Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

A Decision by the Deputy Health and Disability Commissioner

(Case 21HDC02785)

Introduction

1. This report is the opinion of Dr Vanessa Caldwell, Deputy Health and Disability Commissioner,and is made in accordance with the power delegated to her by the Commissioner.

2. The report discusses the care provided to Mr A by Hawke's Bay Fallen Soldiers' Memorial Hospital (FSMH), Te Whatu Ora Te Matau a Māui Hawke's Bay (Te Whatu Ora) (formerly Hawke's Bay District Health Board).[1]

3. The complaint concerns the incorrect placement of an endotracheal tube (ETT)[2] and the delay in recognising the incorrect placement and taking the appropriate corrective actions when Mr A was admitted to the Emergency Department (ED) at FSMH on 17 Month1.[3] This resulted in Mr A sustaining a severe hypoxic[4] brain injury. Sadly, he died on 1 Month2.

4. Mr A's partner, Ms A, with the support of whānau, raised concern that Te Whatu Ora did not provide Mr A with an appropriate standard of care and that Mr A and his whānau were

[1] 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 Hawke's Bay District Health Board now refer to Te Whatu Ora Te Matau a Māui Hawke's Bay.
[2] A flexible plastic tube used to establish and maintain a patient's airway.
[3] Relevant months are referred to as Months 1–2 to protect privacy.
[4] Lack of oxygen.

not treated with respect. Ms A also raised concern that Mr A's informed consent was not obtained prior to the intubation.

5. The following issue was identified for investigation:

- *Whether Te Whatu Ora|Health New Zealand provided Mr A with an appropriate standard of care between 17 Month1 and 1 Month2 (inclusive).*

6. I thank Ms A and Mr A's whānau for raising their concerns with the Health and Disability Commissioner. I acknowledge Mr A — Te Tangata. Nō reira ka tuku a mātou nei aroha, a mātou nei rangimarie ki a koutou katoa — Mauri Ora.

How matter arose

Presentation to ED

7. On 17 Month1, Mr A sustained wounds to his back and was taken to FSMH's ED by his daughter.

8. Upon arrival at the ED at 1.45pm on 17 Month1, initially Mr A was awake. Mr A's whānau told HDC:

> 'On admission … [Mr A] was alert, orientated, sitting on the bed, talking, in some pain but relatively stable, and the contemporaneous notes described him as agitated but co-operative. Despite this, the staff then made a critical decision to sedate, paralyse, intubate, and ventilate [Mr A] "to make him easier to handle" and "to facilitate further assessment".'

9. There are discrepancies in the clinical records about Mr A's presenting state.

10. In the ED clinical records, Mr A's behaviour was described as 'co-operative'. Mr A was also noted to be 'sitting up on bed — not talking'. In the ED discharge summary, Mr A's behaviour was described as 'combative', and it was noted that he was 'talking — some words'.

11. Dr B, a senior medical officer (SMO) from the intensive care unit (ICU) was present on Mr A's arrival. Dr B noted in the clinical records that Mr A was 'sitting upright and maintaining own airway, clearly in pain and minimally co-operative'. The ICU clinical records noted:

> 'Patient initially awake and sitting up but had … wounds visible to back with surrounding swelling. Not compliant and difficult to manage and assess with significant potential injuries.'

12. Mr A was triaged as status 1[5] and a trauma call was activated.

[5] Triage category 1 means the patient's condition is life threatening and requires immediate simultaneous triage and treatment.

13. Dr C was the anaesthetic registrar on call and attended the trauma activation. SMOs from the ICU and the ED were also in attendance, along with registrars from the ED, ICU, Surgery and Orthopaedics. Dr C described in the clinical notes:

> 'On arrival we found a distressed gentleman sat on the resus gurney. He was agitated and not verbalising. He had reportedly received … wounds to his back … His airway was maintained. Saturating well on a [non-rebreather] oxygen mask[6] at 15L/min. Other than a tachycardia his haemodynamics[7] were unremarkable.'

14. Ketamine[8] was provided 'to settle him down' and to facilitate a chest X-ray and further assessment. Morphine[9] was provided for pain relief. Mr A's work of breathing[10] was noted as 'mild', and his pain score was 'moderate'.[11]

15. A chest X-ray was unremarkable and showed no evidence of a collapsed lung.

16. Dr C noted that the plan was for a CT trauma series to be completed. However, due to Mr A's agitated state, a decision was made to intubate[12] him in the ED to facilitate further investigations and management. As the nature of the wounds inside Mr A's body was unknown, the concern was that potentially he could have sustained injuries to the thorax,[13] abdomen, or pelvis. A CT trauma series was needed to identify whether any such injuries had occurred.

17. Te Whatu Ora said that it was appropriate for the anaesthetic team to be called to assist because they were 'rendering an awake patient unconscious'. However, Te Whatu Ora stated that prior to this event the anaesthetic team had seldom worked in the ED environment, and they were less familiar with the ED environment.

18. Ms A raised concern that there was a lack of consent about the decision of the medical staff to 'sedate, paralyse, intubate, and ventilate' Mr A 'to make him easier to handle' and 'to facilitate further assessment'. Ms A said that the decision to intubate appears to have been primarily for the convenience of the treating staff and, while there may have been a clinical justification for this, Mr A's informed consent should have been obtained.

[6] A device used to assist in the delivery of oxygen therapy.
[7] Blood flow or circulation.
[8] A medication used in anaesthesia.
[9] An opioid medicine used to treat severe pain.
[10] The amount of effort used to expand the lungs.
[11] Between four to six out of 10.
[12] Place a tube through the mouth or nose into the windpipe to assist breathing.
[13] The area of the body situated between the neck and the abdomen.

Intubation

19. At 2.12pm, the team leader (ED consultant) asked Dr C to insert an airway (an ETT) under direct laryngoscopy.[14] Dr C noted in the clinical records that on laryngoscopy, he had a partial ('CL[15] grade 2a') view of the glottis.[16]

20. Initially, after the insertion of the ETT, an end-tidal carbon dioxide[17] trace could be seen and monitored on the capnograph[18] (end-tidal carbon dioxide monitor) but the trace was rapidly lost, and Mr A's oxygen saturation dropped to 50%.[19] The clinical records note that a 'quick' bedside echocardiogram showed no evidence of 'large pericardial effusion'[20] but that Mr A's heart rate was slow[21] and his heart had 'very sluggish contraction'.

21. Dr C documented in the clinical records:

> 'I was unable to pass tube (kept going posteriorly). I used a bougie[22] that appeared to go between cords. The ETT was railroaded with ease. There was misting of tube and bilateral chest movement. There was [carbon dioxide] recorded on capnograph. The chest was auscultated by ED Reg who reported bilateral air entry.[23] The ventilation became progressively harder (i.e. increased resistance to hand bag). The saturations began to fall. The [blood pressure] was not recording and air entry bilaterally was reported to be reduced. We assumed the presence of tension pneumothorax. Bilateral chest tubes were placed emergently with large gush of air reported (R>L). The saturations improved to — 80–85% where they remained.
>
> I was transiently unable to ventilate and unable to pass suction catheter. We pulled back ETT 1cm (to 23cm at teeth) and were able to ventilate and pass suction catheter so assumed we had been at level of carina.[24] We still had not had return of [end-tidal carbon dioxide].'

22. Dr B documented in the clinical records that the senior anaesthetic team was managing Mr A's airway, and Dr B left the ED to review other ICU patients. It is unclear from the clinical records how long Dr B was away from the ED, but on return to the ED, Dr B noted that Mr A

[14] A procedure to examine the back of the throat.
[15] The Cormack-Lehane system classifies views obtained by direct laryngoscopy based on the structures seen.
[16] The opening between the vocal cords.
[17] The level of carbon dioxide that is released at the end of an exhaled breath and reflects the adequacy with which carbon dioxide is carried in the blood back to the lungs and exhaled.
[18] A device that measures end-tidal carbon dioxide and respiration rate.
[19] A normal blood oxygen reading is generally 95–100%.
[20] Excess fluid in the space around the heart.
[21] Around 50 beats per minute. A normal resting heart rate for adults ranges from 60–100 beats per minute.
[22] A thin, flexible surgical instrument used to dilate a passage of the body.
[23] The presence of equal bilateral breath sounds indicates that both lungs are inflating equally with a given breath.
[24] A ridge at the base of the trachea (windpipe) that separates the openings of the right and left main bronchi (the tubes that connect to the windpipe and direct air to the right and left lungs).

had been intubated and that his condition had deteriorated 'with initial end-tidal carbon dioxide, then loss of end-tidal carbon dioxide and desaturation'.

23. Mr A's condition did not improve after the bilateral chest drains had been placed. In its root cause analysis (RCA) following the events, Te Whatu Ora noted that the medical team determined that Mr A's deterioration most likely resulted from the co-existing presence of tension pneumothoraces[25] secondary to the wound trauma.

24. At 2.26pm, another chest X-ray was completed, which showed 'under expansion, increased atelectasis[26] compared with the first film taken, [and] no pneumothoraces'. The chest drains were also noted. Dr C documented in the clinical records:

> 'We performed a [chest X-ray] to look at chest drains (I did not see it at this point). I was told that "it appears the ETT is down the right main bronchus". I pulled ETT back to 20cm at teeth. Ventilation was easy, saturations were around 85% but we still had no [end-tidal carbon dioxide] trace. We found this confusing. We asked for a second monitor. This also showed no [end-tidal carbon dioxide].'

25. Dr C noted in the clinical records that the ED consultant listened to Mr A's chest and 'clearly heard' bilateral air entry.

26. Dr B and Dr C performed a repeat video laryngoscopy. Mr A's pharynx was examined with a C-MAC video laryngoscope[27] size 3 blade.[28] A C-MAC size 4 blade could have provided a superior view of the glottis, but the C-MAC size 4 blade was not available in the ED at the time as it was being cleaned after having been used on another patient.

27. Dr C documented that the medical team was unable to see the vocal cords, but that they could clearly see the epiglottis.[29] Although the vocal cords were unable to be viewed, the ETT appeared to go 'forwards and under' the epiglottis, and not 'downwards into the oesophagus'. Dr B and Dr C both confirmed that the ETT was positioned correctly within the trachea. Dr B noted in the clinical records:

> 'Myself and [Dr C] re-checked ETT position with videoscope, appeared to be correctly sited. Still no [end-tidal carbon dioxide] and drains initially bubbled then no significant bubbling. Concern was possible ongoing large air leak.'

[25] An accumulation of air between the chest wall and the lung, which increases pressure in the chest, reducing the amount of blood returned to the heart.
[26] The complete or partial collapse of a lung or a section of a lung.
[27] A device that allows visualisation of airway structures during intubation.
[28] The C-MAC laryngoscope has two Macintosh blades (sizes 3 and 4) available for adult patients. Because of the lower angulation of the size 3 blade, it is preferred for daily practice, whereas the size 4 blade is more curved, resulting in a higher angulation with a wider view of the glottis, which may be advantageous if unexpectedly difficult intubation arises.
[29] A flap of tissue that sits beneath the tongue at the back of the throat. Its main function is to close over the windpipe (trachea) to prevent food from entering the airway.

28. The RCA states that the medical team considered the possibility of equipment failure (ie, the capnograph), or a failed intubation. The RCA notes that in an 'attempt to problem-solve', the trauma nurse 'demonstrated that the first capnograph appeared to be working by exhaling into the sampling port'. Te Whatu Ora said that this information was, however, not handed over, or it was not recognised by the senior staff.

29. In the Adverse Event Review (AER) conducted following the events, Te Whatu Ora stated that a disposable non-electronic end-tidal carbon dioxide monitor was available on the airway trolley, but staff were unaware of this, so it was not used.

30. Te Whatu Ora said that although the first capnograph was in working order, the clinical team 'created a confirmation bias from their past experience (that the capnograph was broken)'. As a result, a second capnograph was sourced, which also detected no end-tidal carbon dioxide trace. Te Whatu Ora said that the delay in establishing that carbon dioxide was absent contributed to the delay in Mr A being re-intubated.

31. At 2.33pm, due to 'grey colour facies, worsening pulse volume, lack of [end-tidal carbon dioxide] and saturation now dropping to around 60%', Dr C performed a bronchoscopy.[30] The bronchoscope was sourced from the ICU because this equipment was not held within the ED. Dr C then discovered that the ETT was placed in the oesophagus[31] (leading to the stomach), instead of the trachea[32] (leading to the lungs).

32. Dr C removed the tube immediately, after which Mr A's oxygen saturation 'improved to 100%'. Dr B noted in the clinical records:

> 'ETT removed immediately and BMV[33] commenced with good [end-tidal carbon dioxide] trace and recovery of [oxygen saturation]. Also heart rate improved from 60 to >120 and contracting improved (Dr … was performing [echocardiogram]). Radial pulses maintained throughout period of hypoxia. Patient was then stabilised and taken to CT then later admitted to ICU.'

33. During the incorrect placement of the ETT, Mr A lacked oxygen for approximately 24 minutes (from 2.12pm until 2.36pm). Dr C documented in the clinical records:

> 'In [hindsight] there must have been an oesophageal intubation from the start. However apart from the [end-tidal carbon dioxide] all other signs suggested that this was not the problem. It was only after a second monitor did not register any [carbon dioxide] that I considered there was an airway issue.'

34. Mr A was re-intubated at 2.36pm and transferred to the ICU for assessments to determine the functioning of his brain. Dr B was concerned that Mr A had suffered a hypoxic brain

[30] A procedure that enables visual inspection of the airways.
[31] The tube that carries food from the throat to the stomach. The top part of the oesophagus lies behind the windpipe.
[32] Airway/windpipe.
[33] Bag-mask ventilation.

injury and noted in the clinical records that Mr A was 'at risk of dying from this or being severely brain injured'.

35. At 5.40pm on 17 Month1, a family meeting took place, facilitated by a kaitakawaenga.[34] Dr B was present during the family meeting, as well as an ICU registrar and a registered nurse. Dr B noted in the clinical records:

> 'Explained that [Mr A's] resuscitation did not go well. That after he was put to sleep and a breathing tube put down he became unstable. The team of doctors and nurses went through a series of actions and checks to try to work out why [Mr A's] oxygen levels were so low. Further specialists were called in to assist. Our initial checks made us think the ETT was in the current position. After 15 minutes of low oxygen we realised our mistake and put the breathing tube in the correct position. Explained I'm concerned he has suffered a severe brain injury due to lack of oxygen. This brain injury could kill him … Explained plan to keep sedated for at least 36 hours and then assess brain function. Also explained Hospital Critical Incident review will be conducted.'

36. Following the successful intubation, Mr A was an inpatient in ICU for 15 days. Sadly, it was determined that he had suffered a severe hypoxic brain injury, and on 1 Month2 his ventilation was removed, and he died with his whānau by his side.

37. The Hospital Record of Death states:

> 'Trauma patient with … wounds to back. Patient agitated and decision made to intubate and sedate to facilitate care and management. Hypoxic event around intubation due to inadvertent oesophageal intubation. Patient failed to recover from this event and developed hypoxic brain injury.'

38. The coroner found that the direct cause of Mr A's death was hypoxic ischaemic encephalopathy[35] (HIE), with the antecedent cause being 'oesophageal intubation'.

Cultural safety and communication

39. Mr A's whānau speak of a whānau man — a much-loved partner, a pāpā and koro.

40. In their complaint to HDC, Mr A's whānau said they felt that the hospital struggled with allowing Mr A to have whānau support him. The whānau raised concerns that they struggled with the hospital staff to be with Mr A. Mr A's whānau said:

> 'It is possible that staff had an "unconscious bias" against [Mr A] because [of his background] and they were dealing with [such] wounds … As soon as he stood when getting out of the car, the staff who had come to assist him, yelled "security" and reacted to him. When [Mr A's daughter] returned to the ED, from parking the car, the

[34] Mediator.
[35] A brain injury that occurs when the brain does not receive sufficient oxygen.

> hospital was already in a heightened security mode and she even struggled to get inside to be with her dad.'

41. Mr A's whānau said that when they became distressed and upset when told that Mr A was severely brain damaged and would not recover, they felt unsupported by staff, who became defensive and called security, adding to their feelings of distress.

42. The whānau feel that Mr A would have been strengthened spiritually through karakia while he was in hospital, but this was made difficult by the presence of security, who questioned the whānau and made them feel watched and unwelcome. The whānau said that hospital staff made it difficult to facilitate karakia.

43. The whānau said that at times, they were treated in a way that was disrespectful, and they were left feeling humiliated and frustrated. The whānau raised their concerns with hospital staff at a meeting on 17 Month1. The whānau said that the hospital apologised for making them feel interrogated, but things did not improve.

44. Mr A's clinical records note that a whānau hui was held following Mr A's transfer to the ICU on 17 Month1. The hui was facilitated by kaitakawaenga from the hospital's Māori health services. Another whānau hui held on 19 Month1 was noted in the clinical records as an update to Mr A's whānau. The clinical records also note that whānau hui were facilitated almost daily by Mr A's ICU team, often with kaitakawaenga present.

45. On 20 Month1, whānau concerns about security were noted in the clinical records. The whānau were advised at this hui that changes had been made and they were encouraged to give feedback.

46. On 25 Month1, a second independent assessment of Mr A's prognosis was requested by the whānau. This was facilitated by Te Whatu Ora on 28 Month1, and an opinion was sought from an intensivist from another hospital. The intensivist's opinion did not differ from that of Mr A's treating team in terms of a prognosis or provide any new insight.

ED in red alert

47. Te Whatu Ora said that on the day when Mr A arrived in the ED (17 Month1), the ED was in 'red alert',[36] with the resuscitation bays being 'heavily used'. Te Whatu Ora stated that the red alert designation had been activated and, in response, resources had been increased.

48. Te Whatu Ora said that in addition to the red alert status, other events were occurring within the ED at that time, including the need to empty beds to accommodate incoming patients, and a ward patient who was unable to be accommodated in the ICU earlier on that day. Te Whatu Ora stated:

> 'Senior staff called to the trauma were required to deal with ongoing problems in the ED, the ICU, operating theatre or other parts of the hospital, including triage of patients.

[36] Extreme overload — any available hospital resources are to go to the ED.

> The intensive care and Anaesthetic consultant, while present during the resuscitation had significant other work distraction (emptying the ICU, running the acute theatre and delivery suite). While two vocationally trained anaesthetic SMO were involved in the care, neither were able to provide undivided attention to the resuscitation. Provisions of multiple other clinical services simultaneously did not allow them to solely focus care of the patient.'

Te Whatu Ora's Adverse Event Review and Root Cause Analysis

49. Following the events, Te Whatu Ora completed an AER and an RCA to reduce the chances of similar events occurring in the future.

Te Whatu Ora's AER

50. The AER states:

> '[It is] Important to appreciate at the outset that this tragedy is not from the oesophageal intubation but failure to [recognise] an oesophageal intubation until after a significant time had elapsed. Oesophageal intubation occurs not infrequently, but early recognition of corrective action prevents this being a major problem, and usually has no clinical consequence. Intubations performed in the [ED] have a significantly higher rate of adverse outcomes and important deficiencies of airway management compared with those performed in routine anaesthetic practice.'

51. The AER states that following the initial intubation, several procedures were performed by staff, including inserting bilateral chest drains, completing a chest X-ray, checking the ETT with a repeat laryngoscopy, completing an echocardiogram, and commencing a blood transfusion.

52. The AER notes that once an ETT is placed, the correct placement needs to be confirmed. This can be done by observation (eg, direct visualisation, observing chest movement, auscultation[37] of breath sounds, absence of epigastria[38] sounds with respiration, tube condensation on expiration, and the presence of exhaled tidal volume) or measurement (eg, measuring end-tidal carbon dioxide, pulse oximetry, or using an oesophageal detector device). The AER states that none of these methods are '100% reliable in all circumstances'.

53. In Mr A's case, chest movement, auscultation, tube condensation and, initially, end-tidal carbon dioxide were noted. An attempt to verify placement of the ETT by direct vision was made with a video laryngoscope but the view was not definitive.

54. The AER states that oesophageal intubation or accidental extubation are primary causes of there being no end-tidal carbon dioxide.

[37] Listening to sounds from the heart, lungs, or other organs, typically with a stethoscope.
[38] Around the stomach area.

55. The AER identified contributing factors that led to the delay in recognising the oesophageal intubation, including the availability of equipment and the lack of orientation of staff from different departments to the ED.

56. Regarding human error and bias, the AER outlined that the treating team were anxious to have a plan that included rapid decompression of the chest as a major priority if problems ensued. When Mr A's condition deteriorated, the wounds created an 'anchoring bias' that Mr A's deterioration was secondary to the wounds, before the adequate examination of plausible alternatives (including oesophageal intubation). The AER states that 'the framing effect' for staff arriving was that 'the patient is suffering from [his] wounds', and not 'this patient has hypoxia following intubation'. The intubation was noted as difficult. The AER states that although the equipment normally available met minimum requirements, the large (size 4) C-MAC blade was unavailable as it had been used earlier that day, which restricted the available options for the team. The AER notes that in this case, the size 4 blade may have provided a superior view of the glottis, particularly when the airway was re-examined.

Te Whatu Ora's RCA

57. The RCA describes the event under review as '[f]atal hypoxic brain injury occurring because of an unrecognised prolonged [oesophageal] intubation during resuscitation in the [ED]'. The RCA states:

> 'The RCA determined that this patient's death was a direct result of the failure to recognise that the endotracheal tube was incorrectly placed in the oesophagus, rather than the trachea. As such, the consensus viewpoint of the RCA team is: Had the oesophageal intubation of [Mr A] been recognised in a timelier manner, and the failed intubation drill initiated; it is highly likely he would have been successfully intubated sooner.'

58. The RCA states that the primary cause of the unrecognised oesophageal intubation was a failure of Crisis Resource Management (CRM) across multiple domains. CRM is an approach to the management of complicated life-threatening medical situations that optimises the non-technical skills required during resuscitation. There are eight broad CRM principles.[39] The RCA identified a failure of the following CRM principles:

'• Know your environment: There was a lack of familiarity with the environment from some team members.

- Anticipate, share and review the plan: In view of the patient's injuries the team anticipated that the patient may immediately deteriorate post-intubation — plans were formulated accordingly i.e. preparations were made to place bilateral chest drains and blood was made available. The consequence was when the deterioration occurred, it was attributed to a pathophysiological response to the intubation rather

[39] 1. Know your environment 2. Anticipate, share and review the plan 3. Provide effective leadership 4. Ensure role clarity and good teamwork 5. Communicate effectively 6. Call for help early 7. Allocate attention wisely — avoid fixation 8. Distribute the workload — monitor and support team members.

than the intubation itself. There was a failure to review the plan when the clinical scenario began to not match the expected course.

- Provide effective leadership: There was a lack of consistent, cohesive and confident team leadership, this was due in part to the ad-hoc nature of the team.
- Allocate attention wisely — avoid fixation: There were also several examples of the unwise allocation of attention resulting in fixation on inappropriate activities. There was an ongoing view within the team that "the next" action was going to resolve the situation.'

59. The RCA states that the standard practice in emergency airway management is that if there is any ambiguity or doubt around ETT placement and subsequent positioning following intubation, the tube should be removed — 'when in doubt take it out'.

60. The RCA states that the following were additional findings (not root causes):

- When the staff members were interviewed following the events, three staff members voiced an opinion that there was a 'widely held perception' among the staff members regularly working in the ED that the capnography devices were 'consistently unreliable'. This was despite the devices undergoing regular maintenance and review of their functioning by Biomedical Engineering. The RCA states that on this occasion, the first capnography device had been tested and was found to be functioning normally.
- There was a lack of equipment for difficult airway management available in the ED. Specifically, the ED did not have a disposable bronchoscope, or a full range of blade sizes available.

61. The RCA found that there were several mitigating factors, including that there was confusion over who was 'in charge' of the airway, that the team leader 'held a degree of deference' to the anaesthetist, and that multiple complicated psychomotor tasks were occurring simultaneously with an expectation that these would resolve the situation.

62. The RCA states:

> 'The RCA team would like to clearly state that we can see how this incident occurred and have considerable empathy for the staff involved and are satisfied that in our view there was no direct or indirect negligence. It is apparent that all staff were trying to do their absolute best in what was a very difficult and complicated clinical scenario.'

Recommendations

63. Following its review of the events, Te Whatu Ora made the following recommendations for changes:

<u>Equipment and process</u>

- To purchase two additional C-MAC type #4 blades to ensure that there is an adequate redundancy to provide for multiple patient uses between cleaning.

- To conduct a review of the airway equipment available in the ED.
- To assess the reliability of the end-tidal carbon dioxide monitor.
- To ensure that the chemical capnograph is present in the drawer with a clearly marked sign on the drawer to indicate that the chemical capnograph is in the drawer.
- To consider placing the Difficult Airway Society[40] guidelines in a prominent position on the wall.
- To develop an ED intubation checklist to include 'checking for a sustained [carbon dioxide] trace'.
- Standardise all difficult/failed airway equipment between the ED, ICU, and the operating theatre, including, but not limited to, the same video-capable laryngoscopies, laryngoscope blade selection, disposable bronchoscopes, and surgical airway devices.

Staff

- Full orientation of all anaesthetic staff (SMO, registrar, and anaesthetic technician) to the ED.
- Full orientation of all anaesthetic staff (SMO, registrar, and anaesthetic technician) to other areas where intubation may be required.
- To reconsider the response to a Red Alert and to prioritise the redeployment of staff to the ED.

Resuscitation

- To remind staff that conversation in the resuscitation room must be minimised unless it is required for care of the patient.
- To consider increasing the hospital acute care capacity (including increased resuscitation, ICU and HDU beds).

Simulation training

- Interdepartmental staff who may be required to work together in 'high pressure' team situations in the ED are to undertake regular, documented, and auditable simulation scenarios to ensure optimal CRM methods and understanding of processes, roles, and responsibilities.
- ED Traumatic and Medical Emergency orientation for non-ED staff.
- Non-ED staff who may be required to work together in a team situation in the ED are specifically orientated to the ED and its processes — specifically, to the management of traumatic and medical emergencies. This will involve a specific walk-around orientation of the ED accompanied with a written summary of processes and expectations when working in the ED that provides a 'very clear' statement around the team leader role.

[40] A UK-based medical specialist society.

Interdepartmental meetings

- To chair regular meetings between the ED, ICU, and the Anaesthetic Department for the purpose of reviewing the equipment, process, and 'difficult/problem' cases.

Further information

64. Te Whatu Ora extended its condolences to Mr A's whānau for the loss of their loved one.

Responses to provisional opinion

Mr A's whānau

65. Mr A's whānau was given an opportunity to respond to the 'Introduction', 'How matter arose', and 'Changes made since events' sections of the provisional opinion.

66. Mr A's whānau's comments have been incorporated into this opinion, where relevant and appropriate.

67. Mr A's whānau maintain that Mr A was not agitated, aggressive, or uncooperative. Ms A said that she was present and witnessed the events unfold. Ms A said that although Mr A was in pain and 'moaning' from time to time, he was able to talk and communicate. Ms A said that at no point did she see or hear Mr A resist the doctors' instructions or be uncooperative. This is supported by both of Mr A's daughters.

68. Mr A's whānau said that a 'core memory' of the events was the 'utter confusion' that existed between staff. Ms A, who was present during the events, said that the staff appeared 'dumbfounded and in panic mode'. Ms A said that she recalls that 'no one seemed to know what they were doing' and that, when the anaesthetic team arrived, they appeared disorganised, unprepared, and uncertain.

69. Mr A's whānau said that although many changes have been made by Te Whatu Ora as a result of the events, they are concerned that none of the changes relate to how the hospital will improve the way in which it deals with Māori. Mr A's whānau stated that this is a 'stark and worrying omission', particularly given the high number of Māori whānau who access the hospital. Mr A's whānau said that the opportunity to reflect, learn, and do better in the future appears to have been lost by Te Whatu Ora, or not recognised as an issue worth addressing.

Te Whatu Ora

70. Te Whatu Ora was given an opportunity to respond to the provisional opinion.

71. Te Whatu Ora stated that it accepts the recommendations proposed in the provisional opinion.

72. Te Whatu Ora said that the Heads of Emergency Medicine, Anaesthesia, and ICU met to discuss the requirements of a regular ongoing training programme for ED and ICU staff on standard practice in emergency airway management. Te Whatu Ora said that the fundamentals to implement this recommendation have been agreed, as well as additional

proposals to enhance the relationships and the interactions that already take place between the three departments.

Opinion: Te Whatu Ora — breach

73. First, I express my sincere condolences to Mr A's whānau for their loss. I acknowledge the significant impact that these events and Mr A's passing have had on his whānau.

74. As a healthcare provider, Te Whatu Ora is responsible for providing services in accordance with the Code of Health and Disability Services Consumers' Rights (the Code). It had a responsibility to ensure that the hospital had the appropriate equipment, that staff were trained and aware of what to do in circumstances such as these, and that Mr A received services of an appropriate standard. I consider that a lack of standardised equipment, a lack of staff awareness in relation to the availability and functionality of the equipment, and the staff not following the standard practice in emergency airway management in a timely manner adversely affected the care provided to Mr A. I have also reflected on the view of Mr A's whānau that the actions of staff may have been influenced by aspects of his background, and that they felt that the hospital struggled with allowing Mr A to have whānau support him.

Delay in recognising oesophageal intubation — breach

75. As outlined above, in order to manage Mr A's perceived agitation and allow further investigations to be completed safely, Mr A was provided anaesthetic medication and intubated. Initially, the capnograph showed an end-tidal carbon dioxide trace but the trace was rapidly lost and Mr A's oxygen saturation dropped to 50%.

76. In response, the medical team took several actions, including a bedside echocardiogram, placement of bilateral chest drains, auscultation of the chest, and a repeat video laryngoscopy.

77. When the laryngoscopy was performed, a size 3 blade was used because the size 4 blade was unavailable at that time. Although the view obtained with the size 3 blade was incomplete because the vocal cords could not be seen, both Dr C and Dr B considered that the ETT had been placed in the correct position.

78. Given that the medical team believed that the ETT had been placed in the correct position, it was thought that Mr A's condition likely deteriorated because of pneumothoraces. As a result, another chest X-ray was performed but no pneumothoraces could be seen.

79. As there was still no end-tidal carbon dioxide trace, the medical team considered the possibility that the end-tidal carbon dioxide monitor (capnograph) was faulty. Although a disposable non-electronic monitor was available on the airway trolley, staff were unaware of this, and a second monitor was sourced from another department.

80. When the second monitor also detected no end-tidal carbon dioxide trace, the medical team sourced a bronchoscope from the ICU because this equipment was not held in the ED. Upon

performing the bronchoscopy, Dr C discovered that the ETT had been incorrectly placed in the oesophagus, instead of the trachea.

81. As a result of the delay in recognising the oesophageal intubation, Mr A suffered serious harm and sustained a fatal brain injury.

82. I adopt the findings of the AER and am critical that the medical team failed to recognise the oesophageal intubation in a timely manner. As stated in the AER, oesophageal intubation or accidental intubation is a primary cause of no end-tidal carbon dioxide. The AER also states that the absence of a recognisable waveform trace indicates failed intubation unless proven otherwise. In my view, the medical team should have reconsidered the placement of the ETT as soon as end-tidal carbon dioxide was unable to be detected by the first capnograph. The detection of sustained exhaled carbon dioxide using waveform capnography is the mainstay for excluding oesophageal placement. The ETT should have been removed if timely restoration of sustained exhaled carbon dioxide could not be achieved, and I am critical that this did not occur.

83. I am also critical that the staff did not follow the standard practice in emergency airway management. As stated in the RCA, the standard practice in emergency airway management is that if there is any ambiguity or doubt around ETT placement and subsequent positioning following intubation, the tube should be removed — 'when in doubt take it out'. This did not occur in a timely manner.

84. Te Whatu Ora accepted that the delay in establishing that carbon dioxide was absent contributed to the delay in Mr A being re-intubated. In its RCA, Te Whatu Ora accepted that there was a failure to recognise that the ETT was incorrectly placed in the oesophagus. The RCA stated that if the oesophageal intubation had been recognised in a more timely manner, it is likely that Mr A would have been successfully intubated earlier.

85. The Australian and New Zealand College of Anaesthetists (ANZCA) 'Guideline on monitoring during anaesthesia 2017' (the ANZCA guideline) states that monitoring equipment should always be used in conjunction with careful clinical observation by the anaesthetist, as there are circumstances in which equipment may not detect unfavourable clinical developments.

86. In this case, the equipment (the first capnograph) did detect the unfavourable clinical development (that there was no end-tidal carbon dioxide trace), but the medical staff doubted its reliability. Despite the first capnograph being tested and confirmed as functioning by one of the nursing staff, the decision was made to source a second capnograph from another department. This contributed to the delay in Mr A's airway being managed adequately.

87. Management of Mr A's airway was further delayed when the second capnograph also detected that there was no end-tidal carbon dioxide trace, and a bronchoscope had to be sourced from another department. The oesophageal intubation was finally identified with a bronchoscopy.

88. Once the oesophageal intubation had been identified, the medical team acted promptly and took the appropriate steps for Mr A to be re-intubated.

89. The ANZCA guideline states that the healthcare facility in which the procedure is being performed is responsible for provision of equipment for anaesthesia monitoring on the advice of one or more designated specialist anaesthetists, and for effective maintenance of this equipment.

90. In this case, a lack of standardised equipment contributed to several missed opportunities for the oesophageal intubation to be identified. When the repeat video laryngoscopy was performed, a size 4 blade may have provided a superior view, but this was not available in the ED as it was being cleaned after having been used on another patient. The staff members mistakenly believed that the first capnograph was faulty, when this was not the case. The staff members were also unaware of the availability of a disposable non-electronic monitor on the airway trolley and sourced a second capnograph from another department. In addition, the staff had to source a bronchoscope from another department when no end-tidal carbon dioxide trace could be detected with the second capnograph.

91. I am critical that Te Whatu Ora did not ensure that there was suitable equipment for difficult airway management available in the ED, and that there was a lack of standardised equipment across the hospital. I am also critical that the staff were not made aware of the equipment that was available, and that the staff were not reassured that the equipment was functional and being maintained adequately. In my view, this contributed to the delay in diagnosing the oesophageal intubation.

92. Te Whatu Ora accepted that the delay in establishing that carbon dioxide was absent contributed to the delay in Mr A being re-intubated. In its RCA, Te Whatu Ora accepted that there was a failure to recognise that the ETT was incorrectly placed in the oesophagus. The RCA stated that if the oesophageal intubation had been recognised in a more timely manner, it is likely that Mr A would have been successfully intubated earlier.

93. I have carefully considered the extent to which the failings in Mr A's care occurred as a result of individual staff action or inaction, as opposed to systemic and organisational issues. I have concluded that because the failures involved multiple staff members from different treating teams (SMOs from ED and ICU and registrars from ED, ICU, Surgery, and Orthopaedics), and a lack of standardised equipment, a lack of staff awareness in relation to the availability and functionality of the equipment, and the staff failing to follow the standard practice for emergency airway management in a timely manner contributed to this, this is reflective of systemic and organisational issues at Te Whatu Ora, for which it is responsible at a service level. Accordingly, I find that Te Whatu Ora breached Right 4(1) of the Code.[41]

[41] Right 4(1) states: 'Every consumer has the right to have services provided with reasonable care and skill.'

Informed consent to intubate — other comment

94. Mr A's whānau raised concern that Mr A's informed consent was not obtained prior to intubation. Mr A's whānau said:

> 'The decision to intubate appears to have been primarily for the convenience of the treating staff and while there may have been a clinical justification for this, they could have given [Mr A] adequate analgesia to treat his pain and agitation and they should have obtained informed consent and did not.'

95. Right 7(1) of the Code states that services may be provided to a consumer only if that consumer makes an informed choice and gives informed consent, except where any enactment, or the common law, or any other provision of the Code provides otherwise.

96. One of the accepted exceptions to obtaining comprehensively informed consent is the doctrine of necessity. That is, in emergency situations, it is not always reasonable, practicable, or possible to obtain fully informed consent of the kind that may be possible in non-emergency situations.

97. In this case, Mr A's situation was an emergency.

98. Although initially Mr A was alert and sitting upright upon arrival at the ED, he had the highest possible triage status. He required immediate treatment because of concerns about the stability of his airway, and further investigations were required to determine the extent of his wounds.

99. I accept, as noted in the RCA, that 'it was appropriate to sedate, intubate and ventilate' Mr A to safely facilitate a trauma series CT scan. Given the emerging situation following Mr A's arrival in the ED, the decision to intubate was necessary, and in these circumstances it is reasonable that Mr A's consent could not be sought at the time.

Cultural safety and communication — other comment

100. Mr A's whānau told HDC that they felt that the hospital struggled with allowing Mr A to have whānau support him. Mr A's whānau needed to ensure that their koroua was strengthened spiritually through karakia while he was in hospital, but at times this was made difficult by security and hospital staff.

101. I note that the ICU team held hui almost daily to provide updates to whānau and discuss their concerns, including the concerns whānau raised about the security staff. At times the hui also included kaitakawaenga from the hospital's Māori health services. In my view, Te Whatu Ora's facilitation of regular whānau hui and recognition of the cultural pathway to ensure that Māori services were made available for the whānau was a reasonable response.

102. While I acknowledge that Te Whatu Ora's response to facilitate regular hui with Mr A's whānau was reasonable in terms of supporting cultural safety and communication, it is important to be reminded of the purpose of whānau hui and the role whānau play when they have whānaunga in hospital.

103. Whānau are fundamental in the health and wellbeing of their whānaunga. Whānau should come away from a whānau hui feeling empowered and supported in the next steps for their whanaunga. This empowerment comes from the quality of the information and advice provided to the whānau.

104. He Korowai Oranga|the Māori Health Strategy clearly defines the importance of whānau to achieve Māori health and wellbeing, with the aspiration that 'Māori families are supported to achieve the fullness of health and wellbeing within te ao Māori and New Zealand Society as a whole'.

105. I have recommended that Te Whatu Ora provide Ms A and Mr A's whānau with the opportunity to have a hohou te rongo, facilitated by HDC's cultural team. The decision to participate in a hohou te rongo process will rest with Ms A and Mr A's whānau.

Changes made since events

106. Following the events and in response to the recommendations, Te Whatu Ora made the following changes:

- Additional C-MAC blades have been purchased, with two size 3 and two size 4 blades now available.
- A bronchoscope has been purchased to 'check airway placement', which has been standardised with ICU and theatre equipment.
- An airway committee has been formed, comprising the Anaesthetics, ICU, ED, and Ear, Nose and Throat Departments. The airway committee has reviewed and standardised airway equipment between the ED, ICU, and the operating theatre.
- Quarterly meetings are held by the airway committee for the purpose of reviewing equipment, process, and 'difficult/problem' cases.
- Equipment is now tested daily, as per the 'Resuscitation Equipment' checklist, and the checklist is signed on completion.
- The presence of the chemical capnograph in the 'airway drawer' is confirmed by a daily checklist.
- A 'Difficult Airway' checklist has been developed.
- Pre-intubation and post-intubation checklists have been developed and are used for all intubations.
- Orientation to the ED and ED monitors and equipment has been co-ordinated by the Department of Anaesthesia.
- The 'Red Alert' response has been reviewed within the ED, and a measurement criteria tool is now available and able to be completed electronically.

- Interdepartmental simulation training sessions were initiated in 2018 with the ED and the ICU, and airway simulation training was undertaken in January 2018. Interdepartmental simulation training sessions are held bi-monthly.

Recommendations

107. Considering the changes made by Te Whatu Ora since the events, I recommend that in addition, Te Whatu Ora:

a) Provide a written apology to Ms A and Mr A's whānau for the deficiencies identified in this report. The apology is to be sent to HDC, for forwarding to Ms A and Mr A's whānau, within three weeks of the date of this decision.

b) Provide all current staff within the ED and the ICU with training on the standard practice in emergency airway management and implement an ongoing programme of regular training on this. Evidence of this is to be provided to HDC within six months of the date of this report.

108. As mentioned earlier in my report, I acknowledge that these events have had a significant impact on Mr A's whānau. With the aim of assisting Mr A's whānau to achieve meaningful resolution, I recommend that Te Whatu Ora provide Ms A and Mr A's whānau with the opportunity to have a hohou te rongo, facilitated by HDC's cultural team. Prior to any hohou te rongo, HDC's cultural team can facilitate a hui ā-whānau, which will support the preparation of a hohou te rongo process, and the decision to participate in a hohou te rongo process will rest with Ms A and Mr A's whānau.

Follow-up actions

109. A copy of this decision with details identifying the parties removed, except Te Whatu Ora Te Matau a Māui Hawke's Bay and Fallen Soldiers' Memorial Hospital, will be sent to Te Tāhū Hauora|Health Quality & Safety Commission and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.