Canterbury District Health Board

Emergency Medicine Registrar, Dr B

Emergency Medicine Registrar, Dr C

A Report by the

Health and Disability Commissioner

(Case 17HDC00725)

Health and Disability Commissioner

Te Toihau Hauora, Hauātanga

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Executive summary

1. On 29 March 2017, Mrs A was seen by her GP because of worsening neck pain, a pulsing noise in her head, and a persistent headache. She had attended physiotherapy for her neck pain, but her pain had worsened. The GP referred her to the Emergency Department (ED) at a public hospital for further investigation.

2. Between 29 and 31 March 2017, Mrs A presented to the ED four times. On 29 March, Mrs A was reviewed in ED and discharged with treatment for an ear infection, neck pain, and a migraine. On 30 March, Mrs A developed vertigo[1] and vomiting, and presented again to ED. She was reviewed in ED, and her care was discussed with the ED consultants. Mrs A was referred to the ENT service for investigation, in accordance with the DHB protocols for patients who present with vertigo. She was reviewed by two ENT junior doctors and diagnosed with otitis media with labyrinthitis[2] and migraine. No consultant review or CT scan was arranged, and Mrs A was discharged home.

3. At 9.45am on 31 March, Mrs A presented to ED a third time, and an ED doctor discussed performing a CT scan with the admitting ENT registrar. Mrs A was referred to the ENT service for investigation, and was seen by the ENT doctor who had examined her previously. Again Mrs A was discharged with a diagnosis of vertigo caused by a middle ear infection. No CT scan was performed, and Mrs A's presentation was not discussed with a consultant.

4. In the evening of 31 March 2017, Mrs A returned to the ED and was reviewed by a senior medical officer, who ordered a CT scan. The scan revealed a vertebral artery dissection[3] and acute and subacute bilateral cerebellar infarcts (two strokes).

Findings

Canterbury DHB

5. The Commissioner found a pattern of poor care across Mrs A's presentations to the ENT service on 30 and 31 March 2017. In particular, Mrs A was not offered a CT scan at either her first or second ENT review, and no discussion with the ENT consultant took place. On 31 March 2017 (her second ENT review), the ED doctor who referred Mrs A to ENT noted that a CT scan was indicated, but this was not communicated to the ENT registrar adequately, and no CT scan was performed at this time.

6. Accordingly, the Commissioner found that Canterbury District Health Board (DHB) breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).

[1] Experiencing a hallucination of motion. In an acute situation it is a whirling rotation in the environment.
[2] A viral infection that affects the inner ear and can cause vertigo and often vomiting.
[3] A tear in an artery of the brain.

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Recommendations

7. The Commissioner recommended that Canterbury DHB (a) provide Mrs A with a written apology; (b) confirm the procedures in place at the DHB to oversee and support junior registrars who are failing to satisfy the requirements of their clinical placements; (c) use this report as a basis for training staff in the ED and ENT departments; (d) audit its compliance with the ENT guidelines to ensure that the escalation process is followed in situations where a consultant review is indicated; and (e) give consideration to developing ED guidelines for situations when a junior doctor has a different diagnosis from the referring GP, and where a patient with no definitive diagnosis re-presents to ED with concerning symptoms that have not resolved.

Complaint and investigation

8. The Health and Disability Commissioner (HDC) received a complaint from Mrs A about the services provided by Canterbury DHB. The following issues were identified for investigation:

- *Whether Canterbury DHB provided Mrs A with an appropriate standard of care in March 2017.*
- *Whether Dr B provided Mrs A with an appropriate standard of care in March 2017.*
- *Whether Dr C provided Mrs A with an appropriate standard of care in March 2017.*

9. The parties directly involved in the investigation were:

Mrs A	Complainant
Canterbury DHB	Provider
Dr B	Provider/emergency medicine registrar
Dr C	Provider/emergency medicine registrar

10. Information was also received from:

Dr D	Ear, nose, and throat (ENT) registrar
Dr E	ENT registrar
Dr F	ENT consultant
Dr G	ENT registrar
Dr H	ENT registrar

Also mentioned in this report:

Dr I	ED Clinical Director

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11. Independent clinical advice was obtained from an emergency physician, Dr Shameem Safih (**Appendix A**), and an otolaryngology head and neck surgeon, Dr Martyn Fields (**Appendix B**).

Information gathered during investigation

Introduction

12. Mrs A was 33 years old at the time of events. This opinion relates to the services she received at the public hospital between 29 and 31 March 2017, when a CT scan revealed that Mrs A had had a vertebral artery dissection[4] and acute and subacute bilateral cerebellar infarctions (two strokes).

Presentation to GP on 29 March 2017

13. On 29 March 2017, Mrs A attended her medical centre because of worsening neck pain, a pulsatile noise in her head, and a persistent headache. She saw a general practitioner (GP) and reported that one week ago she had developed a stiff neck after participating in strenuous physical activity. The GP noted that Mrs A had attended physiotherapy for her neck pain, but that her pain had now worsened. The GP queried whether Mrs A had discitis,[5] and referred her to the ED for further investigation to exclude discitis.

Presentation to the ED on 29 March 2017

14. Mrs A presented to the ED at 1.43pm. She was seen by an emergency medicine registrar, Dr B, who recorded her history of left-sided shoulder pain, left-sided neck pain, left-sided ear pain, and headache on her left side. He noted that Mrs A had recently done heavy lifting above her head and neck, and that following the session Mrs A had developed neck pain and had sought help from physiotherapy. Mrs A reported that initially the neck pain had improved, but in the following days the neck pain had worsened, and she had presented to the GP. Dr B recorded that Mrs A had been referred by her GP for imaging and "bloods to rule out meningitis[6]".

15. On examination, Dr B noted that Mrs A's left shoulder and left side of the neck were very tender, her left ear drum was inflamed, and there was discharge from the ear. Dr B performed a neurological assessment of Mrs A that included assessment of her speech, cranial nerves, facial symmetry, and upper and lower limb strength, and this was normal. Mrs A's temperature, vital signs, and bloods were also normal.

16. Dr B recorded his impression of "likely mechanical neck pain, with L) ear otitis media,[7] with flare up of migraine". He noted that Mrs A's pain resolved after she was given diazepam

[4] A tear in an artery of the brain.
[5] Infection or inflammation that develops between the intervertebral discs of the spine.
[6] An infection of the membranes that cover the brain.
[7] Infection of the middle ear.

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for the neck spasm and chlorpromazine for her migraine. Mrs A was discharged home with pain relief and antibiotics[8] for an ear infection, and advised to return if her symptoms worsened.

17. Dr B stated that in accordance with the Canterbury DHB Headache Health Pathway protocol, Mrs A did not present with any concerning features. He said that it was his impression that Mrs A's symptoms of left ear infection, shoulder pain, and neck pain contributed to her benign headache.

Second presentation to ED on 30 March 2017

18. Mrs A said that 30 minutes after arriving home from the hospital she had a very severe episode of vertigo,[9] and could not walk and had to lie down. Later that day she began vomiting and called an ambulance because she was unable to walk. The ambulance care summary states that Mrs A was complaining of increased pain in the left ear, vomiting, and dizziness. She was given intravenous fluid on the way to the hospital. She arrived at the ED at around 1am, and was assigned a triage score of 3 — to be reviewed within 30 minutes.

Emergency medicine review

19. Dr C, a provisional trainee in emergency medicine, stated that Mrs A was a triage 3 (urgent) to be seen within 30 minutes, but because of high acuity on the ward, she was unable to be seen within this time. He said that he reviewed Mrs A's previous medical notes, and noted that she had been seen recently in the ED and prescribed chlorpromazine[10] and a course of antibiotics.

20. At around 3.30am, Dr C took Mrs A's history and noted that shortly after arriving home she had had an episode of vertigo and vomiting, and had to lie in bed to cope with the symptoms. He noted that in the ambulance Mrs A had been administered intravenous fluids, and that on arrival at the ED she was given analgesia,[11] ondansetron,[12] and Sevredol,[13] and these were effective for her pain.

21. Dr C noted that Mrs A had mild pain across the left side of her head. It was also noted that her neck pain, which had been left sided, was now central and high at the base of the back of the head. He stated that her vertigo had progressed, and was set off by any movement, and settled only when she lay very still. He said that her headache and neck pain were still present but less severe than the previous day, but she also reported left ear pain of severity 8/10. He told HDC that Mrs A reported that this pain was nothing like her previous migraines, and that he agreed that it did not sound like a migraine.

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[8] Amoxicillin.
[9] Experiencing a hallucination of motion. In an acute situation it is a whirling rotation in the environment.
[10] Used to treat nausea, vomiting, and dizziness due to various causes, including migraine (severe headache).
[11] Pain relief.
[12] A medication to treat motion sickness.
[13] Oral morphine for pain relief.

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22. Dr C noted no photophobia[14] and no rash. Mrs A's temperature of 37.5°C was mildly febrile, and her other observations were normal.[15]

23. On examination it was found that Mrs A's left ear was sore, there was a large effusion[16] behind the left ear drum, and it was very inflamed, bulging, and "ready to pop". The right ear was found to be normal. It was also found that the lymph nodes on the left side of Mrs A's neck were mildly tender. Mrs A's neck was stiff on flexion and extension,[17] but was able to be rotated freely. She was unable to sit up, as this induced vertigo.

24. Dr C stated that he performed a HINTS examination to eliminate the central causes of vertigo as per his usual practice. The HINTS examination is a three-part clinical test to differentiate between central and peripheral causes in patients with vertigo, and includes a head impulse test, observation of nystagmus,[18] and looking for skew deviation of the eyes. It was found that Mrs A's speech, eye movements, and limb movements were all normal, and no sensory deficits were noted. Dr C told HDC that he was unable to conduct a head impulse test and gait examination because these movements induced Mrs A's vertigo.

25. Dr C recorded that his impression was of otitis media (middle ear infection) and vestibular neuronitis (severe vertigo).

26. Dr C stated that although Mrs A's pain and nausea had improved at this time, her vertigo remained unchanged, and she was too unwell for discharge. He prescribed prochlorperazine for the vertigo, and continued with antibiotics for the infected ear.

27. Dr C told HDC that his plan was to observe Mrs A and assess whether her condition had improved in the morning. He discussed Mrs A's case with the team leader in accordance with the ED guidelines,[19] and it was agreed to transfer Mrs A from the ED to the observation unit for further review in the morning.

Further review

28. Nursing staff took Mrs A's observations at 1.20am, 2.00am, 2.30am, 3.00am, 4.30am, and 7.15am. It was recorded that her Glasgow Coma Scale (GCS)[20] score (taken to assess level

[14] Painful sensitiveness to strong light.
[15] Heart rate of 66 beats per minute, blood pressure 103/58mmHg, respiratory rate 16 breaths per minute, and oxygen saturation of 98%.
[16] Accumulation of fluid.
[17] Forward and back movement.
[18] An involuntary, rapid, and repetitive movement of the eyes.
[19] ED Orientation Handbook.
[20] The Glasgow Coma Scale (GCS) is the most common scoring system used to describe the level of consciousness in a person following a traumatic brain injury. The GCS measures Eye Opening (E), Verbal Response (V), and Motor Response (M). Clinicians rate the best eye opening response, the best verbal response, and the best motor response an individual makes. The final GCS score is the sum of these numbers. The individual elements of a patient's GCS can be documented numerically as well as added together to give a total Coma Score (e.g., E2V4M6 = 12).

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of consciousness/mental status) was 15/15, and she remained fully alert. Mrs A's assessment of pain at 1.20am was 8/10, and at 7.15am it was recorded as 3/10.

29. Dr C was told by the nursing staff that Mrs A had slept only briefly overnight, and her symptoms were unchanged. At around 7am, Dr C reviewed Mrs A and found that her earache and headache persisted and she was unable to walk, as this still induced vertigo.

30. Dr C stated that he discussed Mrs A's case with three ED consultants at the handover meeting at 8.00am, in accordance with the ED guidelines. Pursuant to their advice, Mrs A was referred to the otorhinolaryngology service (ENT)[21] for inpatient care and further investigation of her vertigo. Dr C told HDC that previously ENT had requested that patients with vertigo be referred to ENT for review and, if indicated, a CT scan would then be arranged.

31. Dr C referred Mrs A's care to ENT, and this was accepted. Dr C completed Mrs A's ED medical assessment record and discharge summary before the end of his shift at 8.30am.

32. Dr C stated:

> "[I]n the history, factors which steered me away from a central cause of vertigo were the initial episodic nature of the pain, her young age and lack of other medical or family history to suggest risk factors for a central cause."

33. Dr C said that he was unable to conduct a thorough neurological assessment owing to Mrs A's symptoms of vertigo, and not because he was "anchored" on a diagnosis of middle ear infection. In terms of cognitive bias, Dr C stated that he would refute this because he moved away from previously considered diagnoses such as migraine, neck sprain, and meningitis when the history and examination did not support these.

First ENT review

Dr E

34. At 9.00am on 30 March 2017, the on-call ENT registrar, Dr E, reviewed Mrs A in the ED observation ward.

35. Dr E noted Mrs A's history of left ear pain, left neck pain, headache, vertigo, nausea and vomiting, and her presentation to ED the previous day. On examination it was found that Mrs A's left ear was inflamed and bulging, and her neck lymph nodes were mildly tender.

36. Dr E stated that she considered a central cause of Mrs A's vertigo, and performed a neurological and physical examination. It was found that her balance, limb movements, nystagmus, and test for eye misalignment were normal. A head impulse test was performed, and saccades[22] was noted. Dr E told HDC that when she reviewed Mrs A she had no problems with her left eye not tracking properly.

[21] Service for conditions of the ear, nose, and throat.
[22] A fast, intermittent eye movement that redirects gaze.

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37. Dr E stated that it was her impression that Mrs A had acute otitis media/labrynthitis.[23] Dr E recorded her plan to admit Mrs A to the ENT ward, commence Augmentin[24] and analgesia,[25] and arrange an audiogram[26] followed by a review in the ENT clinic following the audiogram.

38. In response to the provisional opinion, Mrs A stated that Dr E told her that her left eye was not tracking.

39. Mrs A had an audiogram at 1.15pm, and this was normal.

40. Dr E said that she left the hospital at 12.30pm to attend another hospital, and on her return Mrs A had been discharged by the afternoon on-call registrar. Dr E told HDC that at the time of Mrs A's admission she did not brief ENT consultant Dr F because her priority was to commence treatment and arrange a clinic review following the audiogram. Dr E stated that this is her usual practice.

Review at ENT clinic

41. At 3.00pm, Mrs A was reviewed at the ENT clinic by ENT registrar Dr D. At the time of events, Dr D was a non-training surgical (junior) registrar. Dr D recorded the history and noted that in 2014 Mrs A had been diagnosed with migraine and a CT scan had been normal. He also noted that Mrs A had been reviewed by Dr E, whose impression was an ear infection with vestibular neuronitis. Dr D noted that Mrs A's blood test results were normal and she was afebrile.[27] He noted that she was orientated and her speech was normal. He performed a cranial nerve examination, and this was also normal. A neurological and gait assessment was normal except for an unsteady heel-to-toe walk. Dr D also performed a head impulse test, and no saccades or nystagmus were noted. Dr D told HDC that he found no issue with the tracking of Mrs A's left eye.

42. Examination of the left ear revealed evidence of yellow slough, effusion, and no erythema.[28] The right ear was opaque, with effusion noted. Dr D recorded his impression of vestibular neuronitis and otitis media with effusion. He recorded that his plan was to provide oral Augmentin and refer Mrs A back to the ENT ward, and, if her observations remained stable, she would be safe for discharge home.

43. Dr D told HDC that because of Mrs A's severe headaches he suspected an alternative diagnosis with a neurological origin, and he consulted with ENT registrar Dr H. Dr D stated that he asked Dr H to review Mrs A, and no concerns about Mrs A's presentation were noted. There is no documentation of any discussion with Dr H about Mrs A's care.

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[23] A viral infection that affects the inner ear and can cause vertigo and often vomiting.
[24] Antibiotic.
[25] Pain relief.
[26] Owing to concerns that Mrs A might require a myringotomy (a surgical procedure to drain fluid from behind the eardrum).
[27] Not feverish.
[28] Redness of the skin.

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44. Dr H stated that he has no recollection of any discussions with Dr D about Mrs A's presentation on 30 March 2017. Dr H told HDC that the first time he saw Mrs A was on 5 April 2017, on the ward where Mrs A had been admitted under the Neurology service. Dr H asserts that he did not provide any care to Mrs A at any point when she was under the care of the ENT service.

ENT ward

45. At 5.35pm, a registered nurse recorded that Mrs A's observations were stable, her Early Warning Score[29] was 0, and there were no clinical concerns. Mrs A complained of pain and nausea, for which paracetamol and prochlorperazine were given with good effect. It was documented that Mrs A wanted to go home and felt that she could manage at home. Mrs A was discharged from the ENT ward and advised to seek medical attention if she had any further concerns.

46. Mrs A told HDC:

> "[Dr D] said he saw no issue with the left eye even though I could feel it wasn't right as I couldn't follow his finger without feeling sick. He told me it was all the ear infection and to go home. I went back to the ward where I was told I could go home so I did — I still could not walk properly I was wheeled out and felt uneasy leaving."

47. Mrs A said that after returning home her headache was "awful". She could not sleep, and the pain relief was not effective. She said that she felt so ill that she returned to the ED.

Third presentation to ED on 31 March 2017

48. At 9.45am, Mrs A attended the ED complaining of persistent headache, nausea, dizziness, and vertigo. She was reviewed by a triage nurse and assigned a triage score of 3.

49. Mrs A was seen again by ED registrar Dr B. He noted that Mrs A had been discharged from the ENT service the previous day with a diagnosis of vestibular neuritis and otitis media.

50. Dr B noted that Mrs A presented with a headache and severe pain originating from her left ear towards her left eye, and that she felt very nauseous when she opened her eyes, and the medication prescribed[30] had had little effect.

51. Dr B examined Mrs A and noted that her GCS was 15/15, her vital signs were normal, and she appeared washed out and unable to open her eyes. He performed a neurological assessment of her cranial nerves, facial symmetry, speech, sensation, power, and co-ordination, and these were all normal except for unidirectional horizontal nystagmus on

[29] An Early Warning Score is a tool used to assist staff with the recognition and appropriate response to a patient who is deteriorating clinically, or is at risk of clinical deterioration. An EWS is calculated from routine vital sign measurements, including respiration rate, presence/absence of oxygen therapy, oxygen saturation, heart rate, blood pressure, level of consciousness, and temperature.

[30] Augmentin, Sofradex, prochlorperazine.

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her left lateral gaze.[31] He said that he found no skew deviation and no dysmetria[32] to indicate a diagnosis of central vertigo.

52. Dr B stated that he performed a head impulse test, but this induced Mrs A's vertigo. He said that he did not assess Mrs A's gait because this also induced vertigo, and would pose a high risk of falls.

53. Dr B noted that Mrs A's left ear had improved. He recorded his impression of "ongoing vestibular neuronitis with ?otalgia[33] related headache (on the background of migraine)".

54. Dr B stated that he was concerned that Mrs A's symptoms were related to complications from otitis media, and discussed with Mrs A his plan for a CT scan. He said that he exercised caution about ordering a CT scan because of Mrs A's history of a previous CT scan and her age. He said that in light of Mrs A's history and presentation, he considered that it would be prudent to consult with the ENT service prior to ordering a CT scan.

55. Dr B told HDC:

> "[T]here is a mutual understanding between the Emergency Department and the Otolaryngology [ENT] service, that patients with symptomatic vertigo would be seen by the Otolaryngology [ENT] service for assessment of their vertigo, unless Emergency Department staff were fairly certain that there could be a central cause for the vertigo."

56. Dr B said that he telephoned the on-call ENT registrar.[34] Dr B stated:

> "I asked if they would like the Emergency Department to organise a CT, looking for complications of otitis media, or if Otolaryngology [ENT] service would like to see her first. I was advised by the on-call Otolaryngology registrar to send [Mrs A] up to the acute Otolaryngology [ENT] clinic for review first, prior to making the next decision."

57. Dr B did not arrange a CT scan and, as directed by the ENT registrar, Mrs A's care was transferred to the ENT service and accepted.

58. Dr B stated that in the absence of any concerns about a central cause of the vertigo, Mrs A was referred to ENT as per usual practice. Dr B said that for these reasons, the management of Mrs A's care was not discussed with an ED consultant.

59. Dr B acknowledged that he did not record all of the details of his neurological examination. He said that in a busy ED environment his clinical recording is often interrupted to attend to critical and life-threatening situations.

[31] Left-sided involuntary eye movement.
[32] Impaired ability to estimate distance in muscular action.
[33] Earache.
[34] Dr B could not recall the name of the registrar.

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Second ENT clinic review on 31 March 2017

60. Mrs A told HDC that she was taken by wheelchair to the ENT clinic. She was reviewed again by Dr D, who noted that she had returned because of a persisting and worsening headache, but that she had had no further significant episodes of vertigo or vomiting. Dr D noted that she was feeling hot, and that with her initial pain she had had some floaters in her vision and also blurry vision, in keeping with her migraines.

61. On examination, Mrs A was afebrile. Dr D performed a head impulse test and this was negative, and it was found that there was no evidence of saccades or nystagmus. On examination of the ear, the effusion and minimal inflammation found was consistent with his recent review. Dr D told HDC that he found Mrs A's presentation unchanged from his initial review, but noted that her persistent symptoms were concerning. Dr D recorded that he consulted with ENT registrar Dr G, and it was agreed that there was no sinister cause for Mrs A's symptoms.

62. Dr G told HDC that she was not aware that a consultant had not been informed about Mrs A's recent presentation. Dr G said that Dr D advised her that Mrs A had presented again with worsening headache, and that Dr D's findings from his examination of Mrs A were unchanged from his initial assessment. Dr G stated that she reviewed Mrs A for photophobia[35] or neck stiffness, owing to concerns about mastoiditis[36] or meningitis, and was reassured by her assessment. Dr G told Dr D to continue pain relief, and advised Mrs A to re-present if she had worsening symptoms, including vomiting or photophobia.

63. Dr D increased Mrs A's dosage of prochlorperazine,[37] prescribed ibuprofen for her headache, and advised her to increase her fluid intake. He noted that Mrs A's GP was to review her blood test results on Monday, and that if Mrs A's symptoms worsened she was to return to the ED, in particular if she experienced paraesthesia,[38] sensory changes, worsening headache, vertigo, or vomiting. Dr D stated that he discussed with an ED triage nurse the possibility of referring Mrs A back to the ED, but the request was declined because Dr D did not consider Mrs A's condition to be an emergency.

64. Dr D asserts that he was not aware of any discussion about a CT scan between the admitting ENT registrar and referring ED doctor. He said that he first became aware that Mrs A had been referred from the ED at the end of his consultation, and he did not check Mrs A's online records, which requested a CT scan following the ENT review.

Dr F

65. Dr F, an ENT senior medical officer (SMO), was the consultant on call for ENT for the week of Monday 27 March to Monday 3 April 2017. Dr F told HDC that she was not made aware of Mrs A's presentations to the ED or the ENT service during this on-call period.

[35] Light sensitivity.
[36] A bacterial infection of the mastoid air cells surrounding the inner and middle ear.
[37] Used to treat nausea, vomiting, and dizziness.
[38] An abnormal sensation of the body, such as numbness, tingling, or burning.

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Mrs A

66. Mrs A stated that on her second presentation to ENT, Dr D tried to convince her that she had a migraine. She said that she told Dr D that she had had a history of migraine for more than 15 years, and that her symptoms were not consistent with a migraine. Mrs A stated that she felt unheard and brushed off by Dr D. She said that when Dr D advised her to leave the ENT clinic, she left feeling really unhappy and scared.

Dr D

67. As stated previously, at the time of these events Dr D was a non-training surgical (junior) registrar at Canterbury DHB. Dr D told HDC that it was departmental practice that the ENT clinic registrar would discuss with the consultant all difficult cases or cases that were not clear. In addition, he said that any patients who re-presented with non-resolution of the same problem were to be discussed with senior colleagues.

68. Dr D acknowledges that he failed to discuss Mrs A's care with a consultant when she presented on 30 and 31 March 2017 (the first and second ENT reviews). He stated that he sought advice from senior ENT registrars on both presentations, and, reassured by their advice, he did not seek advice from a consultant. Dr D said that it was difficult for him to follow his own clinical intuition, because he was the most junior registrar in the team. He considers that had a consultant been informed about Mrs A's presentation, this may have alleviated his concerns about her and led to an earlier diagnosis.

69. Dr D told HDC that he sincerely regrets any shortcomings in his manner or attitude towards Mrs A.

Telephone contact with the medical centre

70. Mrs A said that when she returned home from the ENT clinic that day, she telephoned the medical centre for advice about her worsening headache. A registered nurse consulted with a doctor and advised Mrs A to present to the ED again.

Fourth presentation to ED

71. At 5.54pm on 31 March 2017, Mrs A again presented to the ED with headache, dizziness, and earache, and was reviewed by an SMO, who recorded his impression of a headache with an ear infection. He noted Mrs A's multiple visits to the ED and sub-optimal pain relief, and arranged for a CT scan to rule out sinister causes. The CT scan showed bilateral cerebellar infarctions and a dissected vertebral artery, and Mrs A was admitted and treated under the Neurology Department.

72. Mrs A was discharged on 8 April 2017 with medication to treat her post-stroke symptoms, migraine, and nausea, and was referred to the Community Stroke Rehabilitation service, the Neurology outpatient clinic, and ENT for further follow-up.

Further information — Mrs A

73. Mrs A stated that her recovery has been slow, and this has had an impact on the lives of her family. She feels that she was dismissed and disrespected by Dr D, and considers that

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the doctors should have investigated further, and that the failure to do this contributed to the delay in the diagnosis of her stroke.

Further information — Canterbury DHB

ED care

74. Canterbury DHB told HDC:

> "[Dr B and Dr C] have been thorough in their clinical assessment of what was to be a rare diagnosis … Both doctors followed the Headache and Vertigo Health Pathways and standard practice, and the threshold for and early referral to an appropriate specialty (ENT) for advice. Both the ED Registrars, as well as [Mrs A], were regrettably then disadvantaged unknowingly when the ENT Registrar did not advise the Duty ENT Consultant ([Dr F]) of the case as required, and the input of her experienced assessment and advice."

75. With regard to Dr B's request for a CT scan, Canterbury DHB noted that although a CT scan was recommended, in light of Mrs A's age and the radiation risks from CT scans, and because Mrs A had had a CT scan three years previously for headaches and this had been normal, it was agreed to refer her to ENT for review prior to making a decision about a CT scan.

Supervision of doctors in ED

76. The Clinical Director of the ED, Dr I, stated that the supervision of the doctors in ED was reasonable on the three occasions Mrs A presented to the ED. He noted that on her second presentation, Mrs A's care was discussed at the handover, and that three SMOs were present to discuss the plan. A decision was made to transfer Mrs A to the ENT service, and she was admitted to the ENT ward. Dr I told HDC that this was in accordance with the ENT guidelines that patients presenting with vertigo are referred to the ENT service. He stated that on Mrs A's third presentation, the ED doctor noted her previous review with the ENT service, and discussed a further ENT review. Dr I considers that an SMO review at ED was unnecessary, as this would have delayed Mrs A's review by the ENT service.

ENT care

77. Canterbury DHB advised that on 30 and 31 March 2017 (the first and second ENT reviews), ENT consultant Dr F was not consulted. Canterbury DHB said that the expected practice of registrars working in the ENT service is that consultants are informed about a patient's presentation, to provide advice on clinical management and discharge decisions.

Dr D

78. Canterbury DHB stated that concerns had been raised about Dr D's performance and that additional support and oversight was put in place.

79. Canterbury DHB said that at the first sign of difficulty, the expectation for Dr D to take all clinical concerns to a senior member of the team was reiterated to him. Canterbury DHB

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said that this expectation is conveyed to all its training doctors at the commencement of their employment.

Changes made since these events

80. Canterbury DHB advised that it has made changes since these events, including:

- Development of Otolaryngology Registrar Guidelines (2016).
- Revised registrar Guidelines and Responsibilities for Otolaryngology (ENT) Service.
- Increased supervision of ENT registrars.

Dr B

81. Dr B stated that since these events, he has made changes to his practice. Where appropriate, he discusses with the duty Emergency Medicine consultant all patients who re-present to the ED, including patients who have been discharged from other inpatient services.

Dr C

82. Dr C stated that since these events, he has attended training on the topic of HINTS examination and nystagmus in the differential diagnosis of peripheral and central vertigo. In addition, he now includes all pertinent negative findings in his documentation.

Responses to provisional opinion

83. Mrs A, Dr B, Dr C, Dr D, and Canterbury DHB were provided with relevant parts of my provisional opinion, and their responses have been incorporated into the report where appropriate. In addition, I note the following:

Mrs A

84. Mrs A was given an opportunity to comment on the "information gathered" section of the provisional opinion. She stated that she had not wanted to be discharged from hospital and was never happy to go home. She said that when she presented to hospital, she explained that her condition had not improved.

Dr B

85. Dr B stated that he had no further comment to make.

Dr C

86. Dr C stated that he had no further comment to make.

Dr D

87. Dr D stated that he had no further comment to make.

Canterbury DHB

88. Canterbury DHB stated that it accepts the findings in the provisional opinion.

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Opinion: Canterbury DHB — breach

89. DHBs are responsible for the operation of the clinical services they provide, and can be held responsible for any service failures. In addition, they have a duty to ensure that patients receive quality services.

90. On 29 March 2017, Mrs A was referred by her GP to the ED for further investigation of possible discitis. Over the following days, Mrs A's symptoms worsened and she developed vertigo and vomiting, and was unable to walk. During this time, Mrs A presented to the ED on four occasions, was referred to ENT specialist services on two occasions, and received care from no less than five Canterbury DHB medical staff members. During the course of her care, Mrs A was repeatedly diagnosed with middle ear infection and vertigo and was treated for these symptoms, but did not improve. Eventually, on 31 March 2017, a CT scan showed that Mrs A had suffered a vertebral artery dissection and subacute bilateral cerebellar infarctions (strokes), and she was admitted to the neurology ward.

91. On 29 March 2017 (first presentation to ED), Mrs A was seen by ED registrar Dr B, and was discharged with treatment for an ear infection, neck pain, and migraine.

92. On 30 March 2017 (second presentation to ED), Mrs A developed vertigo and vomiting and presented to the ED again. She was seen by ED registrar Dr C and admitted for observation. In the morning, Dr C discussed Mrs A's care with the ED consultants, and she was referred to the ENT service for further investigation of her vertigo.

93. On 30 March 2017 (first ENT review), ENT registrar Dr E reviewed Mrs A and diagnosed otitis media and labyrinthitis. Mrs A was admitted to the ENT ward for further investigations. On the same day, ENT registrar Dr D reviewed Mrs A at the ENT clinic and agreed with Dr E's diagnosis, with the addition of migraine, and she was discharged home later that day. I note that Dr D told HDC that he consulted with ENT registrar Dr H for advice; however, Dr H refutes this and advised that he first met Mrs A in Neurology. On the information available to me, I cannot make a finding on this issue.

94. At 9.45am on 31 March 2017 (third presentation to ED), Mrs A was reviewed again by ED registrar Dr B. Dr B discussed a CT scan with the admitting ENT doctor, and was advised that a decision about imaging would be made by the ENT service. Mrs A's care was transferred to the ENT service for further investigation.

95. On the same day, Mrs A was reviewed in the ENT clinic (second ENT review) by two ENT registrars (Dr D and Dr G). Dr D performed a neurological assessment and, despite Mrs A's history and worsening symptoms, her diagnosis of vertigo caused by a middle ear infection was unchanged. Mrs A told Dr D that although she had a history of migraines, her symptoms were not consistent with a migraine. Dr D was not aware that the referring ED doctor had noted that a CT scan was indicated, and did not review Mrs A's ED clinical notes where this was recorded. Dr G assumed that Mrs A's previous presentation had been discussed with a consultant, but this was not the case. Mrs A was discharged home later that day.

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96. On the same day at 5.54pm (fourth presentation to the ED), Mrs A was seen in the ED by an SMO, who noted his impression of headache with an ear infection and migraine. A CT scan was arranged to "rule out other sinister causes", and it showed a vertebral artery dissection and bilateral cerebellar infarcts.

97. My clinical advisor, emergency physician Dr Shameem Safih, advised:

> "The vestibular system includes parts of the inner ear and brain that help control balance and eye movements. Vestibular dysfunction has a spectrum of symptoms including vertigo and dizziness, and loss of balance. Vestibular disorders can be divided into peripheral and central in aetiology. This differentiation is important. Middle ear disorders (amongst the peripheral causes) are a common cause of vestibular dysfunction. Central vestibular dysfunction, for example caused by cerebellar stroke, tends to be associated with other neurological symptoms. When vertigo is the only symptom, differentiation becomes more problematic. Migraine is also a common cause of vertigo."

98. My clinical advisors, Dr Safih and otolaryngology head and neck surgeon Dr Martyn Fields, advised me that vertebral artery dissection is a rare and challenging presentation. Both clinical advisors agree, and advised that in this case the diagnosis of middle ear infection made by multiple doctors possibly indicates a mind set or that cognitive biases had crept in. Furthermore, they both agree and advise that on 30 March 2017 (the second presentation to ED and first ENT review) when Mrs A presented with vertigo and a severe headache, and was unable to walk, a central cause for her vertigo should have been considered and a CT scan arranged.

Emergency medicine care

First presentation to ED

99. Dr Safih advised that the initial assessment and management was performed with diligence, and meets the standard of care. I am guided by this advice and accept that the care provided in ED on 29 March 2017 met the appropriate standard of care.

Second presentation to ED

100. Dr Safih advised that in accordance with the ED guidelines, when Mrs A presented to ED again on 30 March 2017, ED consultants were consulted appropriately in regard to the management and decision-making of her care. In addition, ED consultants made the decision to refer Mrs A to the ENT service for further assessment of her vertigo. Dr Safih advised that although a CT scan was indicated, the transfer of her care to the ENT service for further investigation of her vertigo was reasonable and in accordance with Canterbury DHB management of patients who present with vertigo.

Third presentation to ED

101. Dr Safih noted that on the morning of 31 March 2017 a CT scan was considered, but Mrs A's care was referred to the ENT service for further assessment and consideration of a CT scan. Dr Safih advised that the ED doctor followed the understanding between the ED and

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ENT departments and transferred Mrs A's care to the ENT service, but noted that this delayed the acquisition of a CT scan.

102. Overall, Dr Safih considers that there was no departure from the standard of care. However, he advised that there are lessons to be learned:

- Clues to an alternative diagnosis were missed because of the focus on the apparent ear infection.
- Early direct senior ED input into complex cases is advisable.
- An earlier CT scan may have helped to reach the correct diagnosis earlier.

103. I accept Dr Safih's advice, and am satisfied that overall, the standard of care provided by the ED service was appropriate in the circumstances. While in hindsight it is easy to conclude that more should have been done to investigate other causes of Mrs A's symptoms, I recognise that her diagnosis was rare, and I note Dr Safih's comment that many emergency doctors may not see such a case in ten or more years of practice, and a delay in diagnosis of the condition is usual. Nonetheless, I am thoughtful that when no firm diagnosis was made over several presentations with concerning symptoms that were not resolving, further critical thinking and diagnostic enquiry was not undertaken more actively.

ENT care

104. Dr Fields advised that the lack of response to antibiotics, the normal audiogram, and the normal middle ear pressures on 30 March 2017 (first ENT review) would be unlikely with an acute middle ear infection, and that this should have raised the suggestion of an incorrect diagnosis. He advised that when Mrs A developed vertigo, vomiting, visual disturbance, and severe headache, other causes should have been considered. Dr Fields stated:

> "Whilst [Mrs A] did not have an intracranial aneurysm, they are relatively common (up to 4% of the population) and should be considered in the differential diagnosis of a severe unexplained headache. Spontaneous vertebral artery dissection although much rarer, may be present in a similar way (1 to 1.5 per 100,000 per year … An aneurysm/intracranial event should be considered in any patient with a severe persisting or worsening headache. Other symptoms can be very subtle and quite variable making early diagnosis difficult even when a scan is obtained. The 4th, 5th & 6th decades have the highest risk of rupture, [Mrs A] [was] only 32 years old — so was not in the typical age group. Women have a higher incidence compared to men (2:1)."

105. Dr Fields advised that on 30 March 2017 (first ENT review), a CT scan was required because of Mrs A's persisting worsening symptoms, which did not fit with the normal audiometric findings or a diagnosis of vestibular/labyrinthitis, with features of a possible central cause. Dr Fields advised that a CT scan was also indicated on 31 March 2017 (second ENT review).

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106. Dr Fields considers that because of Dr D's level of knowledge and experience, he should have informed a more senior colleague and sought advice for all but the simplest of presentations, and that he should have been aware of an expectation to keep senior staff informed.

107. Dr Fields advised that the communication between the ED and ENT departments on 31 March 2017 (third ED presentation and second ENT review) could have been better in respect of the need for a CT scan. Overall, he considers that the care provided by the ENT service represents a moderate departure from the standards of expected care.

108. I agree. I am critical of the assessments and management of Mrs A's care by the ENT doctors. I am critical that the ENT doctors failed to appreciate that the test results did not support a diagnosis of a middle ear infection. In my view, this showed a lack of critical thinking. I note that neurological assessments were performed on three occasions by the ENT doctors, but am critical of the standard of the assessments, and of the lack of consideration of a central cause for Mrs A's vertigo. Further, I am concerned that the ENT doctors failed to recognise that there were sufficient concerning features to warrant a CT scan. I am highly critical that a consultant review was not requested when this was indicated on Mrs A's presentations. By not following the standard practice of the ENT service, there were missed opportunities for consultant Dr F to review Mrs A. I am very critical that this did not occur. In addition, I am critical of the standard of communication, and that the recommendation for a CT scan was not communicated to Dr D adequately. Mrs A was re-presenting, following a medical referral, with concerning unresolved symptoms. Despite this, the ENT doctors failed to discuss her presentation with a consultant, and failed to show critical thinking and make the necessary active diagnostic enquiries.

109. This case demonstrates the significance of the patient's voice and the importance of listening to the patient's experience. I note that Mrs A said that she told a doctor that her symptoms were not consistent with migraines she had experienced previously, and that she felt "unheard and brushed off". There was an opportunity to incorporate Mrs A's concerns into the analysis of her presentation, and I am critical that this did not occur.

Oversight and support for Dr D

110. Dr D was a non-training surgical (junior) registrar on an ENT registrar post. Canterbury DHB advised that concerns had been raised about Dr D's performance and additional supervision and oversight was provided to him.

111. While I have concerns that Dr D did not give adequate consideration to Mrs A's concerns and escalate her care to a consultant, particularly at the time of his second review, and that he failed to review the note requesting a CT scan following ENT review, I note that he did discuss Mrs A's care with another registrar, Dr G. In addition, I note Dr Fields' comments that Dr D was a very junior trainee training to become an ENT specialist.

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112. This very junior doctor was known to be performing at a suboptimal level. Notwithstanding this, the DHB placed him within a critical decision-making role, and this contributed to avoidable delays in effecting appropriate care to Mrs A. I consider this to be a significant failure by the DHB.

Conclusion

113. While aspects of the care provided to Mrs A by Canterbury DHB were adequate, I am concerned that the care provided by the ENT service was sub-optimal. In particular:

- On 30 March 2017 (first ENT review) Mrs A was not offered a CT scan of her head.
- On the morning of 31 March 2017 (second ENT review) Mrs A was not offered a CT scan of her head.
- There was no discussion with the ENT consultant about Mrs A's presentation on 30 and 31 March 2017.
- On 31 March 2017 (second ENT review), the ED doctor who referred Mrs A to ENT noted that a CT scan was indicated, but this was not communicated to the ENT registrar adequately, and no CT scan was performed at this time.

114. Overall, I am critical of the care provided by the ENT service at Canterbury DHB, and consider that this contributed to the delayed diagnosis of Mrs A's condition. In my view, these failings demonstrate a pattern of poor care. Accordingly, I find that Canterbury DHB failed to provide services to Mrs A with reasonable care and skill, and breached Right 4(1) of the Code.[39]

115. I note that since these events, the ENT service has developed guidelines for ENT registrars, and has increased the supervision of ENT registrars. Dr Fields advised that the new guidance for ENT registrars "clearly lays out expectations and protocols for the ENT registrars. If followed, this should reduce/eliminate the problems that occurred with Mrs A's management by the ENT service." I consider the changes made by Canterbury DHB since these events to be appropriate.

Opinion: Dr B — other comment

First presentation to ED — 29 March 2017

116. On 29 March 2017, Mrs A presented to the ED with a history of headache and left-sided shoulder and neck pain following strenuous activity. That day, she had seen her GP, who had noted concerns about symptoms of discitis and referred Mrs A to the ED.

117. Mrs A was reviewed by emergency medicine senior registrar Dr B. He noted the GP's concerns as "meningitis", although the GP had referred Mrs A to rule out "discitis".

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

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118. Dr B reviewed Mrs A and noted her history of headache and significant left-sided shoulder and neck pain following strenuous physical activity. He noted that Mrs A's vital signs were normal, and that blood tests had ruled out infection. A neurological assessment was performed, and this was also normal. On examination, Dr B noted that the left ear drum was inflamed and there was discharge from the ear, and that Mrs A's left shoulder and left side of her neck were very tender. He diagnosed Mrs A with neck pain, ear infection, and migraine. Dr B administered treatment for these conditions, and Mrs A's pain lessened. She was discharged home with antibiotics and pain relief, and advised to return to the ED if her symptoms worsened.

119. My clinical advisor, Dr Safih, noted that Dr B did not discuss with a senior doctor that his diagnosis was different from the GP's diagnosis. Dr Safih considers that this would have been prudent, especially as consultants were present at the time of this admission. He advised, however, that it is likely that this would not have changed the management at this time, and that the management of Mrs A met the standard of care.

120. I am guided by Dr Safih's advice, and accept that the care provided in the ED on 29 March 2019 was of an appropriate standard. However, I agree with Dr Safih's advice that when a diagnosis is made that differs from that of a referring GP, it would be prudent to consult with a more senior doctor.

Third presentation to ED — 9.45am on 31 March 2017

121. On 31 March 2017, Mrs A was reviewed again by Dr B on her third presentation to the ED. He noted Mrs A's discharge from the ENT service on 30 March 2017, with a working diagnosis of vestibular neuritis and otitis media. He performed a neurological examination, and this was normal, with the exception of nystagmus in the left eye. He performed a physical assessment and found that this was also normal. He was unable to assess Mrs A's gait and complete a head impulse test because this induced vertigo. He considered that Mrs A's symptoms were highly suggestive of a peripheral cause for the vertigo.

122. Dr B considered a CT scan to investigate causes for Mrs A's ear pain related to complications from otitis media, and his plan was to consult with the ENT service. Dr B was guided by the ENT service on whether to perform a CT scan in ED, or whether ENT needed to perform further investigations. Dr B did not consult with a senior doctor on this presentation because the findings of his examination were consistent with the working diagnosis of vestibular neuritis, and because Mrs A had been discharged from the ENT service recently. Dr B said that patients who present with vertigo are referred to the ENT service for review unless a central cause for the vertigo is indicated, and that in these circumstances a referral to ENT was appropriate. Dr I told HDC that patients who present with vertigo are referred to the ENT service in accordance with the ENT guidelines.

123. Dr Safih advised that in this type of scenario, a CT scan is indicated in a number of situations, and he noted that Dr B considered a CT scan on this third presentation to ED. Dr Safih said that the decision to refer Mrs A to the ENT service for further management was in accordance with the guidelines, but noted that the involvement of the ENT service at

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this stage delayed the procurement of a CT scan. Dr Safih advised that there was no departure from the standard of care on this presentation.

124. I accept this advice, and note that Dr B followed the guidelines for the management of patients who present to the ED with vertigo, and was guided by the ENT service about the management of Mrs A's care. I note that this was Mrs A's third presentation to ED. While there was a working diagnosis, there had been no resolution of her concerning symptoms. I consider that at this point, the ED service, for which Dr B was a critical decision-maker, should have been on active enquiry.

125. I note that Dr B has reflected on these events and made changes to his practice to ensure that he discusses with a consultant all patients who re-present to the ED, including patients who have been discharged from other inpatient services. I consider this to be appropriate.

Opinion: Dr C — other comment

Second presentation to ED — 30 March 2017

126. On 30 March 2017, Mrs A had pain in her left ear, dizziness, and vomiting, and she presented again to ED. Mrs A was reviewed by ED provisional trainee Dr C, who noted Mrs A's history that she had attended the ED the previous day and had been diagnosed with otitis media and migraine, and treated with chlorpromazine and commenced on antibiotics.

127. Dr C found that Mrs A's left ear drum was inflamed and bulging, and there was a large effusion behind the left ear drum. He performed a neurological assessment, including speech, eye movements, sensory deficits, and limb movements, and this was normal. He assessed Mrs A's neck and noted that she had a full range of motion. Dr C performed a HINTS examination to eliminate central causes of vertigo, and found no skew deviation or bidirectional nystagmus. He said that because of Mrs A's vertigo he was unable to conduct a full neurological assessment including a head impulse test and gait examination.

128. Dr C's impression was otitis media (middle ear infection) and vestibular neuronitis (severe vertigo). He prescribed treatment for these symptoms and admitted Mrs A for further observation.

129. Dr C reviewed Mrs A a few hours later and noted that she was unable to walk, as this induced her vertigo. Mrs A's care was discussed with three ED consultants at the morning handover meeting and, pursuant to their advice, Dr C referred Mrs A's care to the ENT service for further assessment and management, and this was accepted.

130. My clinical advisor, Dr Safih, advised that it is imperative for an emergency doctor to consider central causes of vertigo. Dr Safih noted that most physicians would be aware

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that in patients with vertigo, a recent injury to the neck with persistent neck pain suggests the "possibility of vertebral artery dissection with brain stem or labyrinthine ischaemia". Dr Safih advised that in addition, Mrs A had ongoing headache, and a CT or MRI scan would have been indicated during this second presentation to ED.

131. Dr Safih noted that the absence of any neurological findings, and the presence of fluid behind the ear drum and the tender lymph glands, suggested to Dr C a peripheral cause of Mrs A's vertigo. Dr Safih advised that HINTS tests can be very difficult to interpret, but the absence of neurological findings does not exclude a central cause.

132. Dr Safih advised that Dr C complied with the supervision process and obtained advice from senior doctors. In addition, Dr C was guided by the ED consultants on the decision to refer Mrs A to the ENT service for further investigation. Dr Safih noted that this was in accordance with the understanding between the ED and ENT departments when managing patients who present with vertigo. Dr Safih advised that there was no departure from the standard of care.

133. I accept this advice. Overall, I consider that during Mrs A's second presentation to ED, Dr C consulted with senior doctors appropriately and was guided by senior doctors in the management of Mrs A's ongoing care. I note that a CT scan was indicated, but accept that with a diagnosis of a peripheral cause of vertigo, a referral to ENT for review was in accordance with the management of patients with vertigo. I note that Dr C has attended training on the topic of HINTS examination and nystagmus in the differential diagnosis of peripheral and central vertigo, and has changed his practice to include the documentation of all pertinent negative findings.

Recommendations

134. I recommend that Canterbury DHB provide a written apology to Mrs A for the breach of the Code identified in this report. The apology is to be sent to HDC within three weeks of the date of this report, for forwarding to Mrs A.

135. I recommend that Canterbury DHB confirm the procedures in place at the DHB to oversee and support junior registrars who are failing to satisfy the requirements of their clinical placements, and report back to HDC within three weeks of the date of this report.

136. I recommend that within six months of the date of this report, Canterbury DHB undertake the following and report back to HDC:

a) Use this report as a basis for training staff in the ED and ENT departments, and provide evidence of that training to HDC.

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b) Audit its compliance with the ENT guidelines to ensure that the escalation process is followed in situations where a consultant review is indicated.

137. I also recommend that Canterbury DHB give consideration to the following recommendations, and report back to HDC on the outcome of its consideration, within six months of the date of this report:

a) Consider developing ED guidelines for situations when a junior doctor in the ED has a different diagnosis from the referring GP.

b) Consider developing guidance to staff for situations where a patient with no definitive diagnosis re-presents to ED with concerning symptoms that have not resolved.

Follow-up actions

138. A copy of this report with details identifying the parties removed, except the clinical advisors who advised on this case and Canterbury DHB, will be sent to the Health Quality & Safety Commission, the National CMO group, the Stroke Foundation of New Zealand, and the Central Technical Advisory Service.

139. A copy of this report with details identifying the parties removed, except the experts who advised on this case and Canterbury DHB, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

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Appendix A: Independent advice to the Commissioner

The following clinical advice was obtained from Dr Shameem Safih:

"My name is Shameem Safih. I am an Emergency Physician (FACEM) with over 20 years of experience working in various tertiary and community level emergency departments. The Health and Disability Commissioner has asked me to provide advice on the care provided by Canterbury District Health Board (CDHB) to [Mrs A] between 29th and 31st March. I have read the following documents:

Letter of complaint dated […]

Redacted copies of CDHB's responses to HDC and [Mrs A] dated 5 July 2017

Clinical records from CDHB

Comment and clinical records from [the medical centre] (GP) dated 26th May 2017

Further response from CDHB dated 17th August 2017

[Mrs A] presented 4 times to the Emergency department between the 29th and the 31st of March, 2017. She was discharged home the first 3 times with a diagnosis of migraine and ear infection. On the 4th presentation she had a CT scan which showed she had suffered two strokes. She was then admitted. The Health and Disability Commissioner has instructed me to comment on:

Whether the care provided by ED at [the public hospital] was adequate/appropriate

Whether the assessments undertaken by ED were appropriate given [Mrs A's] presenting symptoms

The timeliness and appropriateness of referral to other services

Any other matters I might consider

On each of the above, he has requested me to advise on the following

What is the standard of care/accepted practice?

If there was a departure from the above, how significant it was.

How would this be viewed by my peers?

Recommendations for improvement to prevent a similar occurrence in the future

Presentation Details

First Presentation 29th March 2017 — 1343 Hrs

[Mrs A] was a 33 year old female referred by her GP to [the] ED with neck pain, headache, and fever. [Mrs A had done strenuous physical activity]. She developed a stiff (described as 'very very' stiff) neck for which she went for physiotherapy. Her

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neck pain worsened after physiotherapy. She went to the afterhours service and was given norflex, naproxen and codeine (medication for pain and muscle relaxation). She re presented to her own GP with persistent, continuous and severe headache. She had been aware of a pulsatile noise in the head. She had also developed a waxy discharge from the left ear.

Given the symptoms of cluster headache, fever and neck pain the GP was concerned about an infection or inflammation in the neck, such as discitis. He sent her to the ED for further assessment and investigation ('bloods, imaging'). In the Emergency Department she was triaged as a category 4. She was seen by ED registrar [Dr B]. [Dr B] has noted the history of preceding strenuous physical activity, physiotherapy, and subsequent worsening of the pain. He noted the GP's concern as 'meningitis' — while this would be a reasonable condition to consider it wasn't exactly what the GP had expressed (see above). He has also stated that [Mrs A] developed some left ear pain and discharge. *It should be noted that [Mrs A] in a letter on the 29th of September 2017 to the HDC states she did not complain of pain in the ear at this visit.*

[Dr B] documented that [Mrs A] was not in any distress. He noted her temperature of 37.3°C (mild fever). He noted her other vital signs, which were normal. On neurological review he found full and symmetrical power, tone, sensation and reflexes. There is no mention of any specific tests for coordination or gait. He found the left shoulder and the left side of the neck to be very tender ('+++') to palpation. He also found the left ear drum to be inflamed. He has not noted any discharge if there was. He made the diagnosis of mechanical neck pain, left middle ear infection and a flare up of migraine. He noted [Mrs A] had a background history of migraine, back pain and endometriosis. He then administered treatment appropriate for the clinical problems he had diagnosed. He administered diazepam for the neck spasm, amoxicillin for ear infection, and 12.5 mg of chlorpromazine in 1 Litre of normal saline intravenously for the migraine. Blood tests were done specifically looking for infection — these were normal. He has noted that the pain resolved with this treatment, and [Mrs A] was keen to go home. So he discharged her on antibiotic/steroid ear drops, and oral amoxicillin and advised her to return if symptoms worsened. At this stage there was no dizziness (vertigo, or spinning sensation in the head). At this stage no referral was made. He advised her to return if symptoms worsened.

Process issues: I'm not sure if [Mrs A] was discussed with an ED consultant at any stage. Given that there was disagreement between the registrar's and the GP's impressions, it might have been prudent to discuss [Mrs A] with a supervising FACEM for his opinion. Given the lack of vertigo (or other cerebellar symptoms) at this stage it is perhaps not unreasonable not to have performed a cerebellar neurological exam or performed specific middle ear balance assessment with the Dix-Hallpike test.

Comment: If one looks without the bias of hindsight, the initial assessment and management appears to have been given with due diligence and meets the standard of care.

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Second visit 30/03/2017 — 0103 hrs

[Mrs A] was brought in by ambulance after midnight, about 7 hours after discharge. As noted by the ambulance officers she was now complaining of increased pain in the left ear and dizziness and vomiting. Her blood pressure may have been on the low side and she was given some intravenous fluid on the way to the hospital. On arriving at the hospital she was triaged as a 3. She was seen by [Dr C], Emergency Medicine Registrar. He noted details of the last presentation. He noted the following as the history of this presentation: Shortly after reaching home [Mrs A] had an episode of severe vertigo (spinning sensation), had to lie down and had vomited several times ('+++'). On trying to walk to the toilet she had another severe episode of vertigo and vomiting, hence had called ambulance. She had been given pain relief and medication for nausea and vomiting (morphine and ondansetron) and now had only mild pain across the left side of her head. He noted that the neck pain which had been left sided was now central and high, just at the base of the occiput. He noted there was no photophobia (light did not hurt the eyes) and no rash, and her temperature was 37.5 (mildly febrile). He found the left ear drum to be very inflamed and building 'ready to pop' while the right ear in comparison was normal. He has also documented a sore left ear. He noted mildly tender swollen lymph nodes in the neck on the same side. He noted that the neck was stiff on forward and backward movement, but could be rotated freely. She was unable to sit up as this provoked vertigo. His impression at this stage was middle ear infection with vestibular neuronitis. His assumption was that the middle ear infection was the cause of the vertigo. He did not document eye movements, gait tests or tests for coordination.

The vestibular system includes parts of the inner ear and brain that help control balance and eye movements. Vestibular dysfunction has a spectrum of symptoms including vertigo and dizziness, and loss of balance. Vestibular disorders can be divided into peripheral and central in aetiology. This differentiation is important. Middle ear disorders (amongst the peripheral causes) are a common cause of vestibular dysfunction. Central vestibular dysfunction, for example caused by cerebellar stroke, tends to be associated with other neurological symptoms. When vertigo is the only symptom, differentiation becomes more problematic. Migraine is also a common cause of vertigo.

[Dr C] prescribed prochlorperazine (stemetil) for the vertigo, continued antibiotics for the infected ear, and kept [Mrs A] overnight for observation. Later that morning [Mrs A] had not improved, she could not walk as any movement produced vertigo. He referred [Mrs A] to the Ear Nose Throat (ENT) registrar on the working diagnosis that the episode of vertigo was based on what he could see as the obvious problem, a middle ear infection.

Question: Was she referred to the appropriate service? In my opinion it was reasonable to refer [Mrs A] to the ENT registrar. To the best of the registrar's assessment she had ear pain, an inflamed ear drum and ongoing vertigo with the

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inability to walk. Peripheral vestibular disorders are ENT problems. ENT specialists should be able to confirm or disconfirm the presence of a peripheral cause of the vertigo, and be should be able to organise further tests as necessary.

Given that the clinical syndrome had progressed from left sided neck pain to now pain in the back of the head with associated vertigo, should the doctors have considered a central cause and organised a CT or an MRI scan? To do this one would have to break away from the (sole) diagnosis of middle ear infection. As far as they could see [Mrs A's] ear infection had got worse. [Dr C] did not do a neurological examination. He has not commented on nystagmus (eye movements), gait or coordination. Given her representation with severe vertigo (inability to walk as a result) nausea and vomiting a neurological exam including attempts to do a cerebellar-focussed neurological exam should have been done. It is generally accepted that whilst a neurological exam performed in ED settings by Emergency Doctors is nowhere near as thorough as the comprehensive one done by a neurologist that emergency doctors should have the patient 'walk and talk' to assess speech and gait. He has not done this most probably because he is anchored on the diagnosis of middle ear infection. He describes the ear drum as full and bulging, 'ready to pop'.

[Mrs A] was admitted by the ENT department. The following points are worth noting:

The admitting ENT registrar [Dr E] found no nystagmus.

He noted saccades (abnormal focal fixation of the eyes which would be in keeping with peripheral vestibular dysfunction).

Cover uncover test was normal (again indicating peripheral cause for the vertigo)

He found the left ear to be inflamed and bulging with no perforation

He found mild cervical lymphadenopathy

He found other tests (for balance) to be normal.

The second ENT registrar who saw [Mrs A] confirmed findings of ear infection and did not find any abnormal neurology apart from 'unsteady heel–toe walk'.

<u>3rd presentation Returned to the ED, referred by the GP — 31 03 2017 — 0945hrs</u>

Triage 3 Presenting complaint: persistent headache and vertigo

[Mrs A] was seen this time again by [Dr B], ED Registrar. He noted the complaint as severe pain originating from the left ear. He noted severe left sided headache, nausea, and noted that [Mrs A] looked washed out. She was unable to open her eyes as she felt nauseated. He notes that the medications prescribed had not had much effect. This time he examined her eyes for abnormal movement. He noted spontaneous left sided nystagmus with left lateral gaze. He noted that the left ear had improved. He noted normal neurological findings otherwise, including normal co-ordination. His impression was ongoing vestibular neuronitis with ear infection related headache on the background of migraine. It appears from his notes that he discussed the need for a

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CT scan with [Mrs A]. [Mrs A] wished to be reviewed by ENT doctors first. She was therefore referred to the ENT clinic. She was seen in the clinic and discharged with the same impression of vertigo caused by middle ear infection.

4th presentation — 31/03/2017 — 1754 hrs

This time [Mrs A] was seen by [an] ED SMO who recognised that she had unresolved symptoms for which she had visited the ED (and in fact other services including her GP) multiple times. Although his impression was still headache with ear infection and possibly migraine, he decided to do a CT scan 'to rule out sinister causes.' Sinister causes would be central causes of vertigo, including cerebellar stroke. CT scan showed that [Mrs A] had suffered a vertebral artery dissection and acute (within a day of this presentation) and subacute (probably sometime in the preceding several days) bilateral cerebellar infarcts. She was then admitted appropriately under neurology services.

Summary

[Mrs A] presented to [the ED] with severe neck pain and headache. She later (after the first presentation) developed vertigo, nausea and vomiting, and occipital headache and presented 3 more times within a few days. She was seen by junior doctors (registrars) on all but the 4th occasion. The initial diagnosis anchored on was of left middle ear infection. Review at subsequent visits (by two ED doctors and two ENT registrars) confirmed the diagnosis of ear infection and they persevered with treatment for ear infection. They attributed the vertigo to the middle ear infection. At the 3rd presentation the need for CT was briefly raised. At the 4th presentation CT was done. Vertebral artery dissection with bilateral cerebellar infarcts was diagnosed.

The question comes to mind whether it should have been picked up earlier that something else was going on apart from the ear infection. One has to ask if there was an ear infection ever present at all? Ear infection can cause ear pain and vertigo but is unlikely to cause the degree of left sided neck pain or the severe pain at the base of the skull. When 4 doctors describe seeing an abnormal ear drum (inflamed, bulging) one has to accept their impression as correct. This then suggests there was dual pathology. There were alarm bells in the history. The typical patient with vertebral artery dissection is a young person (three times more likely to be female than male) who has severe neck or occipital (base of skull pain at the back) following a head or neck injury, and develops neurological signs caused by ischemia (reduced blood supply) of the brain stem or cerebellum. Focal neurological signs may be delayed by days or weeks or more, which makes diagnosis very difficult. The initial injury can be minor, as would be associated with sports and recreational activities, including apparently trivial trauma such as sneezing. Vertebral artery dissection is also a rare but well known complication of chiropractic manipulation of the neck (estimated to increase the risk 6 fold): Smith et al, Spinal manipulation therapy is an independent risk factor for vertebral artery dissection, Neurology 2003; 60, 1424–8.

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[Mrs A] had some physio the nature of which is not known but which made her neck pain worse. The range of neurological symptoms and signs are wide, depending on the specific area affected. Vertigo, nausea and vomiting are part of the syndrome but are nonspecific, and they are a very common presentation to the ED. The most common cause of vertigo would be a peripheral cause, such as Benign Positional Vertigo, Vestibular neuronitis, or ear infections. [Mrs A] was a young female. She had done strenuous activity. She had had some physio which had made her neck pain worse. She had vertigo and vomiting. These are all risk factors for cervical artery dissection. As many as 20% of ischaemic strokes in young patients between the age of 30 and 45 is caused by cervical arterial dissection. However the community incidence of a dissection of an artery in the neck (carotid and vertebral) is rare (estimated to be 2.6 per 100,000). Specifically, vertebral artery dissection is even rarer (approx 1 per 100,000 population). It is not a condition seen commonly as a primary presentation in the ED. Delay in diagnosis of the condition is usual. As illustrated by the case of [Mrs A], it is important to rule out central causes of vertigo. A combination of factors in history (risk factors and symptom evolution) and diligent physical examination, including special physical tests (patterns of ocular movements, power and sensation, tests for coordination, gait and balance impairment and speech) can help determine the likelihood of a central cause.

Early on before focal neurological signs have developed, there may be considerable overlap in clinical features, and differentiation requires a high degree of suspicion plus suitable investigation (CT scan, MRI). To conduct some of the physical tests requires familiarity, practice and skill. In [Mrs A's] case the alternative, more familiar and 'apparent' diagnosis of middle ear infection was made. In the diagnostic process it is possible that a number of cognitive biases crept in, as follows.

Availability bias: the tendency to make a diagnosis based on what easily comes to mind, which depends on what is common, and on the personal past experience of the physician. If a condition hasn't been seen in a long time it is less likely to be diagnosed. Premature closure is the tendency to stop too early in the diagnostic process ie when a diagnosis is made further thinking stops. Search satisfaction is the tendency to stop searching when something has been found.

Anchoring bias: settling on a single diagnosis based on a few important or obvious features (in this case with the first presentation, ear pain plus red ear drum leading to fixation on middle ear infection as the only problem).

Confirmation bias: a tendency to notice the evidence that supports the initial diagnosis and to ignore or explain other symptoms in other ways (in this case linking posterior neck pain, severe headache and severe neck pain to ear infection, migraine or strain).

Diagnostic momentum — when one diagnosis has been made by one individual it is very difficult to break away, remove that label and look at the problem with a fresh

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perspective. The ENT registrars and the ED registrars fixed on the first diagnosis, and did not consider other causes of the vertigo in spite of perhaps other clues in the history.

In answer to the questions by the HDC

Whether the care provided by ED at the public hospital was adequate/appropriate.

Care provided was appropriate for the diagnosis made. The initial assessment and management was done with diligence. It just so happened that ear infection was seen leading to non-consideration of a central cause initially. When symptoms did not settle, [Mrs A] was referred to ENT department. However she presented 4 times to the ED. A CT scan was done only at the 4th presentation. Thus the diagnosis of the more serious pathology was delayed. A mitigating factor is that vertebral artery dissection is an extremely rare presentation and many emergency doctors may not see such a case in 10 or more years of practising.

It should be noted that any person who re-presents within 7 days to an ED for the same or similar (non-trivial) health problem should be at least discussed with an emergency specialist if not seen by one (other departments have this 'rule'). A CT should have been organised at the 3rd presentation, when the indication was first raised. A consultation with the emergency specialist on duty should have occurred. I believe this consultation should have occurred even at the 1st visit, but certainly most EDs would support senior consultation at the second and definitely the 3rd visit.

I would consider failure of supervision or Senior input at the second visit a moderate departure from accepted practice, and failure of senior input at the 3rd visit greater than moderate departure from practice.

Whether the assessments undertaken by ED were appropriate given [Mrs A's] presenting symptoms

At the first presentation a good history was taken and a reasonable examination done. The initial symptoms were very non-specific. Middle ear infection was diagnosed, and this could account for some of the symptoms. Cognitive biases crept in at subsequent visits and neurological assessment was not diligently recorded by an individual ED doctor. A detailed neuro examination should have been done at the second presentation, when she presented with vertigo. This is not to say it would have led to a CT being done at this stage.

Not doing a detailed neuro examination at the second visit and not doing a CT scan at the 3rd presentation may be considered a moderate departure from standard practice.

The timeliness and appropriateness of referral to other services.

She was referred to the ENT speciality at the second presentation to the ED. This was appropriate. She was referred to an appropriate service. This would be standard of care. I consider there was no departure from standard.

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Any other matters I might consider

I feel that given the severity of symptoms, the lack of resolution, senior consultant staff should have been involved earlier. This applies equally to the ENT department.

Recommendations

There is no absolute recommendation I can make to prevent this from happening again. However my strongest recommendation is to mandate an emergency specialist consultation (and patient review if appropriate) for all patients who re-present to ED a 2nd (or subsequent) time with non-resolution of the same (non-trivial) medical problem. Most physicians would tend to stop searching for another cause when they find one peripheral cause to explain the vertigo. A more thorough neurological examination should have been performed on the 2nd and third presentations including tests for differentiating central and peripheral causes of vertigo. These were done by the ENT registrars to some extent.

Other general suggestions to minimise risk of missing the diagnosis would be:

Always consider central cause of vertigo (even though vertigo is such a common presentation with the majority not caused by a central problem)

ED doctors must familiarise themselves with the risk factors for cervical arterial dissection and central causes for vertigo (which vary between the young and the elderly)

Consider cervical artery dissection as cause of stroke/neurological symptoms in the younger patient

A thorough neurological examination should be done and documented each time

Doctors should familiarise themselves with diagnostic physical tests (available on Youtube videos, and in standard texts) that may help differentiate central from peripheral causes (such as the Dix Hallpike and Epley manoeuvres and the HINTS test).

ED doctors should be aware of biases that can creep into diagnostic thinking. If symptoms are not resolving, or the constellation of symptoms cannot be explained by a single entity, a good question to ask is what else could be causing the problem.

MS SAFIH Shameem Safih FACEM 1st November 2017."

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The following further clinical advice was obtained from Dr Safih on 4th April 2019:

"To the Health and Disability Commissioner

Case Reference: 17HDC00725, [Mrs A]

Thank you for asking me to review new information provided on the assessment and management of [Mrs A] at the emergency department in [the public hospital] in March of 2017.

[Mrs A] had presented to the hospital on four occasions over 2 days.

First visit 29th March

She was seen by [Dr B], a senior EM registrar.

She was referred by her GP for a mild fever with headache and significant left sided shoulder and neck pain. The GP had queried the possibility of infection or inflammation in the neck. He did not mention meningitis as a possibility.

Just in the days prior to this presentation she had been [doing] strenuous exercises. She had developed pain in the neck and had subsequently seen a physiotherapist. Her neck pain had worsened after the physiotherapy.

[Dr B] assessed her and arrived at three different coexisting diagnoses: musculoligamentous pain in the neck, ear infection (there was a discharge from the ear), and migraine.

He provided her treatment for each of these conditions.

At this stage she did not have vertigo. [Mrs A] in her letter says she did not have pain in the ear.

She was not discussed with the ED consultant on this occasion. I had been critical of this. I take his point that he is a senior registrar and does not need to necessarily consult with an ED specialist.

His clinical impression was different from that of the GP who had queried a potentially serious condition. I felt therefore it would have been prudent to discuss this difference of opinion with a senior, especially since it was in hours and there were consultants present. It is likely that this consultation would not have changed the management at this time. My comment regarding this is not specific to this case, but it applies in general to a situation where a trainee (registrar or junior) does not agree with a GP's diagnosis.

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Second presentation 30th March

[Mrs A] was seen by [Dr C]. She presented now with severe vertigo and vomiting, which had started acutely soon after discharge the previous day. With the vertigo she had pain in the back of her head, on the left side. It is noted in the notes that she had pain in the ear as well.

[Dr C] saw a large effusion behind the left eardrum. He made the diagnosis of otitis media and vestibular neuronitis. Her symptoms did not resolve with treatment overnight. A complete neuro exam was not conducted because any movement intensified her vertigo.

Her symptoms were of an acute vestibular syndrome (rapid onset vertigo, nausea and vomiting and gait unsteadiness). She was unable to walk the next morning.

It is imperative that the emergency doctor considers central cause of vertigo.

Of some significance in this clinical development is that the vertigo and headache were preceded by exercise causing injury to the neck, with pain being aggravated by physiotherapy. To quote UpToDate, a reference used commonly by physicians, in patients with vertigo 'recent hyperextension injury to the neck, usually with persistent neck pain, suggests the possibility of vertebral artery dissection with brain stem or labyrinthine ischaemia'.

Most emergency physicians are aware of this association.

Further, [Mrs A] had significant ongoing headache.

In this setting a CT or appropriately, an MRI would have been indicated.

As per [Dr C's] examination, the presence of fluid behind the eardrum and neck lymph glands plus the lack of any neurological findings suggested to him a peripheral cause.

[Dr C] did HINTS testing (a 3 part examination consisting of head impulse testing, nystagmus assessment and tests of skew). She was too unwell for him to be able to perform these tests. He goes on to say that the tests can be very difficult to interpret, even in experienced hands. This is absolutely true. The clinicians involved in the original tests were neuro-ophthalmologists. Absence of neurological findings does not exclude a central cause.

[Dr C] stated in his revised statement that he discussed [Mrs A's] case with three ED consultants at handover.

He was advised by the consultants to refer [Mrs A] to ENT for further assessment and management.

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The ENT registrar confirmed findings consistent with a peripheral cause of the vertigo and discharged [Mrs A] without doing any neuroimaging.

I am now satisfied that re-presenters are discussed with ED consultants and there are procedural guidelines in Canterbury DHB that would require this to happen.

I am also satisfied that he did consult three ED specialists at hand over in the morning.

3rd presentation 31 March

[Mrs A] was seen again by [Dr B].

She re-presented with persistent vertigo and severe headache. He believed the headache originated from the ear. The ear looked improved, so he wondered if there had been a complication of the ear infection for which he thought a CT scan should be considered. He discussed this with [Mrs A]. He noted the ENT doctors had been treating her for ear infection, so he discussed the scenario with them. The ENT registrars chose to review the patient, which they did. At their review they did not feel a CT scan was warranted.

Neuroimaging is indicated in a number of situations in this type of scenario: if the examination is not entirely consistent with a peripheral lesion, if there are risk factors for stroke, if there are neurological signs or symptoms, if the HINTS test suggests a central cause, if the HINTS test is unable to be completed, or if there is a new headache accompanying the vertigo.

Lack of improvement or deterioration of symptoms also warrants a CT, as differentiation between central and peripheral causes can be very difficult with overlapping signs and symptoms.

Involvement of the ENT speciality at this stage delayed acquisition of the CT.

At the 4th presentation [Mrs A] was examined by an ED consultant who obtained a CT scan 'to rule out sinister causes'. It is possible that had the ED consultant seen [Mrs A] at the 3rd presentation, he might have organised the CT then.

Overall revised opinion

My biggest issue had been lack of senior involvement. I am now satisfied that there is a consultative/supervision process for the juniors and the registrars — and that this was followed.

There was consultant input into the decision making at the second presentation.

The decision was to follow their standing arrangement which was to refer to ENT for further management.

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I was critical of the CT not being done at the third presentation. The question of CT was raised by the ED doctor ([Dr B]) but care was again transferred back to ENT.

At the 4th presentation the patient was actually seen by an ED consultant who organised the scan.

Many physicians would have done a CT scan earlier.

In the case of the emergency department given the new and more detailed responses from the doctors involved I am prepared to change my opinion to say that there was no departure from standard of care, as standard of care is not clear in a case like this, and they followed their existing guidelines. There certainly are lessons to be learned. Clues to an alternative diagnosis were missed because of the focus on the apparent ear infection. Early direct senior ED input into complex cases is advisable. Earlier CT may have helped reach the correct diagnosis earlier."

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Appendix B: Independent advice to the Commissioner

The following expert advice was obtained from an otolaryngology head and neck surgeon, Dr Martyn Fields:

"I have been asked to provide an opinion regarding the above complaint.

I have read the HDC guidelines for Independent Advisors and agree to follow the guidelines.

My qualifications are: BDS(Sheff), LDSRCS(Eng), FDSRCS(Eng), MBChB(Sheff), FRCSEd(Maxillofacial), FRACS(Otolaryngology). I initially trained as a Dentist then Oral & Maxillofacial Surgeon in the UK before training as an Otorhinolaryngologist, Head & Neck Surgeon in New Zealand.

I have been registered as a specialist Otorhinolaryngologist (ORL/ENT Surgeon) since 1995 and have practised as an ORL surgeon in a teaching hospital in New Zealand and in private specialist practice since then. I am a general ORL surgeon with a sub-specialist interest in Otology and Rhinology.

I have been involved in training ENT surgeons in New Zealand since 1995 and have previously been chairman of the New Zealand Otolaryngology Training, Education and Accreditation Committee and a board member of the New Zealand Society of Otolaryngology, Head & Neck Surgery. I am currently Clinical Leader for the Department of Otolaryngology, Head & Neck Surgery, Southern District Health Board.

Disclosure: I know [Dr F] from her time as a trainee and contact at ENT scientific meetings & membership of the New Zealand Society of Otolaryngology, Head & Neck Surgery.

I have been asked to comment on specific aspects of [Mrs A's] care by Canterbury District Health Board between 29–31 March 2017.

My report is based on the information provided:-

Letter of complaint dated […]
Redacted copies of Canterbury DHB's responses to HDC and [Mrs A] dated 05.07.17.
Clinical records from Canterbury DHB covering the relevant period.
Comment & clinical records from [the medical centre] (GP) dated 26.05.17.
Further response from Canterbury DHB dated 17.08.17
Disc containing various CT & MRI scans.

HDC Questions: Please comment on:-

1. Whether the care provided by the ENT service at [the public hospital] was adequate/appropriate.

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2. Whether the assessments & tests undertaken by the ENT service were appropriate given [Mrs A's] symptoms.
3. Any other matters in this case that you consider warrant comment.

For each question, please advise:-

a) What is the standard of care/accepted practice?
b) If there has been a departure from the standard of care or accepted practice — how significant a departure do you consider it is?
c) How would it be viewed by your peers?
d) Recommendations for improvement that may help prevent a similar occurrence in future.

Background
[Mrs A] presented to [the ED] on 4 occasions between the 29th & 31st March 2017.

29.03.17 Initial ED assessment at the request of the GP regarding neck pain and severe headache. Diagnosis of a middle ear infection resulting in vestibular symptoms and headache was made by an ED doctor …

30.03.17 (early hours) — 2nd presentation to ED by ambulance (unable to walk/stand and vomiting with a severe occipital headache). Placed in the observation unit in ED overnight and referred to the ENT service in the morning. Working diagnosis of otitis media/vestibular neuronitis continued.

31.03.17 3rd presentation to ED due to a severe headache overnight. ENT review — migraine considered in addition to otitis media/vestibular neuronitis. Discharged again.

31.03.17 4th presentation to ED (early evening) — assessed by an ED consultant. A CT scan was undertaken and bilateral cerebellar infarcts were identified. At this stage — referral to Neurology occurred and appropriate management commenced.

Additional CT & MRI scans identified a left vertebral artery dissection and a hypoplastic right vertebral artery with possible dissection. No aneurysm demonstrated.

1. Whether the care provided by the ENT service at [the DHB] was adequate/appropriate?

Comment
[Dr D] is a very junior trainee … This is at a level lower than a first year registrar in training to become an ENT specialist.

The level of knowledge/experience would be at the stage where advice should have been sought from a more senior trainee or consultant for all but the simplest of presentations.

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Having been told that an ear infection was suspected — the 'mind set' may well have been that this was a simple problem on the first assessment, however at the second presentation — advice/input should have been sought from a more senior colleague.

[Mrs A] had been diagnosed previously with Migraine and had had a CT scan in the past which had not identified any intracranial vascular abnormality. These factors along with the lack of other symptoms at presentation may have contributed to the delay in diagnosis.

The focus of this HDC request has been on the role of the ENT service …

Evidence against a middle ear infection.
29.03.17 Blood test: White Blood Cells 6.7 x 10(9)/L (range 4.0 to 11.0) — not raised.

The lack of response to antibiotics should also have raised the possibility of an incorrect diagnosis at the later presentations. Although several records note an inflamed red bulging left ear drum, the normal audiogram and normal middle ear pressures (tympanometry) on the 30.03.17 would be unlikely with an acute middle ear infection.

The CT scan obtained on the 31.03.17 shows no evidence of any middle ear fluid/opacity. If a middle ear infection had been present on the 29.03.17, I would have expected some evidence of this to still be present on the scan. This is compatible with a misdiagnosis of a middle ear infection and vestibular neuronitis at presentation.

The lack of significant otalgia (ear pain) at the time of presentation is not typical of an acute middle ear infection. Neck pain, occipital headache and feeling very unwell with no nystagmus with the vestibular tests do not fit well with the diagnosis of a middle ear infection, vestibular neuronitis or migraine and other causes should have been considered.

Comment
Whilst [Mrs A] did not have an intracranial aneurysm, they are relatively common (up to 4% of the population) and should be considered in the differential diagnosis of a severe unexplained headache.

Spontaneous vertebral artery dissection although much rarer, may present in a similar way (1 to 1.5 per 100,000 per year)

(attached: MJM 2006 9(2):141–146 An overview of intracranial aneurysms. Keedy A. abstract. Can J Neurol Sci. 2008 May;35(2):146–52. Extracranial carotid and vertebral artery dissection: a review. Redekop GJ.).

An aneurysm/intracranial vascular event should be considered in any patient with a severe persisting or worsening unexplained headache. Other symptoms can be very subtle and quite variable making early diagnosis difficult even when a scan is

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obtained. The 4th, 5th & 6th decades have the highest risk of rupture, [Mrs A] is only 32 years old — so was not in the typical age group. Women have a higher incidence compared to men (2:1).

Initially [Mrs A] had no other symptoms to indicate an intracranial problem, however once she developed vertigo, vomiting and visual disturbance in addition to a severe headache — intracranial pathology should have been considered and a scan organised.

[Dr D] has already acknowledged his management was deficient, he has offered an apology and appears to understand his errors and the issues that arose.

[Dr F], once she was aware of the events has taken appropriate steps to explain the events and suboptimal management to [Mrs A] and what will be changed within the ENT service to try and avoid this in the future.

…

2. Whether the assessments & tests undertaken by the ENT service were appropriate given

[Mrs A's] symptoms.

…

At the first presentation , the possibility of intracranial/vascular pathology should have been considered and a CT scan organised.

Conclusion: Questions asked:-

What is the standard of care/accepted practice?
The ENT service and doctors involved have already acknowledged that the care provided was not of the standard expected/required. The second presentation with a severe headache out of proportion to the clinical findings should have been sufficient to consider other causes — such as an intracranial cause.

An urgent CT scan should have been arranged at that stage.

If there has been a departure from the standard of care or accepted practice — how significant a departure do you consider it is?
In my opinion, there has been a moderate departure from the standard of care/accepted practice provided by the ENT service and the ED service.

The junior ENT registrar should have informed a more senior colleague and sought advice/support at the second presentation. He should have been aware of an expectation to keep senior staff informed. This could be in the form of verbal/written orientation at the start of the run.

This is important when some trainees only join a service for a 3 month period. This change is already planned from the information provided by [Dr F].

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…

How would it be viewed by your peers?

Whilst there was an unacceptable delay in making the correct diagnosis and [Mrs A] suffered additional pain and distress, the long term outcome remains the same according to the Neurologist's statement. I am aware that [Mrs A] is unhappy with this conclusion as there was a delay in commencing anticoagulant therapy. I am not a Neurologist so have no personal experience to draw on. Her concerns are understandable and a second opinion from an independent Neurologist may be appropriate.

Awareness of the very variable symptoms due to intracranial vascular events can make early diagnosis difficult. Severe headache is the commonest symptom. This incident highlights the need for clear expectations and protocols for less experienced staff to follow with good access to support from senior colleagues.

Yours sincerely

Martyn Fields"

Further advice was obtained from Dr Fields on 9 January 2019:

"Thank you for your email of the 17th December and the additional information from [the Customer Services Coordinator], [the public hospital], [Dr D] and [Dr I], Clinical Director, Emergency Department, the public hospital in response to my original report. You have asked if this additional information alters my previous advice in any way. I have read the information provided and reviewed my original report.

The letter from [the Customer Services Coordinator] refers to new guidelines/protocols in place for medical staff in training to try and avoid this occurring in the future. I have not been provided with copies of these protocols, however assuming they are appropriate, this is probably the most important outcome of this HDC review:-

Whether CDHB has considered making any further changes to the services it provides following this incident and if so what.

As noted above, the ENT Department has further reviewed and enhanced the Guidelines for Registrars at the time of commencing their clinical placements and this case is tabled as learning opportunity with new RMOs coming in to the Department. Since March 2018, the Guidelines for Registrars in ENT has been further updated and I enclose the latest edition (not provided to me).

Hopefully the guidelines for the ED medical staff have also been reviewed in light of this case but there is no mention of this.

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The letter from [Dr I] disagrees with some of my interpretation/emphasis of the presenting symptoms (eg. regarding headache severity). Having returned all the original documentation I am unable to go back and check this information for accuracy. I recall considering the symptoms at presentation to ED on each occasion and felt that a possible central cause for this patient's symptoms should have been considered at the second presentation by the ENT & ED medical staff. There appears to have been a 'mind set' that this patient had an ENT cause for her problems when she re-presented as she had vertigo and her other symptoms & lack of response to treatment were not given sufficient consideration. Communication between the ED & ENT services could have been better at the second presentation with regard to the need for a CT scan. I have not been provided with copies of the ENT guidelines for vertigo that the ED department state were being followed.

[Dr D] has acknowledged his failings with regard to keeping more senior ENT staff informed and considering alternative diagnoses. He appears to have learned from this and he was unfortunate to be presented with a challenging and relatively rare presentation early in his career. Multiple medical staff were involved in [Mrs A's] care prior to identifying the correct diagnosis and the delay in diagnosis was not [Dr D's] error alone.

In summary, my conclusions/opinion remains."

Further advice was obtained from Dr Fields on 5 May 2019:

"Thank you for your email & additional information of the 16th April 2019.

Your earlier question in italics. These comments are in addition to my earlier reply.

Whether CDHB has considered making any further changes to the services it provides following this incident and if so what.

I have reviewed the new Canterbury DHB 'Otolaryngology Registrars Guidebook' updated since the incident involving [Mrs A]. The 7 page guide appears excellent and clearly lays out expectations and protocols for the ENT registrars. If followed, this should reduce/eliminate the problems that occurred with [Mrs A's] management by the ENT service.

I have not been provided with a copy of any similar guidelines relating to the Emergency department (ED) junior staff. I have been provided with 'Healthpathways' guidelines relating to management of vertigo, headache, etc., however these relate to specific management of various presentations. Having general guidelines for junior staff when joining the ED service with regard to how to manage patients returning to ED with the same (worsening) condition over a short period (how to escalate & flag that something unusual/complex may be presenting) and obtain advice/involvement of a more senior member of the ED service at an early stage could be useful. These guidelines/protocols may be in place but have not been provided.

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The letter from [Dr I] disagrees with some of my interpretation/emphasis of the presenting symptoms regarding headache severity and consideration of more central pathology.

The letter by the ENT registrar dated 31.03.17 notes 'her headache is constant and appears to be worse'. The discharge summary of the 08.04.17 notes 'presented with left neck pain, occipital headache & vertigo' and 'presented multiple times to ED with worsening symptoms'.

31.03.17 17.54 pm ED record ([SMO]) 'presenting complaint — headache, dizziness, earache'.

31.03.17 9.45 am ED record ([Dr B] Registrar) 'severe pain originating from left ear radiating posteriorly towards her mastoid and anteriorly into her left eye'.

29.03.17 [GP] referral letter to ED 'headache has persisted — unrelenting 24/7' — mentioned possible need for imaging at that time.

With each presentation, [Mrs A] did not just have 'vertigo'. She complained of increasing vertigo, headache, nausea and vomiting. Nystagmus was also noted. Although Vestibular neuronitis/labyrinthitis are in the differential diagnosis, these additional worsening symptoms should increase the suspicion of a possible central cause & warrant a CT scan at the second presentation (30 March 2017). …

In my opinion, from the information provided, imaging (a CT scan) should have been arranged at the second presentation (30 March 2017). Using the 'Healthpathways' guidelines for adult headache/vertigo would have led to a similar conclusion. Whilst the ENT service had the primary responsibility to arrange a scan, the management of [Mrs A's] repeat presentation to ED by ED staff appears to have contributed to the delay in making a diagnosis by not investigating further and repeat referral to the ENT service without considering alternative diagnoses & involvement of another service such as Neurology.

The letter from [the] Customer Services Coordinator dated 8th November 2018 provides a clear summary of the events and copies of the CDHB staff responses.

In light of the additional information provided, I have modified my conclusion as follows:-

If there has been a departure from the standard of care or accepted practice — how significant a departure do you consider it is?
In my opinion, there has been a moderate departure from the standard of care/ accepted practice provided by the ENT service … The changes made by the ENT service to improve guidance and support for ENT trainees with the Canterbury DHB are appropriate and will hopefully avoid similar problems in the future.

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I hope the ED service staff have also reviewed the events resulting in the delayed diagnosis for [Mrs A] and how future management of a similar presentation could be improved from their perspective.

Yours sincerely

Martyn Fields"

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