ms B reported that Ms A's vital signs were 'not too out of the normal other than a heart rate of 110 beats per minute. Respiratory rate was 20 breaths per minute, oxygen saturation (SPO_2) of 96% on air, blood pressure (BP) reading 157/93 [mmHg][9] and that she had a slight stridor.[10]'

30. Ms B told HDC that angioedema[11] (rather than anaphylaxis) may respond to nebulised adrenaline, and this is the reason it was given.

31. Ms B said that as she was drawing up the adrenaline, Ms C was setting up the nebuliser, and Ms D was going through the first response bags and telling the officers to put in an IV line. Ms B told HDC that she got Ms D to check the adrenaline measure for the nebuliser to give her something to do and to help 'calm her demeanour'.

32. At 9.01pm, 5mg of adrenaline was administered to Ms A via the nebuliser.

[7] A steroid medication.
[8] Listening to sounds arising within organs (such as the lungs) to aid diagnosis and treatment.
[9] A normal blood pressure level is 120/80mmHg.
[10] A harsh vibrating sound heard during respiration.
[11] Swelling under the skin.

Opinion: Ms B

Nebulised adrenaline — adverse comment

33. The ambulance records for Ms A indicate that the 111 call recorded a potential allergic reaction, and the 'presenting complaint' was listed as 'allergic reaction, shortness of breath' and the job code was listed as 'red' — immediately life-threatening. Ms B advised that she took a short history and noted that food had been eaten, after which Ms A's throat had swelled, and she had had difficulty breathing. Ms B told HDC that she did see some swelling in Ms A's throat and the back of her tongue but not in the front.

34. The CPGs outline that IM adrenaline should be used in instances of anaphylaxis, identified by effects such as stridor, swelling of the throat or tongue, skin rashes, and other systemic issues.

35. Ms B explained that she administered the nebulised adrenaline rather than IM adrenaline because Ms A's systemic signs were 'not too out of the normal' and on that basis appeared to match angioedema. I acknowledge that the CPGs relevant to anaphylaxis advise that if angioedema is suspected, nebulised adrenaline should be administered, and the guidelines specifically state that IM adrenaline should *not* be used:

> 'IM and IV adrenaline should not be administered because angioedema rarely responds to systemic adrenaline and the adverse effects of systemic adrenaline usually outweigh any possible benefit.'

36. The adverse event review found that the decision to administer nebulised adrenaline was a departure from CPG standards, and that an IM injection should have occurred on the basis that it was an anaphylactic reaction. Having independently reviewed the CPGs and considering the factors outlined in paragraph 33, I accept this view as correct.

37. I note that Ms B appears to have accepted that she erred in this instance and has since amended her practice to lower the threshold for administering IM adrenaline, noting that she does not have to 'see swelling if the patient is complaining of swelling'.

38. As the senior officer that night, I consider that Ms B was responsible for the incorrect decision-making, and I am critical of her in this regard.

39. I acknowledge, however, that several factors mitigated this decision-making, including the challenging environment and the pressure under which Ms B was working at the time. I acknowledge that in treating angioedema (rather than anaphylaxis), Ms B was likely acting conservatively to avoid potential harm and adverse effects of IM adrenaline administration. I note that on identifying further systemic symptoms (discussed in the following section), Ms B subsequently corrected the adrenalin administration method to IM injection. I also acknowledge that the scene was complex to manage, including additional stress being placed on Ms B by Ms D's well-intentioned actions of going through the first response bags and requesting that an IV be placed.

Second dose of adrenaline

0.5mg IM at 9.12pm

40. Ms A reported some relief to her throat swelling after using the nebuliser and told Ms B of other symptoms she was experiencing, including nausea, dry retching/vomiting and abdominal cramps, as well as a redness/rash on her chest.

41. Ms B told HDC that taking these symptoms into account, she decided to administer 0.5mg adrenaline via an IM injection in Ms A's right thigh. This is consistent with the CPG treatment pathways for anaphylaxis.

42. Ms B told HDC that she asked Ms D to check the dosage and then asked her to administer the injection, recorded at 9.12pm. Ms B said that the injection happened under her supervision after confirming that Ms D had experience in doing so. At the same time, Ms C was setting up for Ms B to place an intravenous cannula into Ms A's hand, to gain direct access to her veins for any further medicine required.

43. Ms B then contacted the ambulance dispatch centre via radio and requested a critical care paramedic (CCP) be dispatched to provide further support that was not within her scope of practice as a paramedic. This included potential administration of adrenaline via an IV infusion. However, a CCP was not available to attend.

44. Once the IV line had been established, Ms A was administered 8mg of ondansetron (an anti-nausea medication).

IM adrenaline — no breach

45. Having reviewed the available information, there does not appear to be any breach of the Code related to the administration of IM adrenaline. Although it was unorthodox for Ms D to be asked to administer the IM adrenaline, I consider that it was acceptable on the basis that Ms D was an off-duty nurse and Ms B provided adequate supervision to Ms D. I also acknowledge that at the time, Ms C was occupied with preparing for the insertion of a cannula, and Ms B was attempting to manage the scene as best as possible, including the efficient administration of medicine to Ms A in a potentially life-threatening situation.

Third dose of adrenaline

4mg IV bolus[12] at 9.25pm

46. After the administration of anti-nausea medicine to Ms A, Ms C was on the phone to the ambulance service's air desk[13] continuing to discuss the supports required for Ms A. Ms B told HDC that as she was reviewing Ms A's medical notes and complex history,[14] Ms A stated that her throat had started to swell again.

[12] A single dose.
[13] The centre responsible for dispatching air ambulance and transfers, including by helicopter.
[14] Including arteriovenous malformations (a group of blood vessels that have formed incorrectly) and a pulmonary embolism (a blockage in a blood vessel in the lungs).

47. Ms B told HDC that she instructed Ms C to advise the air desk of the change in Ms A's condition. The phone was handed to Ms B at this point, to continue discussing support for Ms A. Subsequently, the air desk arranged for a helicopter to attend and transferred the call to an intensive care paramedic (ICP) who could authorise/instruct an 'out of scope' IV adrenaline infusion if required.

48. There is conflicting information about the communication that occurred next.

49. Ms D told HDC that she recalls one of the officers talking on the phone with a senior person asking whether nebulised adrenaline should be administered again.

50. Ms B reported that she told Ms C that they would administer a further dose of nebulised adrenaline, as this had provided relief to Ms A previously. Ms B told HDC that she continued to talk on the phone with the ICP about Ms A's care whilst drawing up the adrenaline dose. Ms B stated:

> '[I then] went to give it to the patient the EMT said she would do it. I do recall telling the EMT it was for the nebuliser. I do recall labelling the syringe. I did not watch the EMT complete this task as it is within her scope of practice to give nebulised adrenaline. The EMT did not question my instructions and appeared to understand what I was asking her to do.'

51. Ms B told HDC that she continued to talk with the ICP about Ms A's complex medical history and whether to administer further doses of IM adrenaline as per the CPGs or whether to administer an IV infusion. Ms B said that a decision was made to administer further adrenaline via IV infusions to ensure a controlled release rather than a 'dump' of adrenaline, which may occur with repeated IM injections.

52. Ms C provided HDC with the following account of events:

> '… I was standing between the Paramedic and the patient. The patient was to my right, sitting on the couch with her left arm, with the IV access extended.
>
> The neighbour/nurse was sitting on the right of the patient and talking [to] her/supporting her. The patient was wearing a nebuliser mask. The Paramedic was to my left and on the phone at the time, coordinating further resources for the patient. The Paramedic handed me a syringe and spoke quickly to me saying "can you give this to the patient". She then returned to her phone call.
>
> At this stage, based on the instruction, the position of the neighbour, the direction the Paramedic handed me the syringe from and the presence of the patient's extended left arm, I incorrectly made a conclusion about the intended action/instruction, and the adrenaline was administered via the incorrect route (via IV).'

53. In response to the provisional opinion, Ms C told HDC:

> '[Ms B handed me an unlabelled syringe and] did not state the drug, the route, the dose or any other information at that moment as required by [ambulance service] procedures.
>
> … I have identified that at that moment I was frozen … I felt powerless, I did what I was told and I could not interrupt the authority figure on the phone.'

54. At approximately 9.25pm, Ms C administered a 4mg bolus dose of adrenaline to Ms A. For dose comparison, the previous direct IM dose was 0.5mg. Ms B was not aware at the time that this had happened. Within approximately one minute of the bolus adrenaline administration, Ms A's condition deteriorated. She reported that her heart was racing and her head hurt, and then she went into cardiac arrest.

55. Ms A told HDC that after the third dose of adrenaline, she heard someone say something along the lines of 'too much adrenaline' and remembers feeling incredible pain in her brain and chest and stating out loud to her husband: 'I think I am going to die.'

56. Ms A experienced 'abnormal and life-threatening cardiac rhythm (ventricular tachycardia)'. Ms B told HDC that Ms A's breathing changed and she displayed trismus[15] with no response to pain, and CPR was commenced. Ms B charged the defibrillator and delivered one shock to Ms A, after which her cardiac rhythm was restored.

57. Ms A was stabilised before being transferred to the helicopter and flown to hospital.

Identification of medication administration error

58. Ms B told HDC that after Ms A was transported, she 'repeatedly' stated to Ms C that she could not figure out why a cardiac arrest had occurred. Ms B said that at approximately 1am she realised that she had not seen Ms C administer the adrenaline. Ms B stated:

> 'I asked the EMT to confirm that she had put the adrenaline into the nebuliser to which she replied she had administered it via the IV line. She stated that she didn't know why she had done that and had been searching up what could happen with adrenaline overdose. I said to her she needed to come down and write up a reportable event and that I would make some phone calls to the [operations manager] and we would need to let the hospital know.'

59. Ms C told HDC that when they returned to the station 'to the best of [her] knowledge, everything in the job had been done correctly. No one recognised that there had been an error at that stage'. Ms C said that she was trying to assist Ms B in figuring out what had occurred, including querying if the anti-nausea medication had had an adverse effect.

60. Ms C stated: '[When] Ms B came to me with a question about the adrenaline, it was at the same time that I was researching adrenaline on the internet — while hypothesising.' Ms C

[15] An inability to open the jaw fully (also known as 'lockjaw').

said that as soon as Ms B raised the question, the mistake was recognised, acknowledged (by Ms C), and immediate action taken to advise the hospital of the error.

61. Subsequent review of the documentation by the ambulance service noted that the 4mg of adrenaline given had not been recorded on Ms A's ambulance record, as Ms B had assumed that Ms A's cardiac arrest had occurred before the administration of (the intended nebulised) adrenaline. A correction to the records has since been made.

Further information provided

Ms C

62. Ms C explained to HDC her understanding of adrenaline administration as follows:

> 'I understand the parameters and limitations for adrenaline administration at the level of Emergency Medical Technician as outlined in the Clinical Procedures and Guidelines (CPG's). I am aware of the indications, and that this incident is not provided for in the CPG's. The CPG's are clear on what medications and what routes are available at each level of practice …
>
> … I also understand that it is out of scope for EMT staff to administer any IV medications at any time.'

63. Ms C has expressed her deep regret for the incident:

> 'I feel deeply whakama (ashamed) for this and for the way that moment has panned out and for the harm that was caused to the patient by my action. I can only wish that I had the strength to seek clarity and to have checked the detail of the instruction … I am sorry that I reverted to following a person in power, rather than the CPG's that I should have adhered to. I am sorry that I did not pause before acting.'

Opinion: Ms C

Intravenous adrenaline — breach

64. The adverse event report found that a severe departure from standards had resulted in Ms A experiencing a cardiac arrest.

65. Specifically in relation to Ms C, the adverse event report found that she did not confirm with Ms B the medication and dose that was in the syringe, or the required route for administration, and that the administration of IV medicine was not within her scope.

66. Having reviewed all the information available, including having independently considered the CPGs and other standards, I agree with the findings in the adverse event report.

67. The CPGs clearly outline that administration of IV adrenaline is never within the scope of practice of an EMT. Ms C appears to have accepted that she knowingly acted out of scope when she administered the adrenaline via IV. She said that she 'incorrectly made a conclusion about the intended action/instruction', which in part was influenced by her fear of interrupting or questioning a person in authority.

68. The CPGs outline the expected procedure for administration of all medicine as follows:

> 'The person responsible for the administration of the medicine is responsible for ensuring the five rights:
>
> a) The right medicine is being administered
> b) The right dose is being administered
> c) The right patient is receiving the medicine
> d) The right route is being used
> e) The medicine is being administered at the right time in particular the dosing interval is correct'

69. The CPGs also require that 'the person administering the medicine should clearly say the medicine name, dose, and route out loud as it is administered'.

70. I acknowledge that it was a complex scene,[16] with the situation escalating as Ms A's health declined, and that Ms C was operating under the supervision of Ms B. Ms C was a relatively new EMT, having been in the job for only nine months at the time of the incident. Ms C has stated that the communication from Ms B was unclear and that she felt she could not question Ms B about the lack of direction. However, I do not consider these to be mitigating circumstances for this serious incident.

71. Regardless of the clarity of instructions provided by Ms B, under the CPGs, Ms C, as the person responsible for physically administering the medication, had an obligation to complete the 5 Rs, and to state clearly out loud the medicine name, dose, and route as it was administered. It is clear that this did not happen.

72. No information has been provided to indicate that when faced with uncertainty, Ms C sought clarification or advice. On the basis that EMTs are not authorised to administer *any* medication intravenously, I consider that Ms C was aware that Ms A could be compromised by administering medicine outside of her scope, and she should have sought clarification. I am especially critical of Ms C in this regard and consider this an egregious breach of the standards.

73. Ms C told HDC that she is 'devastated for the patient and very sorry for what she went through'. Ms C stated:

> 'I accept that due to my mistake that [Ms A] was not provided with the care she should have been able to expect during the incident. For this I continue to accept my part in the administration of adrenaline via the incorrect route, which was outside of my scope of practice.'

74. Ms C advised that she has reflected and strengthened her practice to ensure that she actively clarifies treatment plans or instructions, rather than accepting or drawing

[16] Including the management of Ms D.

conclusions. She said that she has since spent personal time reviewing academic papers on adrenaline to further develop her knowledge and understanding of the side effects, and she has reviewed the CPGs and had a debrief and an education check and reflection on this incident with the Clinical Support Team. On the basis that Ms C acted outside her scope of practice in administering adrenaline intravenously and did not adhere to the clinical practice guidelines of completing the 5 Rs and stating out loud the dose and administration, I am of the opinion that Ms C breached Right 4(2) of the Code of Health and Disability Services Consumers' Rights (the Code).[17]

Identification of error — adverse comment

75. As outlined in paragraph 58, the adrenaline administration error was not identified clearly until approximately 1am. This meant that for a period of over three hours, medical personnel responsible for the treatment and care of Ms A did not have correct information regarding the cause of Ms A's cardiac arrest.

76. Ms B told HDC that it was only when Ms C was asked directly about the adrenaline that the medicine error was identified. Ms C agrees with this version of events.

77. Ms B reported that Ms C told her at the time that 'she did not know why she had injected [Ms A]' and that she had been 'searching up what could happen with adrenaline overdose'. Ms C has explained that she was researching adrenaline when Ms B asked the question, and she was 'coming to a potential reasoning at the same time [as] [Ms B]' regarding Ms A's sudden decline.

78. Ms C has disputed that she knew of the cause and did not report it until Ms B asked her the direct question at around 1am.

79. Considering that Ms B was aware at the time that she had acted outside her scope of practice, and that Ms A had deteriorated within one minute of her error, it is reasonable to assume that Ms C should have been aware that her actions likely had a direct impact on Ms A's decline.

80. I am critical that Ms C did not identify her mistake at the time.

Opinion: Ms B

Intravenous adrenaline — breach

81. The adverse event review found that 'the adrenaline administered through the IV site was not accordant with the CPGs and directly contributed to [the] patient experiencing a cardiac arrest'.

[17] Right 4(2) states that '[e]very consumer has the right to have services provided that comply with legal, professional, ethical, and other relevant standards'.

82. In relation to Ms B, the adverse event review found that she 'did not provide clear instructions to the EMT regarding the medication and dose that was in the syringe and the required route of administration'.

83. I note that in her response to HDC, Ms B disputes that she did not provide clear instructions to Ms C. Ms B stated:

> 'I do recall telling the EMT it was for the nebuliser. I do recall labelling the syringe. I did not watch the EMT complete this task as it is within her scope of practice to give nebulised adrenaline.'

84. I have reviewed and sought other information around this matter in an effort to determine whether or not Ms B gave Ms C clear instructions. This included seeking the view of the other people in the room at time — Mr A and Ms A, and Ms D. No one was able to clearly recall the directions provided at the time of the third adrenaline dose.

85. Subsequently, I sought and received the audio recording of the calls made with the air desk at the time of the incident. The audio covers the initial call to the air desk and the subsequent transfer to the ICP and Ms A's cardiac arrest and recovery. There is a short gap in the recording as the call was transferred and placed on hold. It was clearly a very complex and heightened scene, complicated by multiple parties in attendance. The call was on speakerphone, and it assumed that other people were able to hear.

86. I note that Ms A told HDC that she recalls hearing something along the lines of 'too much adrenaline'. I can confirm that this likely refers to the conversation between Ms B and the ICP in trying to understand why Ms A had gone into cardiac arrest, and their concerns that the previous IM injection may have been the cause. I note that at this point, neither Ms B nor the ICP were aware of Ms C's mistake.

87. Having reviewed this audio, it appears that at the time, Ms B did not provide clear instructions to Ms C that the adrenaline she had drawn up was for the nebuliser. On the recording, there is no instruction by Ms B to anyone about adrenaline administration.

88. The CPGs cover the general principles of all medicine administration as follows:

> 'The person with the medicine within their delegated scope of practice should usually be the person who draws up the medicine and administers it, as this reduces drug errors. However, it is acceptable for other personnel to draw up and/or administer the medicine, provided the person with the medicine within their delegated scope of practice is responsible for all aspects of medicine administration.'

89. In the circumstances of this case, nebulised and/or IM adrenaline administration was within the scope of practice of both Ms B and Ms C. Intravenous administration was not within scope for either officer.

90. Ms B told HDC that she did not supervise Ms C after handing over the adrenaline, as it was within her scope of practice to administer adrenaline through a nebuliser.

91. Regardless of the fact that nebulised adrenaline was within Ms C's scope of practice, I consider that Ms B was primarily responsible for all aspects of medicine administration on the night of the incident, including adequate communication and supervision. In the circumstances of this case, Ms B was the senior officer at the time and had been responsible for drawing up and administering (including supervising) all the medicine administered to Ms A[18] to that point.

92. Although Ms C was the individual physically administering the adrenaline, I consider that it was incumbent upon both Ms B and Ms C to adhere to the '5 Rs' outlined in paragraph 68,[19] in particular to confirm that 'the right route [was] being used'. It is clear that this did not occur.

93. Sections 2.2.3 and 2.2.4 of the Paramedic Council of New Zealand standards of cultural safety and clinical competence for Paramedics[20] provides further standards related to paramedic communication and supervision:

> '[F]ollow appropriate protocols, procedures, and guidelines to give relevant and timely verbal and written communication
>
> …
>
> [E]ffectively supervise tasks delegated to other healthcare team members.'

94. Having reviewed the available information, it is clear that Ms C was not supervised after being delegated the task of administering adrenaline.

95. I have independently reviewed the Clinical Practice Guidelines and other standards, spoken to other parties in the room at the time, and listened to the audio call, and I accept the findings of the adverse event investigation that Ms B did not provide clear instructions to the EMT regarding the medication and dose that was in the syringe and the required route of administration, and did not supervise Ms C adequately. On that basis, I have reached the opinion that Ms B breached Right 4(2) of the Code — the right to have services provided that comply with relevant standards.

96. Ms B advised HDC that she accepts the opinion and is 'sorry that [Ms A] has had to go through this ordeal, and acknowledges the impact this incident has had on all involved'.

[18] Nebulised adrenaline, IM adrenaline, and anti-nausea medication.
[19] That the right medicine is being administered; the right dose is being administered; the right patient is receiving the medicine; the right route is being used; and the medicine is being administered at the right time, in particular that the dosing interval is correct.
[20] See: https://Paramediccouncil.org.nz/common/Uploaded%20files/Standards/A5%20Standards%20Booklet%20Final.pdf

Disclosure of error — adverse comment

97. As outlined in paragraph 58, the adrenaline administration error was not identified clearly until approximately 1am, when Ms B asked Ms C what had happened to the intended nebulised adrenaline.

98. I find this delay unacceptable.

99. Ms B told HDC that she recalls drawing up the adrenaline and labelling it, before handing it to Ms C, whom she did not supervise.

100. Regardless of Ms B's awareness at the time of what Ms C had done with the adrenaline, I consider that after the incident it was incumbent upon Ms B to audit the medication for which she was responsible.

101. There is no indication that this occurred in relation to the 4mg of adrenaline.

102. In response to the provisional opinion, Ms B acknowledged that she did not account for the 4mg of adrenaline at the time of submitting the ambulance records, and noted that once the error had been identified, she informed the hospital and her manager immediately.

103. As the senior officer, Ms B was responsible for the initial Ambulance Care summary submitted after the incident. The summary did not record that 4mg of adrenaline had been administered in any form. I consider that in completing this report, there was a missed opportunity for Ms B to identify earlier that the 4mg of adrenaline she herself had prepared had not been accounted for adequately.

104. Ms B was aware that she had handed the adrenaline to Ms C, yet there is no record of this being administered via nebuliser or otherwise. On this basis, Ms B provided a medication for administration and then failed to record what happened to it.

105. I am critical of her actions in this regard.

Opinion: Ambulance service — no breach

106. Having reviewed the CPGs, I accept that the ambulance service had systems in place to ensure clear directions regarding authority to practise and medicine administration, and treatment pathways and processes to ensure correct administration (the '5 Rs').

107. In this case, I consider that Ms B's and Ms C's independent errors do not indicate broader systems or organisational issues at the ambulance service. Accordingly, I consider that the ambulance service did not breach the Code directly and is not vicariously liable for Ms C's and Ms B's breaches of the Code.

Changes made since events

Ms C

108. Ms C advised that she has reflected and strengthened her practice to ensure that she actively clarifies treatment plans or instructions, rather than accepting or drawing conclusions. She told HDC that she has since spent personal time reviewing academic papers on adrenaline to further develop her knowledge and understanding of the side effects, and she has reviewed the CPGs and had a debrief, an education check, and reflection on this incident with the Clinical Support Team.

109. Ms C advised HDC that she is no longer seeking a full-time career with the ambulance service and has not done an extended shift for the ambulance service in over 12 months.

Ms B

110. Ms B told HDC that she has reflected on her practice and has taken action to improve her practice, including the following:

- Being clear on instructions, even if what she is asking is within the person's scope of practice;
- Putting the phone down to ensure proper supervision and completion of a task;
- Asking the other person to repeat back any instructions that were provided;
- Reminding others of, and adhering to, the '5 Rs';
- Checking, checking, and double-checking;
- Ensuring that colleagues can ask questions if they are unsure of what she is doing, or what she has asked them to do;
- Ensuring that colleagues can speak up if they are finding family or friends distracting; and
- Changing the way she documents medications and changing how she checks the paperwork before it is submitted.

111. In addition, Ms B has completed a series of self-directed learning through the ambulance service's online learning portal, specifically focused on adrenaline, human factors, and teamwork. Ms B has completed eight hours of ongoing Continuous Clinical Education (CCE) through in-person sessions plus multiple online forums.

112. Ms B is studying towards a Bachelor of Health Science degree in Paramedicine.

Ambulance service

113. An anonymised incident has been reported as an adverse event to the National Ambulance Sector Office (NASO) and Te Tāhū Hauoro|the Health Quality & Safety Commission (HQSC).

114. The issue is being actively tracked in the fortnightly adverse events meeting issues register. This meeting consists of a group of senior managers and subject matter experts who review adverse events and monitor any ongoing issues to ensure that these are being addressed.

115. The ambulance service has registered a risk on the joint ambulance and clinical service risk register: 'Medication administration error — Ambulance personnel who are administering unfamiliar, out of scope medicine are leading to medication errors resulting in patient harm.' This ensures that the risk continues to be monitored and reviewed by the senior leadership team and clinical governance committee whilst improvements are implemented. The risk is currently rated as 'high', with the monitoring of medication error activity now occurring at fortnightly adverse event forums. The control measures include safety alerts for ambulance personnel and an audit framework to identify and follow up on the medication errors. The measures/process being developed to reduce this risk include building safe medication practice into the Clinical Guidelines electronic app.

116. On 6 March 2023, the ambulance service published a 'safety alert' on medicine checks and medicine errors (which included this case). A safety alert is an organisation-wide bulletin drawing ambulance personnel's attention to areas of immediate concern. The safety alert references steps that need to be taken by ambulance personnel to reduce the risk of error.

117. A podcast was published to reinforce the ambulance service safety alerts and provide additional education and information for ambulance personnel.

118. The ambulance service established a clinical focus group for review of medication errors to address and mitigate medication errors within the ambulance service. The group meets monthly and provides recommendations to mitigate and reduce the number of medication errors, through the identification of trends, patterns, and underlying causes. Recommendations from the review can include quality improvements, targeted education, policy changes, and technological enhancements.

Recommendations

119. I note that Ms B has completed a written reflection of her practice and learning from this incident, engaged in further training and education around anaphylaxis, adrenaline, human factors, and teamwork and has adjusted her practice to ensure that medicine administration is supervised adequately. Taking this into account, I recommend that Ms B provide a written apology to Ms A for the matters outlined in this report, including, but not limited to, the initial administration of adrenaline via nebuliser, not providing clear instructions regarding the adrenaline dose and route of administration, and inadequate supervision of Ms C. The apology should be provided to HDC, for forwarding to Ms A, within three weeks of the date of this report.

120. I note that Ms C has reflected on her practice and made changes, reviewed relevant literature, and engaged in a debrief with the clinical support leader. Taking this into account, I recommend that Ms C:

a) Provide a written apology to Ms A for the matters outlined in this report, including, but not limited to, acting outside her scope of practice and incorrectly administering medication. The apology should be provided to HDC, for forwarding to Ms A, within three weeks of the date of this report.

b) Undertake further education/training on adrenaline administration and anaphylaxis. The education/training should be in conjunction with, or endorsed by, the ambulance service. Evidence of attendance and a written reflection on the learnings and how these will be applied in practice are to be provided to HDC within three months of the date of this report.

121. I recommend that the ambulance service provide HDC with an update on any recommendations from the clinical focus group (outlined in paragraph 118), within three weeks of the date of this report.

Follow-up actions

122. A copy of this report with details identifying the parties removed will be sent to Te Kaunihera Manapou Paramedic Council (Te Kaunihera), and it will be advised of Ms B's name in covering correspondence.

123. A copy of this report with details identifying the parties removed will be sent to Te Tāhū Hauora|Health Quality & Safety Commission and the New Zealand Pharmacovigilance Centre and placed on the Health and Disability Commissioner website (www.hdc.org.nz) for educational purposes.