

Whanganui District Health Board

**A Report by the
Deputy Health and Disability Commissioner**

(Case 20HDC00914)

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Executive summary

1. This report concerns the care provided to a man in his sixties by multiple providers, including Whanganui District Health Board (WDHB). It highlights the importance of multiple presentations being managed and considered overall, rather than in isolation.
2. Between June and August 2018, the man presented to Whanganui Hospital on eight occasions with an ingrown toenail and subsequent unresolved infection. He had a complex medical history, including type 2 diabetes, heart attacks,¹ stroke,² peripheral neuropathy,³ peripheral vascular disease (PVD), and an iliac bypass.⁴ He also had undergone previous vascular investigations.⁵

The man's unresolved infection progressed, and his right toe was amputated in an attempt to stop the infection. However, six days later, his leg was amputated below the knee.

Findings

3. The Deputy Commissioner was concerned that despite the man's repeated presentations, a coordinated plan of care directed by a senior staff member or a dedicated multidisciplinary team was not put in place, and each presentation was managed in isolation rather than with overall consideration of his non-resolving issues. The Deputy Commissioner noted that her expectation would be for WDHB's system to operate in such a manner, and this should have been the case with the man. As such, the Deputy Commissioner found WDHB in breach of Right 4(5) of the Code.
4. The Deputy Commissioner criticised aspects of the individual care provided to the man by three doctors, and commented on the care provided by two further doctors.

Recommendations

5. The Deputy Commissioner recommended that WDHB devise a policy or health pathway for general vascular assessments relevant for arterial and venous assessments; provide training for all junior doctors regarding inter-departmental communication; assess whether the high-risk foot clinic provides appropriate oversight of the management plan for patients who repeatedly present to the Emergency Department with unresolved issues relating to diabetic foot problems; and include guidance for the diagnosis, treatment, and management of non-resolving infections for patients with diabetes in the RMO orientation booklet.

¹ Two heart attacks that required stents.

² A transient ischaemic attack.

³ Nerve damage usually caused by diabetes.

⁴ Surgery to improve the blood supply to the legs.

⁵ A CT angiogram in 2014, and a pelvic and femoral angiogram in December 2015.

Complaint and investigation

6. The Health and Disability Commissioner (HDC) received a complaint from Mr A about the services provided by Whanganui District Health Board (WDHB). The following issue was identified for investigation:

- *Whether Whanganui District Health Board provided Mr A with an appropriate standard of care between June and September 2018.*

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

8. The parties directly involved in the investigation were:

Mr A	Complainant
Whanganui District Health Board	Provider

9. Further information was received from:

Dr B	Emergency Department (ED) senior medical officer (SMO)
Dr C	ED SMO
Dr D	ED SMO
Dr E	Consultant general surgeon
Dr F	Consultant general surgeon
Dr G	ED resident medical officer (RMO)
Dr H	ED SMO
Dr I	ED RMO
Dr J	Orthopaedic registrar

10. Clinical nurse specialist RN K is also mentioned in this report.

11. Independent expert advice was obtained from a specialist in emergency medicine, Dr Stuart Barrington-Onslow (Appendix A) and a consultant general surgeon, Dr Mark Sanders (Appendix B).

Information gathered during investigation

Introduction

12. Between June and August 2018, Mr A, aged in his sixties at the time of events, presented to Whanganui Hospital on eight occasions with an ingrown toenail and subsequent unresolved infection.

13. Mr A had a complex medical history, including type 2 diabetes, heart attacks,⁶ stroke,⁷ peripheral neuropathy,⁸ peripheral vascular disease (PVD), and an iliac bypass.⁹ He also had undergone previous vascular investigations.¹⁰
14. Diabetes can cause a decrease in blood flow to the feet, making it more difficult for a wound or an infection to heal. If an infection does not heal, sometimes it can lead to gangrene.¹¹
15. Over time, diabetes can cause peripheral neuropathy, which can lead to blisters and sores. In addition, PVD causes arteries to block, reducing the blood flow and oxygen to the limbs. This can slow wound healing and decrease the body's ability to fight infection. Consequently, PVD can cause tissue damage or gangrene, and the infection can spread to the bone.
16. Mr A's unresolved infection progressed, and his right toe was amputated in an attempt to stop the infection. However, six days later, at another hospital (Hospital 2), his leg was amputated below the knee.

First presentation to Emergency Department on 7 June 2018

17. On 7 June 2018, Mr A attended the Emergency Department (ED) at Whanganui Hospital and was seen by RMO Dr G, who recorded Mr A's history of pain, discoloration (redness) in his right¹² big toe for two days, and worsening peripheral neuropathy over the last six months.
18. On examination, Dr G noted that Mr A's toe was red and tender to touch, it had decreased sensation at the tip, and there was a 3cm area of redness¹³ tracking up to the top of his foot.¹⁴ It was noted that the cuticle of the nail was spreading to the body of the toenail but there was no deformity to the bone. Dr G documented that the pulse in the toe was weak. Dr G assessed Mr A's observations and noted that his vital signs were acceptable.¹⁵
19. Dr G was concerned about the slight tracking of the redness and infection, and asked SMO Dr B to examine Mr A. Dr G said that Dr B examined Mr A and diagnosed a skin infection.¹⁶ Dr B told HDC that he cannot recall whether he examined Mr A or just discussed him with Dr G. The discharge summary documented: "Kindly reviewed by [Dr B], ?par[o]nychia." Dr B told HDC that on review of Mr A's records, he thinks it is unlikely that he would have diagnosed a skin infection, and he would have "been more concerned for a significant process".

⁶ Two heart attacks that required stents.

⁷ A transient ischaemic attack.

⁸ Nerve damage usually caused by diabetes.

⁹ Surgery to improve the blood supply to the legs.

¹⁰ A CT angiogram in 2014, and a pelvic and femoral angiogram in December 2015.

¹¹ Death of body tissue due to a lack of blood flow or a severe infection.

¹² This was documented in error — Dr G meant to state "left" toe.

¹³ Erythema.

¹⁴ The dorsal aspect of the foot.

¹⁵ Temperature 36.6°C, blood pressure 149/74mmHg, heart rate 74 beats per minute, oxygen saturation 97%.

¹⁶ Paronychia.

20. Dr G ordered blood tests to look for any signs of systemic infection, along with an X-ray of Mr A's foot¹⁷ to check whether the infection was due to a bone lesion. The blood tests showed that Mr A's inflammatory markers were normal, and the X-ray showed no signs of inflammation or swelling. Mr A was discharged home with a five-day prescription of antibiotics to treat his infected toe, and was advised to attend his diabetes review on 11 June 2018. The discharge summary advised Mr A to return to ED if his foot became redder, more infected, or more swollen.

Second presentation to ED on 11 June 2018

21. On 11 June 2018, Mr A re-presented to the ED. He reported ongoing pain in his left toe and that the antibiotics had not helped. He was seen by SMO Dr D, who recorded Mr A's history of vascular disease and heart attacks that had required stents. Dr D documented that on examination Mr A was "well appearing" and that the left toe appeared slightly red but was not warmer than the right, and the inside of the toe was especially tender, and Dr D suspected an ingrowing toenail. Dr D assessed Mr A's vital signs¹⁸ and undertook repeat blood tests (which were within acceptable limits), and diagnosed an ingrown toenail and cellulitis¹⁹ of the foot.
22. At this presentation, Dr D removed the inside part of Mr A's toenail. Dr D documented that the nail was "freed" and that "a slither of nail" was removed.
23. Mr A was discharged with a further five-day prescription of antibiotics, but no further safety-netting advice was provided. The discharge instructions provided to Mr A were to take the antibiotics as prescribed. Mr A has raised a concern that phenol²⁰ was not used on this occasion to treat his ingrown toenail.

Third presentation to ED and admission to Orthopaedic Department 13–14 June 2018

24. On 13 June 2018, Mr A attended the ED again. A surgical house officer reviewed Mr A and documented his history of a sore and red left toe, and that he was experiencing shooting stabbing pains in his toe. The house officer recorded Mr A's history of diabetes and peripheral neuropathy.
25. Mr A was admitted to the post-acute ward in the Orthopaedic Department overnight. The referral noted that Mr A had diabetes with peripheral neuropathy and an infected great toe.
26. At 9.15am on 14 June 2018, Dr E, a consultant general surgeon, reviewed Mr A on the ward round. Mr A's history of a painful, red, and oozy toe since the toenail removal procedure on 11 June 2018 was documented in the ward round notes. Dr E documented that on examination, Mr A's toe was tender to palpation, and a faint pulse²¹ could be felt in the toe.

¹⁷ The discharge record documented that the X-ray was reviewed with a consultant.

¹⁸ Vital signs taken at 12.36pm: Respiratory rate 14 breaths per minute, oxygen saturation 96%, heart rate 67 beats per minute, blood pressure 136/65mmHg. Vital signs taken at 2.16pm: Respiratory rate 14 breaths per minute, oxygen saturation 96%, blood pressure 142/69mmHg.

¹⁹ A deep, potentially serious infection of the skin caused by bacteria.

²⁰ A compound used on severe ingrown toenails that do not respond to other treatments.

²¹ A pulse of the dorsalis pedis (an artery of the upper surface of the foot).

Dr E did not calculate Mr A's ankle-brachial pressure index (ABPI)²² at this time, and did not undertake a computed tomography angiogram²³ (CTA). Mr A's observations were stable,²⁴ and during his admission he was administered intravenous antibiotics.²⁵

27. Dr E told HDC that when Mr A was reviewed during the ward round, he was not systemically unwell, and the improvement in his toe following the intravenous antibiotics and elevation, and his blood results,²⁶ were reassuring. Dr E considered that at this point, there did not appear to be an indication for an acute admission, further imaging, or operation.
28. Dr E advised that Mr A be given a further dose of intravenous antibiotics at 2pm, and subsequently he was discharged with a ten-day prescription of oral antibiotics and advice to see his GP in ten days' time for review. Dr E told HDC that even though it was not documented, her usual practice is to have a safety-netting talk with patients (discharge advice) about the reasons to seek a review.
29. Dr E told HDC that it is not common practice to undertake a detailed vascular examination²⁷ on post-acute wards, especially in a patient with a minor, resolving infected toenail. Dr E stated that she did not perform an ABPI²⁸ because she was satisfied that Mr A's condition was minor and improving. She noted that ABPI is less accurate in diabetic patients owing to calcification of the arteries, and is of less use in this group. Dr E said that she assessed the problem as infective rather than ischaemic,²⁹ but noted that when she has concerns about ischaemia,³⁰ her usual practice is to request imaging with CTA, rather than perform an ABPI, which may be unreliable. Dr E told HDC that the plan was for community review with advice to return if the situation changed.

Presentation to accident and medical clinic on 24 June 2018

30. At 2.55pm on 24 June, Mr A presented to an accident and medical clinic. It is documented that he had finished the antibiotics and that his left toe was much worse and very painful to walk on. On examination it was noted that the redness on the left toe was extending to the metatarsophalangeal³¹ joint, and the tissue was "a bit necrotic" and smelly, and the base of the nail was soft, tender, and "boggy".
31. The accident and medical clinic referred Mr A to Whanganui Hospital.

²² A tool to detect peripheral artery disease in the lower limbs by calculating the ratio of a patient's systolic blood pressure at their ankle to the systolic pressure in their arm.

²³ A procedure that uses X-rays to create detailed pictures of the blood vessels and blood flow inside the body.

²⁴ Temperature 35.7°C, pulse 61 beats per minute, blood pressure 138/71mmHg.

²⁵ Three doses of 1g flucloxacillin.

²⁶ Normal white cell count and mildly raised C-reactive protein of 16.

²⁷ Vascular studies are tests that check the blood flow in the arteries and veins.

²⁸ An ABPI can be performed using a Doppler device (most reliably) or by using a blood pressure machine.

²⁹ Relating to a lack of blood supply to an organ or tissue.

³⁰ An insufficient supply of blood to an organ or tissue, usually as a result of narrowing or blockage of an artery.

³¹ Located at the base of the big toe.

Overnight admission to surgical ward — 24–26 June 2018

32. Mr A presented to the ED at Whanganui Hospital, and at 6pm his past history of diabetes, multiple heart attacks, peripheral neuropathy, iliac bypass, and stroke was documented in his progress notes, together with his current history of numbness and tingling in his toe, and pain when walking.
33. It was documented that on examination, Mr A's left toe was swollen, not warm, cold to touch, and tender, with a reduced range of motion. It was also recorded that some checks on his blood flow were undertaken³² (although it is not documented whether this was by angiogram, ABPI, or by Doppler ultrasound) and that Mr A was systemically well, and that the pulse in his toe was faintly palpable. It is unclear who documented these notes.
34. Mr A was commenced on intravenous antibiotics, and bloods, an X-ray, and a wound swab were taken. The swab showed an infection.
35. At 7.10pm on 24 June 2018, Mr A was admitted to the surgical ward.
36. Dr F, a consultant general surgeon, told HDC that prior to 25 June 2018, when Mr A's peripheral pulses on both lower limbs³³ were taken, the pulse over the left pedal arteries³⁴ was weak³⁵ and Mr A's legs and feet were warm. Dr F said that an assessment of Doppler ultrasound signals³⁶ on the ankle was performed, but this was not documented, and it is unclear whether Dr F performed the test or whether it was performed by someone else.
37. At 11.30am on 25 June 2018, Mr A was assessed by a diabetes clinical nurse specialist, who documented that the plan was to refer him to the high-risk foot clinic. There is no record that this referral occurred.
38. Also on 25 June 2018, a junior surgical registrar consented Mr A for a partial wedge resection of the ingrown toenail on his left great toe.³⁷ Mr A ticked on the consent form that he understood the nature, benefit, and risks of the procedure. The specific risks of the procedure were not documented on the consent form.
39. Dr F told HDC that he decided to undertake the wedge procedure (removal of part of the toenail and infected tissue) to prevent recurrence of the condition because the infection had continued for several weeks, the antibiotic therapy had been ineffective, it appeared that the ingrown toenail was the focus of the infection, and he felt that the infection could have progressed.

³² It is documented that PV (peripheral vascular) and BD (Buerger's disease — a rare disease of the arteries and veins in the arms and legs) or PD (pedal Doppler) were "okay".

³³ Pulses of the arteries below the knee, taken by palpation (feeling with the fingers).

³⁴ A blood vessel of the lower limb that carries oxygenated blood to the top surface of the foot.

³⁵ Each foot should have two pulses that are easily detected. This test is performed to determine whether the blood flow to the feet is normal. Coldness in the foot could signify a blocked artery.

³⁶ A non-invasive test that can be used to estimate the blood flow through blood vessels.

³⁷ Removal of part of the toenail.

40. Dr F told HDC that he informed Mr A of the risks and complications of the operation, including bleeding, infection, wound healing problems, and recurrence of the ingrown toenail. Dr F told HDC that he felt that there was enough blood flow to the leg to heal the surgical site. Dr F performed the wedge procedure at 4pm on 25 June 2018.
41. Mr A was discharged on 26 June 2018 with oral antibiotics for four days and a follow-up appointment with General Surgery scheduled for two weeks later (10 July 2018³⁸). A referral to the high-risk foot clinic was not made. The discharge summary documents that Mr A's repeat blood test results were satisfactory and his observations had remained stable. The discharge summary also states: "[I]f you have any concerns, feeling unwell, having excessive pain please visit ED for assessment."

Fourth presentation to ED — 1 July 2018

42. Dr I, ED RMO, documented Mr A's history of heart attacks, stroke, and an iliac bypass. It was noted that Mr A had finished his post-procedure antibiotics, his pain was controlled with analgesics, and he was progressing well, but he still had concerns about infection in his toe, owing to his background of diabetes.
43. On examination, Dr I noted normal vital signs³⁹ and recorded that the left great toe was healing well with no bleeding, pus, or redness, and that sensation was present and the sutures were intact. No vascular investigation was undertaken.
44. Mr A was discharged at 12.49am on 2 July 2018 with advice to continue analgesia at home and attend the follow-up surgical clinic appointment as scheduled. He received no other discharge advice.
45. Dr I told HDC that he cannot recall this case due to the passage of time, but stated that his notes document that no red flags were observed; the toe was neurovascularly intact; Mr A had no fever; and his pain had settled with analgesia. Dr I noted that Mr A had a further review scheduled on 14 July 2018⁴⁰ in the surgical clinic, and that this review acted as an extra safety net, as Mr A's toe would have been examined by the surgeon at that appointment.

Fifth presentation to ED — 3 July 2018

46. Mr A was referred to the ED by a district nurse on 3 July 2018, owing to concerns that his left toe had become inflamed since finishing his course of antibiotics two days previously, and he had been experiencing increased pain in the area.
47. On examination, Dr C, SMO, noted redness of the left big toe that extended over the top of the foot, and a "weak" dorsalis pedis pulse (the pulse that runs down the top of the foot between the great and second toe). Dr C documented Mr A's history of vascular disease and heart attacks that had required stents.

³⁸ The outpatient appointment took place on 17 July 2018.

³⁹ Blood pressure 140/65mmHg, heart rate 84 beats per minute, oxygen saturation 96%.

⁴⁰ The outpatient appointment took place on 17 July 2018.

48. Dr C diagnosed a postoperative infection and Mr A was administered an intravenous antibiotic, with further intravenous antibiotics to be given for 12 days. Dr C did not discuss Mr A's case with the duty surgical team or the team who had performed the surgery, and no vascular assessments were undertaken.
49. Mr A was discharged with a prescription for 12 days of antibiotics and advised to see his GP in a week for a recheck and a review of the home antibiotics. Dr C documented in the discharge summary that a swab taken during the nail removal procedure on 25 June 2018 showed a skin infection,⁴¹ and that it was sensitive to the antibiotics prescribed previously.

Appointment with Dr F — 17 July 2018

50. On 17 July 2018, Mr A attended his follow-up appointment with Dr F (this is the review referred to by Dr I in paragraph 45 above). In his clinic letter, Dr F noted Mr A's history of mild cellulitis on the top of the left big toe, but did not document any other risk factors. He documented that on review, the surgical site had healed well and all sutures had been removed from the toe wound, and that Mr A could stop his antibiotic therapy. Dr F arranged for follow-up in one month's time to ensure that the wound had healed completely.

GP assessment — 23 July 2018

51. On 23 July 2018, Mr A presented to his GP with increased pain in his left toe. The GP documented that there was redness and swelling from the toe to the top of the foot, with areas of "black ? necrotic tissue⁴²" and some pigmented areas at the end of the toe. The GP noted that there was no sensation at the tip of the toe. He re-started antibiotics⁴³ and referred Mr A to Whanganui Hospital for a further surgical review.⁴⁴

Sixth presentation to ED — 30 July 2018

52. On 30 July 2018, Mr A presented to ED again and was assessed by Dr G. Dr G documented Mr A's past history (peripheral neuropathy, heart attacks that had required stents, diabetes, and an iliac bypass), and his recent history of worsening ingrown toenail and previous administration of intravenous antibiotics.
53. Dr H, the ED SMO at the time, told HDC that he advised Dr G to consult with the surgical service that had seen Mr A after the toenail excision procedure and follow-up. Dr H also told HDC that an ABPI was not indicated at this presentation, as there was good perfusion (blood flow) of the left foot at the time of this visit.
54. Dr G discussed Mr A with Dr J, an orthopaedic surgery registrar, and explained Mr A's procedure and repeated course of antibiotics. Dr J told HDC that because of the passage of time he does not recall the discussion. He said that based on the medical records, Dr G's

⁴¹ *Staphylococcus aureus*.

⁴² Dead tissue.

⁴³ A seven-day prescription ending on 30 July 2018.

⁴⁴ This referral was superseded by his presentation to ED on 30 July 2018.

main concern was postoperative infection, so he advised that Mr A start on a short course of antibiotics,⁴⁵ with early follow-up in one week's time under Dr F, the consultant in charge.

55. Blood tests taken showed a normal white cell count, mildly elevated C-reactive protein⁴⁶ of 7mg/L, and glucose of 15.9mmol/L.⁴⁷ As the results were largely normal, Dr G suggested that Mr A return home with oral antibiotics, and follow up with Dr F in a week's time as arranged.
56. In the discharge summary, Dr G documented that Mr A was systemically well, but there was a "more offensive smell" and a dark, black area at the medial aspect of the nail bed, and that the foot was warm to touch. No vascular investigation occurred.

Seventh presentation to ED — 6 August 2018

57. On 6 August 2018, a district nurse referred Mr A to the ED with ongoing infection, redness, and necrotic areas on his left great toe. Mr A was diagnosed with necrosis⁴⁸ of the toe and admitted to the surgical ward.
58. On 7 August 2018, a lower limb CT bilateral angiogram showed thickening of the arteries⁴⁹ causing moderate narrowing.⁵⁰ An X-ray showed that there was no damage to the bone.⁵¹ A wound swab showed a heavy growth of *Staphylococcus aureus*.⁵² Intravenous antibiotics were commenced, and Mr A's case was discussed with two vascular registrars, and he was accepted for transfer to Hospital 2.

Transfer to Hospital 2

59. On 9 August 2018, Mr A was transferred to Hospital 2's vascular service, where he was diagnosed with a critically ischaemic left lower limb,⁵³ a necrotic left big toe, and wet gangrene.⁵⁴ He was administered ongoing intravenous antibiotics. A vascular ultrasound scan⁵⁵ was completed on 10 August, and an angiogram and an angioplasty⁵⁶ were undertaken on 11 August. All imaging showed narrowing of the femoral artery (the main blood vessel supplying blood to the lower body) in two areas (above the knee and mid-calf).
60. On 11 August 2018, a vascular registrar amputated Mr A's left toe. The discharge summary documented that the amputation was to prevent any further infection. It is noted that the

⁴⁵ Flucloxacillin 500mg.

⁴⁶ A test for the presence of inflammation or infection.

⁴⁷ Normal range of glucose in adults is 11–20mmol/L.

⁴⁸ Dead tissue.

⁴⁹ Extensive calcified plaque in the femoral artery (the main blood vessel supplying blood to the lower body) and the superficial femoral arteries (which run the length of the thigh).

⁵⁰ Stenosis.

⁵¹ No destructive bony lesions.

⁵² A bacterium commonly found on the skin, but which sometimes can get inside the body and cause serious, life-threatening infection.

⁵³ A severe blockage in the arteries of the lower extremities, which markedly reduces blood-flow.

⁵⁴ Gangrene is referred to as "wet" if there is a bacterial infection in the affected tissue.

⁵⁵ To check the blood flow in the arteries and veins.

⁵⁶ A procedure to increase blood flow in a narrowed artery.

amputation was successful but that the wound showed signs of poor healing, and that further debridement⁵⁷ of the wound took place on 13 August 2018.

61. On 16 August 2018, Mr A was reviewed by the infectious diseases team. Infection was noted in bone samples, and Mr A's antibiotics were changed. However, the wound site became necrotic and was not healing, and it was decided to proceed to a left below-knee amputation.
62. Mr A's left leg was amputated below the knee on 17 August 2018. DHB2 told HDC that the operation note documents the type of sutures, but not the number used. Similarly, while the discharge summary notes "sutures out 10–14 days", it does not document how many sutures were in the wound.

Whanganui Hospital

63. On 22 August 2018, Mr A was discharged from Hospital 2 to Whanganui Hospital for rehabilitation, and was admitted to the General Surgery ward.
64. DHB2 told HDC that it does not know what information was copied and sent when Mr A transferred to Whanganui Hospital, but its usual process is to send a full set of notes with the patient when they transfer to another DHB. WDHB told HDC that when Mr A returned to Whanganui Hospital on 22 August 2018, the number of sutures used to secure the wound was not listed on Hospital 2's discharge summary.
65. Mr A was transferred to the Assessment, Treatment & Rehabilitation ward at Whanganui Hospital. On 28 August 2018, a nurse documented that she removed 18 sutures from Mr A's leg amputation wound. The nurse told HDC that she removed all visible sutures and counted them, and that Mr A's wound was healing well and there was no ooze or bleeding.
66. On 21 September 2018, Mr A was discharged from Whanganui Hospital into the care of his GP, with follow-up from the Wellington Vascular Surgery Department and the Limb Clinic, the district nursing service, and the community occupational therapist.
67. On 22 November 2018, RN K, a clinical nurse specialist in wound care, documented that she removed "stray" sutures (but not how many) from Mr A's wound bed. RN K recorded that Mr A told her that he was in constant pain, which alternated between his stump and his right leg.

Further information

68. Dr F told HDC that the main contributing factor to the adverse outcome in Mr A's case was the poor circulation in his legs due to peripheral vascular disease and diabetes.
69. WDHB told HDC that the clinicians involved have all reflected on the care provided to Mr A and, in future, they will have a lower threshold for vascular imaging.

⁵⁷ Removal of dead or infected tissue to help a wound to heal.

Leg ulcer vascular assessment policy

70. WDHB's policy on neurovascular assessment dated March 2018 outlines that if a patient has a leg ulcer for longer than six weeks and the patient has diabetes, a specialist referral should be considered.

Responses to provisional opinion

71. Mr A was provided with the opportunity to comment on the "information gathered" and "changes made" sections of the provisional opinion, and provided HDC with some further clinical records from earlier treatments for an ingrown toenail in 2013/2014.
72. WDHB was provided with the opportunity to comment on the relevant sections of the provisional opinion, and told HDC that it accepts the findings and recommendations. It confirmed that Dr F, Dr J, and Dr D had no comments to make.
73. Dr I and Dr C were also provided with the opportunity to comment on the relevant sections of the provisional opinion. Dr I had no comments to make, and Dr C did not respond.
74. DHB2 was provided with the opportunity to comment on the relevant sections of the provisional opinion, which suggested that the number of sutures used be documented. DHB2 told HDC that it is not aware of any surgical service that requires the documentation of the number of sutures used in closing a wound. It stated that it is unlikely that Mr A's pain was caused by sutures remaining in his leg, but rather from stump and phantom limb pain. DHB2 told HDC that it will not be requiring that the number of sutures used is documented in the operation note.

Opinion: Whanganui District Health Board — breach**Introduction**

75. My role is to assess whether, with the information available to Mr A's healthcare providers at the time of events, those providers acted appropriately and in accordance with accepted standards of practice. When retrospectively assessing the care provided, I have endeavoured to make that assessment free from hindsight bias, notwithstanding the outcome. I consider that the issues in this case relate to the lack of a multidisciplinary team approach to monitor Mr A's progress in a holistic manner. There were missed opportunities to undertake appropriate investigations, in particular vascular investigations, given Mr A's complex medical history and the well-known complications his medical conditions posed.
76. To assist my assessment of this matter, I sought independent expert advice from a consultant general surgeon, Dr Mark Sanders, and an emergency medicine specialist, Dr Stuart Barrington-Onslow. I will refer to this advice in my discussion below.

Care provided in Emergency Department

77. At Mr A's first presentation to ED on 7 June 2018, blood tests and X-rays were performed, and it was documented that the pulse in his toe was weak. At his second presentation to ED on 11 June 2018, part of his toenail was removed. At Mr A's third presentation to ED on 1 July 2018, it was documented that his toe was healing well, and he was discharged with advice to attend his surgical appointment.
78. At Mr A's fourth presentation, on 3 July 2018, a weak pulse in his toe was noted and an infection in his wound had developed. At Mr A's sixth presentation to ED on 30 July 2018, an "offensive smell" and a dark black area in the toenail bed was noted. Mr A was not reviewed by the surgical team, and he was discharged with antibiotics.
79. My independent advisor, Dr Barrington-Onslow, advised that in view of Mr A's known peripheral vascular disease and previous surgery, an appropriate vascular assessment should have been made prior to his seventh presentation on 7 August 2018 (when he had a CT angiogram (a type of vascular assessment)).
80. Dr Barrington-Onslow advised that in relation to the ED visits, Mr A received an acceptable standard of care, apart from the lack of specific discharge instructions, which he considered was a mild deviation from acceptable standards. I have addressed this criticism (as it relates to individual providers) below.
81. Dr Barrington-Onslow also advised that the standard of care for diabetic foot problems involves a multidisciplinary team of doctors, nurses, podiatrists, etc, and he could see no reference to such a group at WDHB. Dr Barrington-Onslow explained that many doctors on multiple occasions would have treated Mr A with good care, but there was no oversight. He stated: "[I]n my opinion, what was required was a service he should have entered that would continually monitor his progress in a holistic manner."
82. I agree with this advice. Mr A had unplanned presentations to the ED at Whanganui Hospital on six occasions⁵⁸ over two months with a wound that was not healing, and a complex medical history including diabetes and peripheral neuropathy, which increased the chance of his wound not healing. The lack of a multidisciplinary team at WDHB to oversee and critically assess Mr A's lack of progress and continued symptoms and deterioration resulted in a lack of coordination of care.

Lack of vascular assessments and surgical input

83. On Mr A's third presentation to the ED, on 13 June 2018, he was admitted to the post-acute ward in the Orthopaedic Department. On 14 June 2018, he was reviewed in the post-acute ward by Dr E. Dr E told HDC that she did not undertake any vascular investigations (ABPI or CTA) following this review as she was reassured by Mr A's normal blood results, and the improvement of his toe following antibiotics and elevation. Dr E told HDC that it is not common practice to undertake a detailed vascular examination on the post-acute wards, especially in a patient with a minor, resolving infected toenail. She said that she assessed

⁵⁸ By the seventh presentation on 6 August 2018, his symptoms had advanced and appropriate action was taken.

the problem as infective rather than ischaemic, and noted that if she had had any concerns about ischaemia, she would have undertaken a CTA rather than ABPI, as ABPI is less reliable in diabetic patients.

84. It appears that Mr A did undergo some tests to check the blood flow in his legs on 24 June 2018. It is documented that his right big toe was cold to touch and tender, and that the pulse in his toe was only faintly palpable. However, there is no documentation of the specific tests that were undertaken, or by whom. Dr F told HDC that before the toenail surgery on 25 June 2018, an assessment of Doppler ultrasound signals on Mr A's ankle arteries was performed but was not documented adequately. Dr F also said that prior to the procedure, an examination of peripheral pulses by palpation on both lower limbs was done, and the pulse over the left pedal arteries was felt to be weak, and Mr A's legs and feet were warm.
85. As acknowledged by Dr F, there is no contemporaneous written evidence of a Doppler ultrasound having been performed prior to the surgery, or by whom, as it has not been documented in the clinical record. I acknowledge, however, that Dr F has told HDC that a Doppler was performed. Whilst I acknowledge that there is no documentation that a Doppler ultrasound was performed, I am satisfied that one took place in light of Dr F's decision to remove Mr A's toenail.
86. On 25 June 2018, Dr F removed part of Mr A's toenail.
87. When Mr A presented to the ED on 30 July 2018, Dr G consulted Dr J by telephone, and he advised a short course of antibiotics. Dr J did not perform a review of Mr A's toe.
88. Regarding the telephone call between Dr J and Dr G on 30 July 2018, my independent advisor, Dr Sanders, stated that Mr A had known peripheral vascular disease and had delayed healing despite antibiotics and the removal of the focus of the infection. Dr Sanders advised that a slightly more detailed assessment of the wound and vascular assessment should have been undertaken by Dr J at this time. Dr Sanders considers that this was a minor departure from the accepted standard of care in that Mr A should have been reviewed more formally.
89. However, Dr Sanders advised that the overall level of vascular assessment Mr A received from Whanganui Hospital was a "moderate/significant" departure from the accepted standard of practice. Dr Sanders said that in Mr A's case, his established past history of vascular disease, type 2 diabetes, and neuropathy, combined with the lack of straightforward resolution of a toe infection, both in the preoperative period (before 25 June 2018) and postoperative period (after 25 June 2018), should have alerted physicians to the possibility of other reasons for the lack of progress. Dr Sanders advised:
- "An [APBI] measurement (basically comparing the blood pressure in the feet and arm) should have been undertaken as a minimum and this could have been then used to guide the need for further vascular imaging."
90. Dr Sanders stated that the ABPI assessment or additional vascular imaging (CT angiogram) should have been undertaken at some stage during Mr A's hospitalisation, ideally

preoperatively but, if not, and given the delayed healing postoperatively, during that stage of his management. Dr Sanders acknowledged that, as stated by Dr E in relation to Mr A's presentation on 13–14 June 2018, ABPI measurements can be erroneous in diabetic patients with small vessel disease. Dr Sanders advised that undertaking an ABPI would be considered the standard of care, noting that it is a relatively straightforward and simple procedure, and that it remains a useful screening tool. He said that even though this patient obviously had an infection, given his past history and risk factors, including previous arterial interventions, the potential for underlying ischaemia as a compounding factor should have received more thought.

91. I accept this advice. As Dr Sanders notes, an ABPI is a simple procedure, and, despite its limitations, is still a useful screening tool. Mr A was seen by eight clinicians between 7 June and 30 July 2018, with an infected toe that would not heal. Given his history of vascular issues, in my opinion this should have prompted the clinicians to undertake more formal vascular assessments to assess the cause, and these assessments should have included an ABPI as a minimum. This in turn could have led to further vascular assessments, and therefore earlier intervention.
92. While it is not certain that Mr A's ultimate prognosis and outcome would have been any different if further vascular assessments had been performed, I consider that earlier and more detailed vascular assessments may have led to earlier detection and intervention of Mr A's ischaemia. I consider that at Mr A's presentations to WDHB there were missed opportunities to undertake more detailed vascular assessments.

Policies

93. WDHB had no general policy in place regarding vascular assessments for clinicians to follow.
94. Dr Sanders noted that WDHB's policy "Leg Ulcers", whilst not specific to the vascular assessments in Mr A's case, could have provided a "very good framework for a more generic vascular assessment relevant for arterial and venous assessments, and could have been of relevance in [Mr A's] case".

Conclusion

95. While there is individual accountability and obligations on individual providers to provide care within accepted standards, WDHB had an organisational responsibility to provide a reasonable standard of care to its patients. Mr A presented to ED on six occasions, and had an unplanned admission to the surgical ward and a scheduled appointment with the surgical team for the same ongoing issue (non-healing of an ingrown toenail and later a non-healing wound). I am concerned that despite these repeated presentations, Mr A did not have a coordinated plan of care directed by a senior staff member or a dedicated multidisciplinary team, and each presentation was managed in isolation rather than with overall consideration of his non-resolving issues. Previously, this Office has stated⁵⁹ that a DHB's system would be expected to operate in such a way that a patient who has attended numerous times with the same issue would be afforded continuity of services (for example,

⁵⁹ 19HDC00256, available at www.hdc.org.nz.

by having a dedicated team assigned to oversee, monitor, and plan the patient's care). I would expect WDHB's system to operate in this manner, and consider that this should have been the case with Mr A. In my view, this meant that WDHB did not provide quality and continuity of services to Mr A, and, accordingly, I find that WDHB breached Right 4(5) of the Code of Health and Disability Services Consumers' Rights (the Code).⁶⁰

Missed sutures — other comment

96. On 17 August 2018, Mr A's left leg was amputated below the knee at Hospital 2. The number of sutures used was not documented in the operation note or the discharge summary. On 28 August 2018, 18 sutures were removed from Mr A's wound by a WDHB nurse, but on 22 November 2018, RN K removed stray sutures from Mr A's wound bed. RN K documented that Mr A told her that he was in constant pain, which alternated between his stump and right leg. RN K did not document how many stray sutures were removed.
97. I understand that the cause of Mr A's pain could have been from either remaining sutures or, as DHB2 advised, stump and phantom limb pain. Whilst I accept DHB2's assertion that it would not be considered reasonable practice to record the number of sutures used in a wound on every occasion, I would reiterate that documenting the details of what activity is undertaken as an accurate record is an expectation of a good standard of care.

Dr F — adverse comment

98. On 25 June 2018, Dr F removed the growing part at the base of Mr A's ingrown toenail. Dr F told HDC that he carried out this procedure to prevent recurrence of Mr A's condition. Dr F said that he felt that there was enough blood flow to the leg to heal the surgical site. He stated that examination of the peripheral pulses by palpation on both lower limbs had been undertaken prior to 25 June 2018, and the pulse over the left pedal arteries was felt to be weak, and Mr A's legs and feet were warm. Dr F also stated that a Doppler assessment was undertaken.
99. My independent advisor, Dr Sanders, advised that the non-resolution of Mr A's ongoing infection in the left great toe was appropriately linked to the ingrowing toenail. Dr Sanders stated that despite appropriate antibiotics having been given for the infective element, there was also likely to have been a not-insignificant vascular element to the slow or non-resolution of the infection.
100. Dr Sanders said that if it was felt that the ingrowing toenail was providing a focus for the infection that was not allowing the antibiotics alone to work, draining or removing the focus would have been a reasonable next step, and this could have been achieved by removing that portion of the nail while not cutting into or excising any tissue. Dr Sanders explained

⁶⁰ Right 4(5) states that "[e]very consumer has the right to co-operation among providers to ensure quality and continuity of services".

that the primary aim at this stage in Mr A's care should have been to try to control the infection rather than definitive treatment to prevent it happening in the future.

101. Dr Sanders explained that Mr A's toe was actively infected at the time the excision of the growing portion of the nail bed was undertaken. He considers that the excision could safely have been delayed until the infection was under control, which may well have required more formal vascular assessment and intervention. Dr Sanders advised that performing the nail bed excision in the presence of active ongoing infection in a patient with peripheral vascular disease when a simpler intervention for control of the infection alone could have been more appropriate, regardless of the vascular status, was a moderate departure from the accepted standard of care. However, when originally making the determination that it was a moderate departure, Dr Sanders was unaware that Dr F had considered the vascular element.
 102. I acknowledge this advice. Notwithstanding that Dr Sanders did not reduce his criticism once he became aware that Dr F had considered the vascular element, I am satisfied that as a Doppler assessment of Mr A's pulses was performed, an adverse comment is appropriate. I therefore remind Dr F of the importance of excluding critical limb ischaemia prior to undertaking surgical procedures. I also remind Dr F of the importance of keeping clear and accurate documentation, including documentation regarding the vascular assessments that have been carried out.
-

Dr C — adverse comment

103. On 3 July 2018, Dr C assessed Mr A in the ED, and noted that his dorsalis pedis pulse was weak and that the result of a swab taken on 25 June 2018 was positive for a skin infection. Dr C diagnosed a postoperative infection and prescribed intravenous antibiotics.
 104. My independent advisor, Dr Barrington-Onslow, an emergency medicine specialist, advised that as this was a postoperative infection, the standard of care would have been at least to discuss the situation with the surgical team who performed the surgery, or the duty surgical team. Dr Barrington-Onslow considers that the lack of discussion with the surgical team was a moderate deviation from the standard of care.
 105. I acknowledge this advice. Whilst I agree that Dr C should have discussed Mr A with the surgical team (Dr F), in my opinion, that he did not is reflective of the lack of overall co-ordination of care and ownership in Mr A's case. For this reason I am satisfied that this departure does not amount to a breach of the Code. However, I remind Dr C of the importance of seeking specialist advice from the team involved in a patient's recent operative procedure, in a timely manner.
-

Dr J — adverse comment

106. Mr A presented to the ED for the fifth time on 30 July 2018. At this presentation it was documented that there was a black area on the nail bed, and the dorsalis pedis pulse was present. Dr G discussed Mr A with Dr J, who advised that Mr A should continue on antibiotics and attend the follow-up appointment with Dr F in a week's time. Dr J told HDC that due to the passage of time he does not recall the discussion, but based on the medical records, Dr G's main concern was postoperative infection, so he advised that Mr A start on a short course of antibiotics and have early follow-up in one week's time under the consultant in charge, Dr F. Dr J did not review Mr A in person.
107. My independent advisor, Dr Sanders, a consultant general surgeon, advised that as Mr A had known peripheral vascular disease and delayed healing despite antibiotics and the removal of the focus of infection, a slightly more detailed assessment of the wound and vascular assessment should have been undertaken. Dr Sanders said that Dr J may have been reassured to a degree by the description of a palpable dorsalis pedis pulse, but Mr A should have been reviewed more formally. Dr Sanders considers that the lack of a formal review was a minor departure from the accepted standard of care. I accept this advice, and I note that as the specialist, it was Dr J's responsibility to instigate the review.
108. I remind Dr J of the importance of ascertaining whether any risk factors are present, in order to make an informed decision about when an in-person assessment is required.

Dr D — other comment

109. On 11 June 2018, Mr A presented to ED for the second time. Dr D diagnosed Mr A with an ingrown toenail and removed part of the toenail. Mr A did not receive any safety-netting advice regarding under what circumstances he should return to the ED or seek GP advice. Mr A re-presented to ED two days later on 13 June 2018.
110. My independent advisor, Dr Barrington-Onslow, advised that it would be the standard of care to suggest that Mr A see his GP within a given period to check on his wound, and that failure to do so is a mild deviation from this standard.
111. I acknowledge this advice. However, as Mr A re-presented to ED two days later on 13 June 2018, I am satisfied that Mr A was provided with adequate safety-netting advice but Dr D did not document this advice. I remind Dr D of the importance of keeping clear and accurate documentation.
112. Mr A raised a concern that phenol was not used on this occasion to treat his ingrown toenail. Dr Barrington-Onslow advised that phenol can be used for both diabetic and non-diabetic feet with similar results. However, he noted that he has worked in several EDs in New Zealand, and he is not aware of any that use phenol.

Dr I — other comment

113. On 1 July 2018, Mr A presented to ED for a wound check. Dr I noted normal vital signs and documented that the left great toe was healing well with no bleeding, pus, or erythema (redness). Mr A did not receive any safety-netting advice. However, Dr I told HDC that Mr A's scheduled appointment at the surgical clinic two weeks later acted as an extra safety net, as Mr A's toe would have been examined by the qualified surgeon at that appointment.
114. My independent advisor, emergency medicine specialist Dr Barrington-Onslow, advised that he would have expected Mr A to have been advised to see his GP at a specific time from this encounter, and that the failure to do so is a mild deviation from the standard of care.
115. I acknowledge this advice. However, I accept that Mr A was due to be seen in the surgical clinic two weeks later, at which point any further concerns could be addressed. I remind Dr I of the importance of ensuring that patients are provided with appropriate safety-netting advice.
-

Changes made since events

116. Whanganui DHB has established a high-risk foot clinic to focus on education and awareness, assessment, diagnosis and care plan development, initiation of treatment, follow-up, and onward referral.
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Recommendations

117. I recommend that WDHB:
- a) Devise a policy or health pathway for general vascular assessments relevant for arterial and venous assessments, including ABPIs. Evidence that this has been done is to be sent to HDC within six months of the date of this report.
 - b) Provide training for all junior doctors regarding inter-departmental communication relating to requests of other departments to review, admit, or provide advice, and the requirement to document the request clearly. Evidence that this has been done is to be sent to HDC within three months of the date of this report.
 - c) Assess whether the high-risk foot clinic provides appropriate oversight of the management plan for patients who repeatedly present to ED with unresolved issues relating to diabetic foot problems. Details of this assessment are to be sent to HDC within three months of the date of this report.
 - d) Include guidance for the diagnosis, treatment, and management of non-resolving infections for patients with diabetes in the RMO orientation booklet, and ensure that

this is discussed during orientation. Details of this assessment are to be sent to HDC within three months of the date of this report.

Follow-up actions

118. A copy of this report with details identifying the parties removed, except the names of the experts who advised on this case, Whanganui District Health Board, and Whanganui Hospital, will be sent to the Health Quality & Safety Commission and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent clinical advice to Commissioner

The following expert advice was obtained from Dr Stuart Barrington-Onslow, an emergency medicine specialist:

“November 2021

Independent advice to the Health and Disability Commissioner for case number 20HDC00914 by Dr Stuart Barrington-Onslow

I have read and agreed to follow the guidelines for independent advisers provided by the office of the Health and Disability Commissioner.

I am an Emergency Medicine Specialist, qualifying as a doctor in 1988 at the University of London. I have been practising Emergency Medicine since 1997 and became a Fellow of the Australasian College for Emergency Medicine in 2007. I am currently employed as a full-time specialist at the Christchurch Hospital Emergency Department.

I have been asked to provide independent expert advice regarding the care provided to [Mr A] in the Emergency Department of Whanganui Hospital between the 7th June and 30th July 2018. To aid me in my advice I have received documentation from the commissioner’s office that includes:

1. Letter of complaint dated 27 May 2020.
2. Whanganui DHB’s response dated 29 July 2020.
3. Medical records from Whanganui DHB for 7 June 2018–30 July 2018.
4. Letter received from Whanganui DHB dated 23 February 2021 and enclosures.
5. Whanganui DHB’s response dated 8 June 2021 and attachments.

Summary of Events

7th June 2018

[Mr A], at the time [in his sixties], presented to the Whanganui Hospital Emergency Department at 14:06hrs.

He was assessed by an Emergency Department (ED) Registered Medical Officer (RMO), ([Dr G]) at 16:00hrs.

The RMO noted that [Mr A] was complaining of a reddened painful **right** big toe (the rest of the documentation notes left), that had developed over the previous evening. His vital signs were acceptable with a temperature of 36.6°C, blood pressure 149/74 mmHg, heart rate of 74 bpm and oxygen saturations of 97%. [Mr A’s] past medical history was documented as type 2 diabetes mellitus on insulin, previous MI (myocardial infarction — heart attack) twice, requiring stents, transient ischaemic attack (mini-stroke), peripheral neuropathy (usually represents loss of sensation and/or position in the extremities of the limbs), and an iliac bypass (surgery to improve the blood supply to the legs).

Examination findings of note, documented a reddened LEFT great toe with erythema tracking up the dorsum of the foot for 3 cm. The toe was tender to touch with a white area at the cuticle, the left DP (dorsalis pedis — pulse that runs down the top of the foot between the great and second toe) pulse was ‘weak’ and there was decreased sensation to the tip of the toe.

The RMO discussed the case with the Senior Medical Officer (SMO) ([Dr B]), checked blood tests for signs of systemic infection and arranged an Xray of the foot to ensure the infection was not due to any bone lesion.

All of the investigations were acceptable and [Mr A] was discharged home with a prescription for 5 days of the anti-biotic amoxicillin 500mg plus clavulanic acid 125mg (Augmentin) at 18:49 hours for treatment of his infected left toe.

Questions

a) Whether the investigations undertaken were appropriate.

Yes. The investigations performed were above the standard of care and entirely appropriate for this presentation.

b) Whether you would have expected any further investigations to have taken place.

No. The investigations performed at this stage were more than adequate.

c) Whether the advice provided to [Mr A] was appropriate.

Yes. [Mr A’s] diabetes control was poor with an HbA1C of 96 on 6th June 2018, with the level being higher during the preceding year. So, it was important that he followed up with his diabetes appointment as stated in the notes. (HbA1c is a blood test that averages the glucose level in blood over a 2–3 month period. Lower is better).

I would have expected that the ED team request that [Mr A] saw his General Practitioner (GP) to review his infection.

d) Whether the treatment provided to [Mr A] was appropriate.

Yes. Appropriate antibiotics.

e) The adequacy of the care provided to [Mr A] by each individual provider on this day.

Good.

f) Whether the safety netting advice provided to [Mr A] was adequate.

Yes. He had diabetic follow up and the door of the ED was left open for him.

g) The adequacy of the documentation for this presentation to the ED.

The documentation was of an acceptable standard.

11th June 2018

[Mr A] returned to the Whanganui Hospital ED at 12:17hrs, and was assessed by an ED SMO ([Dr D]). [Mr A] complained about ongoing pain in his LEFT great toe, and that the antibiotics he had been taking, appeared to have made no difference.

Examination findings are noted — his vital signs were ‘reviewed’, [Mr A] appeared well and his left toe appeared slightly red and no warmer than the right. The SMO did comment that the medial side of the toe was especially tender to make him suspect an ingrowing toenail.

Repeat blood tests during this visit were again within acceptable limits.

The SMO documented performing a procedure on [Mr A]. The toe was anaesthetised with 2% lignocaine, the medial side of the nail was ‘freed’ and a slither of nail removed.

The toe was dressed, and a further 5 days of Augmentin was prescribed. There were no discharge instructions documented and [Mr A] left the ED at 16:55hrs.

Questions

a) Whether the investigations undertaken by [Dr D], Senior Medical Officer, were appropriate?

Yes.

The repeated blood tests show a good understanding regarding the potential issues with diabetic foot infections, and also being aware of the vital signs and general wellbeing of [Mr A].

b) Whether you would have expected any further investigations to have taken place?

No.

The SMO had a reason for the lack of response to the first course of antibiotics, namely that there was an ingrowing nail on the affected toe.

c) Whether the treatment provided to [Mr A] was appropriate.

Yes.

If an ingrowing nail was thought to be contributing to the infection, then dealing with it in a minimalistic way, as the SMO did, is an appropriate standard of care.

d) Whether the removal of part of the toenail was carried out to an appropriate standard?

Yes. The notes are brief, but understandable in an ED environment. (I do not know how busy the ED was, but in my experience most doctors in ED write notes retrospectively as the workload prevents notes being written at the time of assessment).

e) Whether the safety netting advice provided to [Mr A] was adequate.

No. It would be standard of care to suggest that [Mr A] see his GP within a given period to check on his wound. This is a mild deviation.

f) The adequacy of the care provided to [Mr A] by each individual provider on this day.

Good.

[Mr A] mentions the use of phenol in treating ingrowing toenails in diabetic feet. Phenol can be used for both diabetic and non-diabetic feet with similar results; I have worked in several EDs in New Zealand and am not aware of any that carry phenol.

g) The adequacy of the notes for this presentation and the toenail removal.

The notes were somewhat brief, but at an appropriate standard that allows review of the presentation, investigations, treatment and discharge.

1st July 2018

[Mr A] presented to the Whanganui Hospital ED at 21:44 as he was concerned his left big toe was infected. It was noted that he had this nail resected on 25/6/18 by a surgical team, had finished his post procedure antibiotics, and his pain was controlled with analgesics. He felt he was progressing well and had a surgical out-patient review on 14/7/18.

[Mr A] was assessed by an ED RMO ([Dr I]) who noted normal vital signs and documented that the left great toe was healing well with no bleeding, pus or erythema (redness).

The RMO appeared content with the toe, as [Mr A] was discharged at 00:49 on 2nd July 2018.

Questions

a) Whether the investigations undertaken by [Dr I], RMO were appropriate?

Yes. There were no investigations apart from vital signs and a review of the surgical wound. This is appropriate and at the level of standard of care.

b) Whether you would have expected any further investigations to have taken place?

No. I have concerns regarding why a patient presents to an ED on a Sunday night for a wound check. Are there no after-hours medical services in Whanganui?

c) Whether you would have expected any further action on 1 July 2018?

No. The review was good, and it was well documented. There was no reason to call an ED SMO about this presentation.

d) The adequacy of the care provided to [Mr A] by each individual provider on this day. From the notes I have received, this appeared appropriate.

e) Whether the safety netting advice provided to [Mr A] was adequate.

No. Again, I would expect [Mr A] to have been advised to see his GP at a specific time from this encounter. This is a mild deviation from standard of care.

3rd July 2018

[Mr A] was sent by a district nurse to the Whanganui Hospital ED, arriving at 12:18hrs. He was seen by an SMO ([Dr C]) at 12:56hrs. The concern of the nurse was that his left toe had become inflamed since finishing his course of antibiotics two days prior, and [Mr A] had been experiencing increased pain in the area.

The SMO performed a complete and thorough examination with notable findings being redness of the left big toe that extended over the dorsum (top) of the foot. A 'weak' DP (dorsalis pedis) pulse was noted. The SMO also determined that a swab taken on 25/6/18 during the nail procedure grew *Staphylococcus aureus*, and that it was sensitive to the antibiotics [Mr A] had been prescribed.

The diagnosis made was of a post-operative infection and the SMO suggested [Mr A] be treated with 'Hospital in the Home' with intravenous antibiotics for 12 days. I assume this duration was to continue treatment until his post-operative appointment on 14/7/18.

[Mr A] appears to have been discharged home at 15:05hrs with a prescription for eleven further days of intravenous Cefazolin 2gm with oral probenecid 1gm daily (this is a standard regime for use of intravenous antibiotics in the home).

[Mr A] was advised to see his GP in a week for review of the home antibiotics.

There was a prescription amendment made by an [SMO] on 4/7/18.

Questions

a) Whether the investigations undertaken by [the SMO] and [Dr C] were appropriate?

[The SMO] does not appear to have been involved during this presentation, as they appear to have only amended a prescription the next day.

There appear to have been no investigations taken during this visit. This could be justified by the thorough examination, vital signs and the examination of the toe leading to an appropriate plan of action i.e., home intravenous antibiotics.

b) Whether you would have expected any further investigations to have taken place?

No.

c) Whether you would have expected any further action on 3 July 2018?

Yes. As this was a post-operative infection it would, in my opinion, be standard of care to have at least discussed the situation with the surgical team who performed the surgery, or the duty surgical team. There is no documentation of this occurring.

This is a moderate deviation from the standard of care.

d) Whether the safety netting advice provided to [Mr A] was adequate.

Yes. The advice was both time and place specific, to see his GP in 7 days.

30th July 2018

[Mr A] presented at 15:02 hrs as his left great toe was becoming nasally offensive, and the skin was darkening. He was reviewed by an ED RMO ([Dr G]) who reviewed the history and noted that 2 weeks prior, [Mr A] was seen in the surgical out-patient department and that his toe was 'healing well'.

The RMO noted that there was a dark black area on the medial aspect of the nail bed, his foot was warm and well perfused, and the dorsalis pedis pulse was 'present'. She sought advice from an SMO (Dr H) who reviewed the patient and suggested she discuss [Mr A's] presentation with the surgical team. Blood tests at this time showed a normal white cell count, a CRP (C reactive P) of 7 and a glucose of 15.9. The normal white blood count and very mildly elevated CRP would, probably falsely in this case, reassure the clinician that there is no significant infection present.

The documented discussion between the ED RMO and the surgical RMO ([Dr J]) states that the latter suggested 'due to normal bloods' [Mr A] be discharged home on the oral antibiotic flucloxacillin and to be followed up in the surgical out-patient department in a week as previously arranged.

[Mr A] was discharged at 22:13hrs and advised to return to ED if things worsen further.

a) Whether the investigations [and] actions undertaken on 30 July 2018 were appropriate.

Yes, the investigations were appropriate. However, in my opinion the action or lack of by the surgical RMO were not. On reviewing the notes, what the ED RMO is describing, is to my mind gangrene-offensive smell and black area of tissue, and as an ED physician I would expect a surgeon to at least view such a wound irrespective of blood test results.

This is a severe deviation from standard of care.

b) Whether you would have expected any further investigations and/or actions to have taken place.

From what is described I would have expected a surgical admission, and further investigations from there.

c) Whether the advice provided to [Mr A] was appropriate.

Yes, from the ED, but he should not have gone home without a surgical review, not just a phone call. This is a severe deviation from standard of care.

d) Whether the treatment provided to [Mr A] was appropriate.

No, in my opinion he should have been admitted.

e) Whether the safety netting advice provided to [Mr A] was adequate.

Yes.

f) The adequacy of the documentation for this presentation to the ED.

The notes have the required requisites, the current problem and its history, the clinical findings and investigations, and the request for surgical input and the response.

Comments

One of the main questions [Mr A] has is whether something could have been done to prevent the amputation of his left leg that occurred in August 2018. Unfortunately, I cannot say. However, in view of his known peripheral vascular disease and previous surgery, an appropriate vascular assessment should have been made prior to August 7th when he had a CT angiogram. In this situation, it is not, in my opinion the role of the ED to perform except possibly the visit on 30th July. (see comments 5a above).

The standard of care for diabetic foot problems involves a multidisciplinary team of doctors, nurses, podiatrists etc and I could see no reference to such a group in the Whanganui DHB. The reason is that multiple doctors at multiple times would have treated him with good care, but there was no oversight i.e. in my opinion, what was required was a service he should have entered that would continually monitor his progress in a holistic manner.

Find attached the Ministry of Health guidelines for diabetic care and specifically standard 11.

Regarding the ED visits, all were of an acceptable standard of care apart from the lack of specific discharge instructions. These would be seen as a mild deviation from acceptable standards.

The major issue I have is the apparent lack of review by the surgical registrar on July 30th 2018. My concerns are noted above that it was inappropriate for the surgical RMO not to review [Mr A].

This is a severe deviation from standard of care.

I would suggest Whanganui DHB instruct all their juniors they need to make it clear that they want a patient reviewed, admitted or just advice, and document it in the notes.

Dr Stuart Barrington-Onslow FACEM"

Appendix B: Independent clinical advice to Commissioner

The following expert advice was obtained from Dr Mark Sanders, a general surgeon:

“I have been requested by the commissioner to provide an expert opinion on case number **C20HDC00914**. I have read and agreed to follow the commissioner’s guidelines for independent advisors.

Professional Credentials of ‘Expert Advisor’ relevant to this report

My name is Mark Nathan Sanders and I am a vocationally registered consultant general surgeon employed by Northland District Health Board.

I hold an MBBS from the University of Newcastle upon Tyne, U.K., awarded in 1988. I hold a fellowship of the Royal College of Surgeons of London, England, and a fellowship of the Royal College of Surgeons of Edinburgh both gained by examination in 1993. I also hold a fellowship of the Royal Australasian College of Surgeons gained by examination in 2001. Following fellowship training I was appointed a consultant senior lecturer at the University of Bristol and the Bristol Royal Infirmary in the U.K. Since 2002 I have worked as a consultant general surgeon based at Whangarei Area Hospital. Since 2007 I have also worked in private practice at Kensington Hospital, Whangarei. My practice in Whangarei encompasses a wide range of general surgical conditions in this provincial hospital setting. I have previously been Head of the Dept of Surgery. I have held various training and committee positions for the Royal Australasian College of Surgeons and I am currently an Examiner for the final fellowship in General Surgery.

CONFLICT OF INTEREST IN THIS CASE

I have no conflicts of interest in this case.

SYNOPSIS OF THE CASE

[Mr A], hereafter known as the patient, was a gentleman with known peripheral vascular disease, Type II Diabetes, and peripheral neuropathy. He presented to the Emergency Department over June 2018 with an infection in the left great toe which caused repeated presentations. It was felt to be in relation to an ingrowing toenail on that toe. On 25/06/2018 he had an operation for resection of the ingrowing toenail. Following discharge he was seen extensively by the community nursing service for dressings and in the Emergency Department on several occasions for ongoing infection but subsequently developed some necrotic areas. He was readmitted in early August which precipitated an angiogram in Whanganui. He was then transferred to the vascular surgical service in [Hospital 2] on 09/08/2018. While there he had further vascular assessments including ultrasound scans, angiogram and angioplasty, and had an amputation of the left great toe on 11/08/2018 and further debridement on 13/08/2018. Things failed to heal and on 17/08/2018 he had a left below knee amputation.

Specifically I have been asked to provide an opinion on [Mr A's] management by Whanganui DHB Surgical Service between 13/06/2018 and 09/08/2018 including:

1. The standard of vascular assessments undertaken during this period.
2. Whether there was any indication for procedures such as lower limb ABI, measurements or vascular imaging prior to performing any nail surgery or at any other time.
3. Whether it was appropriate to perform nail surgery and whether the technique was acceptable.
4. The standard of surgical follow up care after the surgery.
5. The standard of surgical assessment/advice following [Mr A's] ED attendance on 30/07/2018.
6. Any other comments on [Mr A's] management.
7. Any recommendations you wish to make regarding care of patients in a similar condition to [Mr A].

EVIDENCE TO SUPPORT CONCLUSION

I have been furnished with information from the Commissioner's office electronically which includes:

1. A letter of complaint from the nationwide Health & Disability Advocacy service dated 27/05/2020.
2. Responses from Whanganui DHB dated 28/03/2019, 27/11/2019, and 02/03/2020.
3. Clinical records from Whanganui DHB, and from [Hospital 2] (vascular service notes) supplemented by additionally notes pertinent to specific aspects of the care that I had requested directly.

TIMELINE OF EVENTS

Past medical history of relevance here is that the patient was a known Type II diabetic with peripheral neuropathy. He also had a known history of peripheral vascular disease and he had a previous aortobifemoral bypass. The patient had previous vascular investigations in [Hospital 2], a CT angiogram in 2014, and a pelvic and femoral angiogram in December 2015. The patient had previously had an ingrown toenail treated with Phenolisation likely toward the end of 2017 or early 2018 ... but there are no details as to which toe was treated.

07/06/2018

- Seen in the Emergency Department at Whanganui Hospital with a Paronychia (sic). A we[a]k dorsalis pedis (one of the two commonly felt foot pulses) was document[ed] as being felt. No osteomyelitis seen on x-ray.

14/06/2018

- Seen again in Emergency Department at Whanganui Hospital with pain around an ingrowing toenail on the left great toe. It is mentioned that the patient was admitted

under General Surgery ([Dr E]). No formal vascular assessment documented but comments were of a palpable faint dorsalis pedis pulse.

24/06/2018

- Emergency Department review again with infected left great toe and admitted under [Dr F] with intravenous antibiotics started. Admission notes made comment on this being a right toe although I think it is likely to be erroneously documented as there is nothing commented on for the contralateral side and it is highly likely this is a documentation error. The toe is documented as being painful and cold to touch, swollen and red with a discharge from the edge of the nail. 'Pulse faintly palpable' although which pulse and where is not defined, is documented.

25/06/2018

- A consultant ward round with [Dr F]. Toe inspected. No other vascular assessment or comments made on the patient's vascular status, and documented for an acute operation.

25/06/2018

- Patient had a partial resection for the left big ingrown toenail and matrix (excision of the growing part at the base of the nail). He was discharged the following day on antibiotics with intravenous antibiotics having been given over the time of surgery.

01/07/2018 and 03/07/2018

- Seen in the Emergency Department with pain in the toenail excision site, documented as healing well initially but then some extending redness on the second review. Intravenous antibiotics as an outpatient to be given by the nurses was organised at that stage.

17/07/2018

- Seen by the surgeon in clinic and documented as healing with a plan for a one month review. During this time the patient was regularly seen by the Community Nursing team for regular dressings throughout July and into the beginning of August.

23/07/2018

- GP sent a referral in noting increased redness and some black necrotic areas.

30/07/2018

- ED review noting a black area at the medial aspect of the nail bed. Dorsalis pedis pulse was documented as being present. The case was discussed with [Dr J] (surgical registrar) who advised. Allowed home on continued oral antibiotics. There was no documentation that the patient was seen by the surgical registrar at that stage.

07/08/2018

- Patient had been readmitted under the surgical service at Whanganui DHB with ongoing infection, redness and necrotic areas on the left great toe. A CT bilateral lower limb angiogram was performed. Intravenous antibiotics were started.

09/08/2018

- Patient transferred to [Hospital 2] vascular service with what was described as wet gangrene, with ongoing intravenous antibiotics.

10/08/2018

- Vascular ultrasound scan in [Hospital 2] showed stenosis (narrowing) of the femoral artery in two areas.

11/08/2018

- Angiogram with angioplasty (dilatation of narrowed areas) of three areas in the left lower limb. Arterial vascular supply was undertaken together with amputation of the left great toe.

13/08/2018

- Further debridement because of ongoing necrosis of the toe wound was undertaken.

17/08/2018

- A left leg below knee amputation was undertaken in [Hospital 2].

SPECIFIC ISSUES

1. The standard of vascular assessments undertaken during this period, and
2. Whether there was any indication for procedures such as lower limb ABI, measurements or vascular imaging prior to performing any nail surgery or at any other time.

The patient had known peripheral vascular disease with previous vascular operations and imaging having been undertaken. He also had Type II Diabetes and neuropathy, and all of these would mean that a more detailed vascular assessment and investigation would have been appropriate for this type of presentation. I cannot find any evidence of any detailed vascular assessment having been undertaken. The presence only of a dorsalis pedis pulse at various reviews was mentioned but this too was also documented as faint or weak. No documentation has been written as to whether the other foot or the left ankle pulse was palpable. Similarly the presence or not of any of the more proximal femoral or popliteal pulses in that leg was not documented.

Both in relation to his history but also specifically the fact that the patient had had several presentations to the Emergency Department and, despite being on

appropriate antibiotics, had not had resolution or dramatic improvement in the infection. His past history in the presence of a non-resolving toe infection are sufficient indications in themselves to undertake a more formal vascular assessment. This should have been to document the presence or absence of all pulses including comparison with the opposite side. An ankle brachial pressure index measurement (basically comparing the blood pressure in the feet and arm) should have been undertaken as a minimum and this could have been then used to guide the need for further vascular imaging. ABPI measurements can be erroneous in diabetic patients with small vessel disease but would be considered standard of care anyway.

This continues to be the case in the post-operative period as well given the on-going infection, particularly despite intravenous antibiotics and the issues with what would appear to be delayed healing and black necrotic areas which had started to develop. This should have precipitated the need for the same level of vascular assessment to at least document whether there was any significant component in this as a pathology causing the delayed healing and ongoing infection. This was finally undertaken on 07/08/2018 when the patient had a bilateral CT angiogram but this was nearly 6 weeks after the surgery.

One pulse has been documented as being palpable on several occasions but apart from this I feel the overall level of vascular assessment required for such a case is a moderate/significant departure from the accepted standard of practice.

3. Whether it was appropriate to perform nail surgery and whether the technique was acceptable.

The patient did have ongoing infection in the left great toe which was appropriately put down to at least having an element of the ingrowing toenail to its non-resolution. As well as this there was likely to have been a not insignificant vascular element to the slow or non-resolution of the infected element despite appropriate antibiotics.

If it was felt that the ingrowing toenail was providing a nidus for the infection that was not allowing the antibiotics alone to work, draining or removing this nidus would have been a reasonable next step. This however could have been achieved by avulsing that portion of the nail while not cutting into or excising any tissue. The primary aim at this stage should have been to try and control the infection rather than definitive treatment to prevent it happening in the future. The toe was actively infected at the time the excision of the growing portion of the nail bed was undertaken. I think this could have safely been delayed until the infection came under control which may well have required more formal vascular assessment and intervention.

The technique of excision of the nail bed described in the operation note is an appropriate technique. The patient has sent a separate email mentioning his previous Phenolisation of the nail bed. This too is a technique which can be used, sometimes the two are actually combined, both are efficacious and both are at risk of post-operative infections.

Reference: [Cochrane Database Systemic Review 2005;2:CD001541](#)

I feel that this is a moderate departure from the accepted standard of care in performing the nail bed excision in the process of active ongoing infection in a patient with peripheral vascular disease when a simpler intervention for control of the infection alone could have been more appropriate, regardless of the vascular status.

4. The standard of surgical follow up care after the surgery.

It would appear that the patient had appropriate follow up care planned and undertaken; particularly the surgical and district nursing input was good throughout this time. The patient was discharged on appropriate antibiotics after having the operation covered with intravenous antibiotics. A planned surgical follow up for two weeks was made at the time of discharge and the patient seen in clinic on 17/07/2018 to check healing which seemed to be proceeding, and the plan for another one month follow up was made at that stage, and was all quite appropriate. The patient was also seen in the Emergency Department as a result of the ongoing pain and likely infection but this was not part of the planned surgical follow up.

There was no deviation from the accepted standard of care for the undertaken and planned surgical follow up.

5. The standard of surgical assessment/advice following [Mr A's] ED attendance on 30/07/2018.

The patient had been seen in the Emergency Department in the post-operative phase on his toenail operation. On 30/7/2018 he was seen by the Emergency Department with what was described as a black area on the medial aspect of his nail bed. The dorsalis pedis pulse was mentioned as being present. There is documentation that it was discussed with [Dr J] (surgical registrar) but there is no documented evidence that the patient was actually seen by the surgical team. Advice was apparently given for the patient to continue on oral Flucloxacillin (this was an appropriate antibiotic given the previous sensitivities) and for the follow up to continue as had been arranged after his clinic check by his surgeon on 17/07/2018.

This is not a detailed surgical assessment. Again my feeling is that we have a patient with known peripheral vascular disease who has delayed healing despite antibiotics and despite now being post removal of the nidus of infection, a slightly more detailed assessment of the wound and vascular assessment should have been undertaken. The surgical registrar may have been reassured to a degree by the description of a palpable dorsalis pedis pulse.

This is a minor departure from the accepted standard of care in that the patient should have been more formally reviewed, or at least if they were, then documentation of that should have been made in the patient's notes.

6. Any other comments on [Mr A's] management

I have no specific comments to make on [Mr A's] management for the indicated dates other than those mentioned above.

7. Any recommendations you wish to make regarding care of patients in a similar condition to [Mr A].

The case highlights the importance of bearing in mind the past medical history of the patients who may have a link to their current problem. In [Mr A's] case this was a significant risk factor for on-going peripheral vascular disease and his established past history of vascular disease when put together with the lack of straight forward resolution of a toe infection, both in the pre and post-operative period, should alert the caring physicians to the possibility of other reasons for the lack of progress. In this case the likely established peripheral vascular disease and a degree of chronic ischaemia. At least appropriate and documented clinical examinations and simple vascular assessments in the form of an ABPI could have been undertaken. This can at least guide the need for any further more detailed imaging or appropriate referrals.

Submitted for your review and consideration

Yours sincerely

Mark Sanders MDBS FRCS (Eng) FRCS (Ed) FRACS
Consultant General Surgeon — Northland District Health Board"

The following further advice was obtained from Dr Sanders:

"Independent advice to Health & Disability Commissioner

Supplementary Report provided by Mr Mark Sanders, general surgeon

I have been asked by the investigators to comment on responses from Whanganui DHB regarding the above-mentioned case.

Expert Advice requested

I have been asked whether this new documentation amends any conclusions from my earlier report and specifically whether:

Questions 1&2

Comment on the adequacy of Whanganui DHB's process for vascular assessment and the adequacy of the policies in place at WDHB at the time of the events.

Questions 3&4

The adequacy of changes at WDHB since these events, and whether you have any further recommendations for improvement.

Question 5

A response to [Dr F's] comment that he performed a vascular assessment prior to the June 25th excision but he did not document this.

Question 6

A response to [Dr E's] comment that she 'cannot recall a single occasion when a consultant performed ABPI's on a patient during ward rounds'.

Question 7

Comment on the appropriateness of care provided to [Mr A] in the event that a suture was overlooked during his suture removal as per his complaint.

Question 8

What information regarding the risk of potential amputations should you have expected [Mr A] to receive and including at what point during his patient journey at WDHB would you have expected the information to have been provided.

Question 9

Any other matters in this case you consider warrant and amount to a departure from the accepted standard of care.

I have been furnished with the letter and documents from Whanganui DHB dated 23/2/2021. Some specific questions have been requested of me as per the email from the HDC investigator dated 4/3/2021 as listed above. The following is my response.

Report

Question 1&2: Comment on the adequacy of Whanganui DHB's process for vascular assessment and the adequacy of the policies in place at WDHB at the time of the events.

Of the documents forwarded to me there is not a document from the WDHB specifically regarding lower limb vascular assessment. Of relevance there is one on leg ulcers (this was an excellent document overall). The detail was not specific to vascular assessments in this case, however the details in this document provide a very good framework for a more generic vascular assessment relevant for arterial and venous assessments, and could have been of relevance in this case. In future it could also be simply modified to be more specific for vascular assessments and not necessarily just for the presence of ulceration. There was a neurovascular assessment document but this was generic, not on WDHB letterhead, and not specific for real arterial vascular assessment or relevance in this case.

Item 12 in the WDHB reply letter does say that copies of relevant DHB policies were going to be attached and this includes a) amputation and c) vascular assessment, neither of these were present, with the caveat mentioned above regarding vascular assessment, in the documents I had forwarded to me.

Question 3&4 The adequacy of changes at WDHB since these events, and whether you have any further recommendations for improvement

I think all of the response to this specific question appears to be item 13 in the WDHB reply letter stating ‘the clinicians involved in this case have all reflected on it and in future will have a lower threshold for vascular imaging’. This is obviously an important first step but the creation of a more formal vascular document including indications for when vascular assessment may be required would formalise this and should be considered.

Question 5 A response to [Dr F’s] comment that he performed a vascular assessment prior to the June 25th excision but he did not document this

In reviewing [Dr F’s] response on page 48 of the WDHB letter of 23/2/21 and repeated at the bottom of page 62 [Dr F] says that examination of [Mr A’s] peripheral pulses by palpation on both legs was undertaken prior to the procedure and his assessment also included a Doppler ultrasound examination, not a formal ABPI but it appeared to him that the assessment had not been properly documented. From his comment we have to assume that he did undertake the relevant examination of the arterial supply. I retain my opinion that the ABPI assessment or additional vascular imaging should have been undertaken at some stage during [Mr A’s] hospitalisation, ideally pre-operatively but if not, and given delayed healing post operatively, during that stage of his management.

Question 6 A response to [Dr E’s] comment that she ‘cannot recall a single occasion when a consultant performed ABPI’s on a patient during ward rounds’

I agree with this comment in that the post-acute ward round is not usually conducive to doing a prolonged investigation such as an ABPI and I would not necessarily suggest that a consultant would have to do it on the ward round. However I again maintain that at some stage an ABPI should have been undertaken on [Mr A] and this could certainly have been done by the junior medical staff after the ward round.

ABPI is a relatively straight forward and simple procedure to undertake and I am aware it can have limitations as has been documented. It remains a useful screening tool. More significant investigations such as the CT Angiogram mentioned by [Dr E], could also have been considered. I maintain that even though this patient obviously had an infective element to things, given his past history and risk factors including previous arterial interventions, the potential for underlying ischaemia as a compounding factor here, should have received more thought. Indeed [Dr F’s] response from 24/12/2018 quite rightly states in the 3rd paragraph that the main contributing factor to the adverse outcome in [Mr A’s] case is the ‘poor blood supply to his legs negatively affecting treatment of infection and healing of the surgical wound on the toe’.

Question 7 Comment on the appropriateness of care provided to [Mr A] in the event that a suture was overlooked during his suture removal as per his complaint.

In the documentation provided, his recent response letter is the WDHB comment number 4 that [Dr F] has seen [Mr A] in his clinic on 17/7/2018 and documented ‘all

sutures out'. Sometimes small sutures can be difficult to see in the presence of inflammation, swelling and necrotic tissue but it is unlikely that this, as an isolated event, would have significant bearing on the final outcome.

Question 8 What information regarding the risk of potential amputations should you have expected [Mr A] to receive and including at what point during his patient journey at WDHB would you have expected the information to have been provided.

I would not have expected amputation to have been particularly brought up in the early stages of [Mr A's] journey when the infection was hoping to be controlled without the need for any surgical intervention. Once however surgery is considered and any patient with this vascular background then part of the consent for that intervention should have included progression of the infection, non-healing of the consequential wound, and therefore the potential for the need for further interventions although not necessarily including amputation at that stage in those potential interventions. Once the post-operative wound started to become necrotic and was not responding to more conservative means and particularly when the vascular investigations had been undertaken, the CTA, the potential need for further interventions should have been covered although I think a formal discussion about amputations probably would have come to the fore once the patient arrived in [Hospital 2] at the hospital Vascular Service.

Question 9 Any other matters in this case you consider warrant and amount to a departure from the accepted standard of care.

It does appear from [Dr F's] comments that he did at least feel the pulses and undertake a Doppler assessment on the foot pulses prior to [Mr A's] surgery although these were obviously not documented. Documentation is important but this new information does at least show us that the vascular element had been considered and this detail was not presented to me when I made my first report. I maintain that it does appear that the underlying vascular issues and the potential for that impacting on the whole healing process should have prompted further and earlier investigations, at least the ABPI if not a CT angiogram, particularly when healing problems started to come to the fore.

Yours sincerely

MARK SANDERS MDBS FRCS (Eng) FRCS (Ed) FRACS
Consultant General Surgeon
Northland District Health Board"

Appendix C: Standards for Diabetes Care

“Quality Standards for Diabetes Care 2020¹”

These national standards for diabetes care provide guidance for comprehensive, equitable patient-centred care and service planning in primary and secondary care settings. They should be scaled to local diabetes prevalence and population characteristics. The standards should be read alongside other national or international guidelines highlighting specific clinical recommendations, some of which are identified below.

The standards are specific to people with diabetes and apply equally to type 1, type 2 and other less common causes of diabetes. People identified with prediabetes should be monitored and managed in accordance with the latest prediabetes advice provided by the Ministry of Health.

...

Management of diabetes complications (extensive guidelines available)

All people with diabetes:

...

9. will have access to regular retinal photography or an eye examination at nationally recommended intervals, with prompt subsequent specialist ophthalmological treatment if necessary
10. will have regular, at least annual, checks of renal function (eGFR) and proteinuria (ACR) with appropriate management and/or specialist referral if abnormal, especially where progressive renal dysfunction is evident
11. will be regularly assessed, at least annually, for the risk of foot ulceration which will be documented using national guidelines. If required, they will be referred for podiatry review and treatment. Those with active foot problems will be referred to and treated by a specialist multidisciplinary foot care team within recommended timeframes
12. will also be reviewed to identify other complications, eg, peripheral or autonomic neuropathy and provided with appropriate management
13. who have serious or progressive complications of any sort will have timely access to expert/specialist help. Access will be based on clinical need and not on type of diabetes.

While in hospital

All people with diabetes:

...

¹ <https://www.health.govt.nz/our-work/diseases-and-conditions/diabetes/quality-standards-diabetes-care-2020>.

14. who are admitted to hospital for any reason will be cared for by appropriately trained staff and provided access to an expert diabetes team when necessary. The option of self-monitoring will be considered, and they will be encouraged to manage their own insulin whenever clinically safe and appropriate
15. who are admitted as a result of uncontrolled diabetes or diabetic ketoacidosis — and those with newly-diagnosed type 1 diabetes — will receive educational support before discharge and follow-up arranged in liaison with their primary care team and/or a specialist diabetes team, or who have experienced severe hypoglycaemia requiring emergency department attendance or admission will be actively followed up and managed in liaison with their primary care team and/or a specialist team to reduce the risk of recurrence and readmission.”