Auckland District Health Board
(Te Whatu Ora Te Toka Tumai Auckland)

Vascular Surgery Registrar, Dr C

A Report by the

Health and Disability Commissioner

(Case 21HDC00223)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Contents

Executive summary

1. This report concerns the care provided to a woman when she presented to Auckland Hospital in April 2016 with leg pain and swelling following a privately performed sclerotherapy procedure. She was discharged twice with a diagnosis of sciatica. The woman returned to hospital for a third time in the same 24-hour period and was found to have a retroperitoneal bleed and deep vein thrombosis. She required major surgery, care in the Cardiovascular Intensive Care Unit, and a lengthy rehabilitation.

Findings

2. In relation to the woman's first presentation to hospital, the Commissioner found no breach of the Code. However, the Commissioner considered that at the time of the second presentation, given the ongoing severe pain without a clear diagnosis, a further ultrasound or CT scan should have been arranged. The Commissioner concluded that a vascular registrar failed to provide services with reasonable care and skill, and breached Right 4(1) of the Code.

3. The Commissioner considered that inconsistencies in documentation of the medical reviews from the first two presentations, and a lack of clarity in Te Whatu Ora – Te Toka Tumai Auckland's expectations for referrals between specialties, amounted to a breach of Right 4(1) of the Code by Te Whatu Ora Te Toka Tumai Auckland.

4. The Commissioner also criticised documentation by the vascular registrar and a general medicine registrar.

Recommendations

5. The Commissioner recommended that Te Whatu Ora Te Toka Tumai Auckland provide a written apology to the woman for the failings outlined in this report; provide HDC with a copy of the finalised SMO escalation plans for Vascular and Medical services; provide HDC with an update on the progress made as part of the discharge planning project; confirm to HDC that its current RMO orientation includes clear guidance about who is to document internal referrals made by telephone, or face-to-face, and where this information is to be recorded; and use the case (in an anonymised form) as the basis for training of its new registrars in Medical and Vascular services, focusing on the importance of robust communication around intra-hospital referrals.

6. The Commissioner recommended that the registrars each provide a written apology to the woman for the criticisms outlined in this report.

Names have been removed (ADHB/Te Whatu Ora|Health New Zealand Te Toka Tumai Auckland and Auckland City Hospital, and the advisors on this case) to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.

Complaint and investigation

7. The Health and Disability Commissioner (HDC) received a complaint from Ms A about the services provided to her by Auckland District Health Board (ADHB) (now Te Whatu Ora Te Toka Tumai Auckland).[1]

8. A preliminary assessment of this complaint was undertaken, and the complaint was closed on 22 May 2018.[2] Following review by the Ombudsman and consideration of additional information, including submissions, HDC reopened the complaint in 2021 and commenced an investigation the same year. HDC has taken a "fresh eyes" approach to this investigation, with the information and evidence being considered by a new investigator and a new Commissioner.

9. The Commissioner has investigated the following issues:

- *Whether Auckland District Health Board provided Ms A with an appropriate standard of care on 26 and 27 April 2016.*
- *Whether Dr C provided Ms A with an appropriate standard of care on 26 April 2016.*

10. The parties directly involved in the investigation were:

Ms A	Consumer
ADHB	Provider

11. Further information was received from:

Dr B	General medicine registrar
Dr C	Vascular surgery registrar

12. Also mentioned in this report:

Dr D	Phlebologist

13. Independent advice was obtained from a general physician, Dr Richard Shepherd (Appendix A), and vascular surgeons Dr Thodur Vasudevan (Appendix B) and Dr Richard Evans (Appendix C).

[1] On 1 July 2022, the Pae Ora (Healthy Futures) Act 2022 came into force, resulting in all district health boards being disestablished and Te Whatu Ora|Health New Zealand being established in its place. All references to ADHB in this report now refer to Te Whatu Ora Te Toka Tumai Auckland.

[2] This was achieved by confirming the provisional decision to take no further action in accordance with section 38(1) of the Act, together with a section 37(1) referral of Ms A's outstanding concerns to the Nationwide Health and Disability Advocacy Service.

Information gathered during investigation

Introduction

14. Ms A's complaint centres on the care she received during two presentations to Auckland City Hospital (ACH) on 26 April 2016 with leg pain and swelling, following a privately performed sclerotherapy[3] procedure. She was discharged twice with a diagnosis of sciatica.[4] Ms A returned to the hospital for a third time in the same 24-hour period and was found to have a retroperitoneal [5] bleed and deep vein thrombosis (DVT). [6] She developed compartment syndrome[7] and required major surgery, care in the Cardiovascular Intensive Care Unit (CVICU), and a lengthy rehabilitation. She has not been able to return to her work or her previously active lifestyle.

Background

Sclerotherapy procedure

15. On 31 March 2016, Ms A had a sclerotherapy procedure under Dr D[8] at a specialist varicose vein clinic (the vein clinic) to treat a varicose vein in her left leg. On 26 April 2016, Ms A re-presented to Dr D with a painful and swollen left leg. An ultrasound scan was taken at the vein clinic. Dr D told HDC that at the vein clinic, ultrasound scans are performed "in-house" by a sonographer, and are not reported on by a radiologist.

16. Dr D referred Ms A to Auckland City Hospital. Dr D sent a referral letter to the vascular registrar, which stated:

> "Thank you for seeing [Ms A] for assessment of a painful cold swollen left leg. Over the past 2 days [Ms A] has noted left thigh and left sided back pain and some nausea with vomiting this am …
>
> **Clinical and doppler:**
> Left leg
> Swollen from groin to ankle.
> Rubour [redness] of left leg from groin to ankle.
> Temperature cooler on left leg.
> Arterial pulses palpable in both feet.
>
> **Ultrasound scan**:
> Fibrosed treated left anterior accessory vein as expected post sclerotherapy.[9]

[3] Sclerotherapy is used to treat varicose veins. It involves injecting a solution directly into the vein, which causes the vein to scar, forcing blood to reroute through healthier veins.
[4] Nerve pain in the leg caused by irritation or compression of the sciatic nerve.
[5] The retroperitoneum is the area in the back of the abdomen behind the peritoneum (the membrane that lines the inside of the abdomen and pelvis).
[6] A blood clot in a deep vein, usually in the legs.
[7] Compartment syndrome occurs when excessive pressure builds up inside an enclosed muscle space in the body.
[8] Dr D is a Fellow of the Australasian College of Phlebology.
[9] A fibrosed vein contains scar tissue.

> Femoral and popliteal vein[10] normal compressible with normal flow. Phasic flow in Femora[l] Vein, Femoral artery flow pulsatile.[11]
>
> ? proximal vascular obstruction ? arterial."

First presentation to ACH — 26 April 2016

17. Dr D contacted Ms A's family once the referral had been received and accepted by Auckland City Hospital, and Ms A's daughter and granddaughter accompanied Ms A to Auckland City Hospital. Her triage took place at 2.08pm and she was noted to have a "? Ischemic [Left] leg". She was admitted to the Assessment and Planning Unit (APU) and the vascular service was informed of her arrival.

18. Ms A's vital signs were normal. A blood test was taken and arrived at the laboratory at 2.53pm. The results were within normal limits with the exception of a raised D-dimer level of >10000µg/L (normal is 0–699µg/L). D-dimer is one of the protein fragments produced when a blood clot gets dissolved in the body. Its level in the blood can rise significantly when the body is forming and breaking down blood clots.

19. Ms A was seen by a vascular registrar, Dr C, at 4.40pm. Dr C stated:

> "I saw her with a constellation of symptoms including left lower back pain ('catching'), left leg pain, and left leg swelling. She had mentioned a history of recent heavy lifting. She had also had a recent left leg sclerotherapy for superficial venous disease. She was not anticoagulated.
>
> She came with a letter from her GP querying whether there was an arterial compromise. On examination I found … her left leg to have a full complement of pulses, suggesting no arterial compromise. She had some swelling and discolouration of her left leg. On direct questioning, she described that the left leg discolouration and swelling were chronic, and this seemed consistent with her history of venous disease. She had normal vital signs.
>
> Blood tests were not remarkable (elevated D-dimer[12] in the setting of recent venous sclerotherapy) and she had a negative left leg DVT scan result as part of her referral.
>
> Putting the above information together I formulated a diagnosis of neuropathic pain[13] [secondary] to her heavy lifting. I had discussed this diagnosis with the patient and her family and there were no concerns raised about the plan to discharge her with analgesia

[10] The femoral vein is the main deep vein of the thigh. The popliteal vein is also a deep vein of the leg. It is near the back of the knee and drains blood away from the leg and into the femoral vein. The scan did not cover the iliac veins in the pelvic area.
[11] These findings suggest normal blood flow, which would not be consistent with a DVT.
[12] ADHB's electronic records show that Dr C viewed the D-dimer result at 9.50pm.
[13] Pain caused by damage or injury to the nerves that transfer information between the brain and spinal cord.

> and outpatient physiotherapy, on the proviso that if things got worse, she come in to hospital."

20. Te Whatu Ora Te Toka Tumai Auckland told HDC that at this time, there were no indications for admission to hospital. Ms A was therefore discharged at around 10pm.

21. In response to the provisional opinion, Ms A told HDC that she did not tell Dr C that it was a chronic condition, and she did not have a history of venous disease. She stated that it was not until she had the sclerotherapy that she began to have trouble with her legs.

22. Dr C recorded his assessment of Ms A (consistent with his statement above) in the assessment to discharge planner.[14] The diagnosis recorded was: "?sciatica causing lower back pain and calf cramps no arterial [diagnosis]." No discharge summary was made for this visit to APU.

23. Ms A's family accompanied her to the carpark. Her daughter told HDC:

> "Mum was walking very slowly and in obvious pain still and when we reached the car park she collapsed and proceeded to sit on the curb and was violently vomiting. 2 nurses were heading into work, came to our aid … [Ms A] was taken back into the Emergency Department … and re-admitted back into the APU ward."

Second presentation to ACH — 26 April 2016

24. Ms A re-attended the APU at 10.18pm, and the triage note records: "[F]ailed discharge, feeling faint, vomiting."

25. Ms A was assessed by a nurse at 10.52pm. Her pain was recorded as 8/10 and described as cramping pain shooting up to her lower back. Her vital signs and an ECG[15] were normal.

26. Ms A was seen again by Dr C. Dr C stated:[16]

> "I assessed her once again. There were no changes to her vitals nor her examination findings. At this stage, I advised the patient to be admitted for observation as I thought she needed further investigation and management of her symptoms. I referred the patient to the medical team immediately for an opinion, who agreed to see her with a view to admission for observation. I had planned to discuss the case with the consultant first thing in the morning. This was the extent of my involvement [until her third presentation]."

[14] Te Whatu Ora Te Toka Tumai Auckland told HDC: "[T]he documentation of physical assessments by medical staff is recorded in the written medical record. On admission each patient has an [admission to discharge] planner which is a booklet that provides a proforma template to record clinical information in a systematic manner and the physical examination findings form part of that document with an expectation that admitting doctors complete the template."
[15] An ECG records electrical signals from the heart to check for heart conditions.
[16] In a statement to Te Whatu Ora Te Toka Tumai Auckland dated August 2016.

27. Dr C made no clinical notes in relation to this review. That is, he did not document his assessment of Ms A or his referral or instructions given to the medical team.

28. Ms A's and her family's recollection of this second review is that Dr C had another "quick look at her leg" by lifting the sheet. He reiterated to them that it was a sciatic issue with a compressed nerve in the spine causing the discolouration, and she was then "put under the care of the Medical Team".

29. Ms A was seen by a general medicine registrar, Dr B, a short time later. Dr B's recollection of this presentation[17] is that he was called by Dr C, who advised of Ms A's history of varicose vein treatment one month previously, and that she had a painful and swollen, discoloured leg, and had had a negative DVT scan in the community. Dr B said that Dr C believed these changes to be due to the surgery, and that there was not a vascular or arterial issue. Dr B noted Dr C's diagnosis of sciatica, and stated: "[Dr C's] referral to me was for analgesia advice and possibility this patient may require admission under medical service for analgesia or physiotherapy."

30. Dr B said that he then assessed Ms A in the presence of her daughter. He noted Ms A's discoloured leg, and confirmed with the family that she had had an ultrasound in the community that had been negative for DVT. Dr B said: "I explained my role in that I was consulting to provide analgesia options." He said that Ms A was comfortable with oral analgesia and was mobilising independently, and therefore he did not believe there was benefit from inpatient admission. Dr B told HDC that during his assessment, he examined Ms A's back, and she had sat up for the assessment, which indicated that she did not have abdominal pain. He said that he also asked her about urinary or bowel issues, which she denied. Dr B estimated that he spent at least 45 minutes with Ms A and her daughter.

31. As part of the initial complaint, Ms A's daughter commented that Dr B examined Ms A and appeared uncomfortable calling her presentation a sciatica problem. Their recollection is that he referred back to Dr C's diagnosis, and that Ms A had been cleared by that team.

32. Dr B provided Ms A with pain relief from the hospital stock, and advised her to return to the Emergency Department should her pain or condition worsen, and to see her general practitioner (GP) for a referral for outpatient physiotherapy.

33. The nursing notes record that Ms A's observations were stable, she had been given Sevredol (morphine, for severe pain), tramadol (an opioid medication for moderate to severe pain), and ondansetron (an anti-nausea medication), and that her early warning score was zero.[18] She was then discharged at 12.37am on 27 April 2016.

[17] Written in September 2016.

[18] The early warning score (EWS) is a guide used to quickly determine the degree of illness of a patient based on their vital sign measurements. In New Zealand, a score of zero is normal. If the score is 10 or more, the patient is considered to be critically unwell.

34. While Dr B did not document his review in the assessment to discharge planner, a discharge summary completed by Dr B provides a summary of this admission. It states:

> "[B]riefly reviewed by [General Medicine] for analgesia options for likely sciatica pain … Discussed and offered admission for pain relief and potential [physiotherapy] assessment [in the morning]. Patient happy to go home with analgesia."

35. Te Whatu Ora Te Toka Tumai Auckland told HDC that Dr B saw no evidence to change Dr C's diagnosis of sciatica causing lower back pain and calf cramps.

Third presentation to ACH — 27 April 2016

36. Ms A returned home with her daughter but was in "unbearable" pain, so she asked her daughter to call an ambulance.

37. The ambulance returned Ms A to the Emergency Department at 3.08am on 27 April 2016. Ms A was haemodynamically unstable,[19] with significant back/flank and leg pain, and a very swollen left leg with concern about potential arterial compromise. A CT scan was performed and reviewed by the on-call vascular surgeon. The CT images showed that Ms A had two separate conditions: a retroperitoneal haematoma[20] from an unknown source, as well as findings consistent with the clinical suspicion of a clot in the iliac veins (an iliofemoral DVT). The extent to which these conditions were interrelated is unknown.

Subsequent events

38. Ms A was admitted to the CVICU for monitoring, and an inferior vena cava[21] filter was placed to protect her from a pulmonary embolism.[22] She then developed compartment syndrome[23] secondary to the DVT, and required surgeries to relieve swelling and pressure in the leg (fasciotomies).

39. Ms A had a long and protracted recovery in CVICU and then spent several weeks in rehabilitation.

ACC

40. ACC approved a treatment injury claim for "[r]etroperitoneal haematoma on the left psoas muscle,[24] development of compartment syndrome and subsequent fasciotomies as a result of a failure to treat the iliac vein thrombosis [DVT] in a timely manner".

41. In reaching the decision to approve this claim, ACC considered advice from a vascular surgeon, who advised:

[19] Unstable or abnormal blood pressure.
[20] An abnormal collection of blood in the area outside or behind the peritoneum.
[21] A large vein in the abdomen that returns blood from the lower half of the body to the heart.
[22] A condition in which one or more arteries in the lungs become blocked by a blood clot.
[23] This occurs when pressure rises in and around muscles. The pressure results in insufficient blood supply to tissues within that space.
[24] A muscle in the lower back.

> "Given the patient's clinical history with recent sclerotherapy and presenting with a swollen leg, in my opinion the raised D-dimer should have led to further imaging in the form of either a duplex scan of the iliac veins or a CT scan. In my opinion it was unreasonable for the patient to be discharged from [the Emergency Department] the first and second times."

Further information

Ms A and her family

42. Ms A told HDC that she was unhappy about having been discharged without a scan of her leg, and she considers that her medical care was negligent. Ms A said that she spent two months in hospital, then one month in rehabilitation after this event, then had private surgery to correct a drop foot (which occurred as a result of the fasciotomies). She required high doses of painkillers, and said that it took her months to be able to walk again, and she has not been able to return to her former job.

43. Ms A's daughter is concerned that her mother's high D-dimer result, in the context of her other symptoms, did not result in more in-depth investigations or diagnostic imaging. Ms A's daughter told HDC that during both the first and second presentations she asked the doctors whether a scan should be performed. She is concerned that her mother was discharged twice from the APU with the incorrect diagnosis.

Te Whatu Ora – Te Toka Tumai Auckland

44. Te Whatu Ora Te Toka Tumai Auckland's Service Director of Vascular Surgery reviewed Ms A's care. He concluded that at the first presentation, Ms A's assessment and findings were reasonable, but Ms A should have undergone a CT scan at the second presentation given her ongoing severe pain without a clear diagnosis.

45. Te Whatu Ora Te Toka Tumai Auckland stated that in hindsight, the presence of a DVT could have been considered as a diagnosis during either of the first two presentations. However, it noted that there was significant clinical ambiguity in Ms A's presentation, and different management of the first two presentations may not have changed the ultimate outcome. Te Whatu Ora Te Toka Tumai Auckland stated: "Retroperitoneal haematoma is a very rare condition and would have been very unlikely to have been diagnosed earlier by senior clinicians."

46. Te Whatu Ora Te Toka Tumai Auckland's view is that it is not possible to determine the relationship between the retroperitoneal haematoma that Ms A suffered, and the DVT. It noted that had DVT treatment guidelines been followed (without prior CT scanning) and Ms A had received anticoagulation, there would have been a greater likelihood of more dangerous bleeding from the haematoma. Te Whatu Ora Te Toka Tumai Auckland stated:

> "If a CT scan had been performed to investigate the raised D-dimer, the diagnosis of retroperitoneal haemorrhage and [DVT] would have been made earlier. However it would not have led to a change in treatment because of the dangers of using anticoagulation when there is concurrent bleeding."

47. Te Whatu Ora Te Toka Tumai Auckland acknowledged that "the formal communication and documentation between [its] Vascular and General Medical service was not as complete as [it] might expect". Te Whatu Ora Te Toka Tumai Auckland also acknowledged that at the time of these events, its guidance around clinical documentation and referrals was "not as process-driven as [Te Toka Tumai] would like them to be". While Te Whatu Ora Te Toka Tumai Auckland had a comprehensive Registered Medical Officer (RMO) Handbook, this focused mainly on clinical standards and processes rather than documentation, including documentation of referrals. Te Whatu Ora Te Toka Tumai Auckland noted that in the acute care setting, telephone and face-to-face referrals would continue to be used for the immediacy of contact, but it acknowledged the opportunity to improve its teaching to RMOs about timely documentation of these.

48. Te Whatu Ora Te Toka Tumai Auckland extended its "sincere apologies to [Ms A] and her family for the distress that she and her family experienced during this illness and subsequent surgery and rehabilitation". Te Whatu Ora Te Toka Tumai Auckland stated: "[W]e would like to acknowledge the challenges that [Ms A] has faced over the last five years."

Wells score

49. At the time of these events, Te Whatu Ora Te Toka Tumai Auckland's RMO Handbook included DVT diagnosis and treatment guidelines — in particular, guidance on the use of the Wells score, which predicts the probability of pulmonary embolism. This score then determines what investigations should be undertaken where a pulmonary embolism is suspected (eg, D-Dimer test, compression ultrasound, CTPA scan[25]).

50. The Wells score was not utilised in Ms A's case.

Dr B

51. Regarding the referral from the Vascular Service, Dr B told HDC[26] that he was called by the vascular registrar, who asked for the patient to be admitted for analgesia options for sciatica and for physiotherapy review in the morning. He stated: "I was not asked to undertake a diagnostic review or assessment."

52. Dr B said that he did not discuss Ms A's discharge with a senior medical officer (SMO), and in his assessment she could be discharged without SMO approval because: she had already been assessed twice by the vascular service; her pain was well controlled and she was mobile; her vital signs indicated that she had no current active bleeding, infection, or other serious process; she was happy to be discharged home and her daughter would be staying with her; and he did not consider there to be any significant clinical uncertainty or concern.

53. Dr B clarified that he did consider DVT as a differential diagnosis, but was satisfied that this was unlikely given the previous vascular reviews and investigations that had been done

[25] Computed tomography pulmonary angiography is a scan that uses CT technology to look at the arteries of the lungs.
[26] In a statement of May 2021.

already. Dr B did not consider there to have been any reason to question the precision or scope of Dr D's scan or report, because she was a vein specialist.

54. Dr B said that if he had been the first doctor to see Ms A that day, given her history, symptoms, and clinical signs, he would have ordered an ultrasound and referred her to the vascular team for further management. However, he stated that this is not what happened. Instead, he "received the referral *after* she had been assessed by [Dr D], *after* she had had an ultrasound scan, and *after* she had been assessed twice by the vascular team".

55. Dr B noted that Ms A was a high risk for DVT (per the Wells score), and that she had already had an ultrasound scan on her first clinical contact with Dr D. He said that according to the Wells score model, if an ultrasound scan is negative but concerns about DVT remain, a follow-up scan can be considered after one week for the purpose of re-evaluation.

56. Dr B stated:

> "I frequently think back on [Ms A's] case, and how these events have changed her life and the lives of her family members. Genuinely, I live with the regret that I could not have changed the outcome for her."

Responses to provisional opinion

Ms A

57. Ms A was given the opportunity to respond to the "information gathered" section of the provisional opinion. Ms A told HDC that her life is extremely challenging as a result of the ongoing issues she has suffered following the care provided.

58. Ms A told HDC that she continues to suffer from ongoing pain, with the high doses of painkillers she was put on having also affected her Crohn's disease. She now has an ileostomy[27] and is struggling financially as a result of no longer being able to work.

Te Whatu Ora Te Toka Tumai Auckland

59. Te Whatu Ora Te Toka Tumai Auckland was given the opportunity to respond to the full provisional report. Te Toka Tumai Auckland acknowledged the Commissioner's provisional findings and accepted all recommendations.

60. Te Toka Tumai Auckland stated that this was a complex clinical case with significant diagnostic ambiguity and challenge, which was brought about by the co-existence of two concurrent problems. Te Toka Tumai Auckland stated that it would be more agreeable to using this case to highlight to junior staff the importance of robust communication around intra-hospital referrals, as this is likely to be more helpful. This recommendation has been amended accordingly.

[27] Where the small bowel is diverted through an opening in the abdomen.

Dr C

61. Dr C was given the opportunity to respond to the relevant sections of the provisional report. At the outset, Dr C acknowledged Ms A and her family's journey to this point, and stated that he is deeply sorry to learn that all these years later Ms A continues to be plagued with issues following her treatment.

62. Dr C noted that at the time of these events he had less than two years' experience in vascular surgery, and his knowledge of sclerotherapy and iliac vein thrombosis was limited. He stated that Ms A's case was the first instance of concurrent psoas haematoma and iliac vein thrombosis that he had seen. Dr C said that sclerotherapy is more commonly performed in private, outpatient settings, and therefore is not generally a part of the training that registrars are exposed to in public hospitals. Dr C noted that as surgery training is an apprenticeship model, doctors learn from the surgeons and types of cases their hospitals handle, which can result in gaps in a registrar's overall experience. He stated that in 2016, his training had not exposed him to Ms A's rare condition, and he lacked the highly specialised knowledge used to identify features of its presentation and subsequent diagnosis.

63. Dr C told HDC that when he first reviewed Ms A he had relied on the findings of the ultrasound report she had presented with. He advised that the ultrasound report referred to there being "phasic flow in the femoral vein", with such a finding usually indicating that a dedicated iliac vein ultrasound may not be required. Dr C noted that when phasic flow is seen on the femoral vein, usually this means that there is no obstruction in the iliac vein and inferior vena cava leading to the heart and lungs.

64. Dr C noted that with the benefit of hindsight, perhaps he had relied too heavily on the imaging performed by the community specialist vein clinic, but at the time he had been satisfied that the imaging and surrounding information supported Ms A's diagnosis. He stated that in the context of having diagnosed Ms A with a musculo-skeletal condition, but with further concerns due to her increased pain, he felt that more general care was appropriate and that she should be admitted for observation. Given that the appropriate team to provide oversight, clinical input, and any further investigations for a suspected musculo-skeletal condition with significant pain was General Medicine, he felt that a referral to General Medicine was appropriate.

65. Dr C acknowledged that his lack of records from Ms A's second admission was below standard, and that he could have managed his documentation better. He told HDC that he recognises the importance of detailed, contemporaneous record-keeping, and apologised for any difficulty caused as a result of his insufficient record-keeping.

66. Dr C apologised to Ms A for failing to diagnose her condition earlier, and for causing Ms A and her family to feel that the care he provided on 26 April 2016 was perfunctory or insufficient in any way. Dr C noted that this was not his intention, and that he had tried to provide the best care he could with the information and experience he had at the time.

67. Dr C submitted that the assessment of his actions needed to take into account his level of experience as a registrar, rather than judging his care against that of a senior vascular consultant.

Dr B

68. Dr B was given the opportunity to respond to the relevant parts of the provisional report. He had no comments to make.

Opinion

Introduction

69. Ms A suffered an unfortunate life-changing illness, which eventually was diagnosed on her third presentation to ACH. I extend my sympathies to Ms A for her experience.

70. The key issue to determine with regard to a reasonable standard of care is whether on her first two presentations, appropriate assessments and investigations were undertaken, and whether her discharges were appropriate.

71. In order to assist my assessment of these issues, I sought independent advice from Dr Richard Shepherd, a general physician, and Dr Thodur Vasudevan, a vascular surgeon. Following receipt of the responses to my provisional opinion, I sought further clinical advice from Dr Richard Evans, a vascular surgeon. The clinical advice provided is included as Appendices A, B, and C, respectively.

Opinion: Dr C — breach

First assessment — no breach

72. Dr C was the vascular registrar who saw Ms A during her first presentation to the APU. At the time of these events, Dr C had completed two years of vascular training, and was beginning his third year. He had seen the referral from Dr D, and he assessed Ms A and found no suggestion that there was arterial compromise to her left leg. He considered her blood tests to be unremarkable (including the elevated D-dimer in the context of recent venous sclerotherapy), and planned for her to be discharged with a diagnosis of sciatica causing lower back pain and calf cramps.

73. Regarding the first assessment, my independent advisor, Dr Vasudevan, stated:

> "[Ms A's] first admission was appropriately managed. This presentation did not warrant any further investigations particularly since an ultrasound scan was already performed at the GP practice."

74. Dr Vasudevan acknowledged Ms A's concerns regarding the discharge in the context of the elevated D-dimer levels. He commented: "[T]his is neither a symptom nor sign [of DVT] but a test to complement signs and symptoms."

75. I have considered Dr Vasudevan's advice, together with the comments made by Te Whatu Ora Te Toka Tumai Auckland's Service Director of Vascular Surgery, and am satisfied that it was reasonable for Dr C to discharge Ms A following her first admission, despite her elevated D-dimer level.

Second assessment — breach

76. When Ms A returned to APU at 10.18pm, shortly after her first discharge, Dr C saw her again. Prior to his assessment, a nurse had recorded Ms A's pain score as 8/10. Dr C said that there were no changes to Ms A's vital signs or examination findings, and that he advised for Ms A to be admitted for observation, as he thought that she needed further investigation and management of her symptoms.

77. Dr C stated:

> "I referred the patient to the medical team immediately for an opinion, who agreed to see her with a view to admission for observation. I had planned to discuss the case with the consultant first thing in the morning."

78. Dr C did not document his assessment of Ms A or his referral or instructions given to the medical team.

79. Dr Vasudevan advised that Ms A's second presentation to hospital suggested some underlying problem of significance. He commented: "Given the vague nature of the presentation, the referral to the medical registrar was appropriate."

80. However, Dr Vasudevan also noted that "a swollen leg with discolouration in a patient with recent venous intervention and a raised D-dimer is a [DVT] unless otherwise ruled out by testing". He considered that further testing would be a specialist-run ultrasound scan, and a CT scan or MR venogram[28] to look at the iliac veins. He also noted that a CT scan to rule out a pulmonary embolus would be appropriate.

81. Dr Vasudevan considers that the failure to undertake an ultrasound scan and CT scan at the second admission was a "medium" departure from the standard of care. Dr Evans agreed with Dr Vasudevan and advised that these investigations should have been done prior to referring Ms A for review and admission by General Medicine.

82. I note that Dr Vasudevan's opinion is also consistent with Te Whatu Ora Te Toka Tumai Auckland's Service Director of Vascular Surgery's view that Ms A should have undergone a CT scan at the second presentation given her ongoing severe pain without a clear diagnosis.

[28] A diagnostic procedure that uses magnetic resonance technology and intravenous contrast dye to visualise the veins.

83. I acknowledge Dr C's view that Ms A's examination findings and vital signs were unchanged from her first assessment, and that the available imaging clearly ruled out a DVT. I also acknowledge Dr C's comments in response to the provisional report that at this time, his knowledge of sclerotherapy and iliac vein thrombosis was limited.

84. However, given that Ms A had re-presented to hospital shortly after her first discharge, and was experiencing significant pain, this should have put Dr C on notice that something more significant was occurring. In this respect I note the family's concern that Ms A's condition was getting worse.

85. Whilst it may have been an appropriate step for Dr C to refer Ms A to the medical team, I also consider that, as the vascular team member accepting a referral that queried vascular obstruction or an arterial issue, Dr C should have arranged for a further ultrasound scan to satisfy himself that the ultrasound scan performed in the community by Dr D was in fact accurate. In this respect, it is relevant that the community ultrasound was incomplete, as it had not imaged or reported on the iliac vessels, which is a common site for DVT that generally would be assessed as part of DVT consideration in the context of a swollen lower limb. Dr Evans advised that he would expect a registrar of Dr C's level of experience at the time to know this.

86. In his response to the provisional opinion, Dr C noted that the ultrasound report had stated that there was "phasic flow in the femoral vein". He said that phasic flow usually indicates that there is no obstruction in the iliac vein, and is used to exclude a DVT. Dr Evans advised that although phasic flow at femoral vein level makes significant iliac and caval thrombosis less likely, it does not exclude it, and Dr C should have arranged a CT scan to exclude a DVT or a pulmonary embolism.

87. I am critical that Dr C did not arrange a CT scan. I emphasise that my criticism is not in relation to a failure to diagnose Ms A's condition, but rather to undertake further investigations in the context of her presentation.

88. My function is to determine whether Ms A received care of an appropriate standard. The weight of clinical evidence satisfies me that she did not. In reaching this conclusion I have sought to guard against hindsight and outcome bias, noting the information that was available to Dr C at the time, and that as a registrar in the specialty of vascular surgery, he was best placed to order further investigations. I am also satisfied that with reference to Dr Evans' advice, the expected standard of care was within Dr C's level of experience. Therefore, I find that Dr C did not provide services to Ms A with reasonable care and skill, and, accordingly, breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).

Documentation — adverse comment

89. I am also concerned that Dr C did not write a discharge summary for Ms A's first visit to APU, he did not document his second assessment of Ms A in the clinical record, and he did not

document his referral to the medical team or the reasons for it. The lack of referral instructions has cast doubt over his specific instructions or requests to the medical registrar.

90. Dr C provided additional information to this investigation regarding his career journey since these events, including the development of his experience and expertise in complex vascular cases. He has also provided reflections on, and learnings from, the care he provided to Ms A. This information is outlined further below. I acknowledge and commend Dr C for his sincerity of reflection.

Opinion: Dr B — adverse comment

91. Dr B was the general medicine registrar who saw Ms A during her second presentation to the APU at 10.18pm on 26 April 2016, after Dr C had assessed her.

92. Dr B's recollection of this presentation is that he was called by Dr C, who advised of Ms A's history of varicose vein treatment one month previously, that she had a painful and swollen, discoloured leg, and had had a negative DVT ultrasound scan in the community. Dr B said that Dr C believed these changes to be due to the surgery, and that there was not a vascular or arterial issue. Dr B noted Dr C's diagnosis of sciatica.

93. Dr B's notes written in the discharge summary are consistent with his recollection that the referral from Dr C was for analgesia advice for sciatica pain. This is in contrast to Dr C's statement, which is that he referred Ms A to the medical team for an opinion, and they agreed to see her with a view to admission for observation.

94. Dr B highlighted that he was reassured by Dr D's assessment, the ultrasound scan, and the fact that Ms A had been assessed twice by the vascular team that day. He noted, however, that if he had been the first doctor to see Ms A that day, he would have ordered an ultrasound scan and referred her to the vascular team for further assessment.

95. General physician Dr Richard Shepherd provided independent advice to HDC regarding Dr B's care. Dr Shepherd cited *Cole's Medical Practice in New Zealand*[29] (page 9), which states:

> "When you assess, diagnose or treat patients you must provide a good standard of clinical care. This includes: adequately assessing the patient's condition, taking account of the patient's history and his or her views, reading the patient's notes and examining the patient as appropriate."

96. Dr Shepherd stated that if considering that standard in isolation:

> "[Dr B's] assessment would be deemed to have fallen well below accepted practice by not adequately reconsidering the history, examination findings, investigation results

[29] Published by the Medical Council of New Zealand in February 2013.

> (including the previous [ultrasound scan] and D-Dimer result) and then re-evaluating the diagnosis in light of *his* clinical impression … That *opportunity* to make a different diagnosis was lost if [Dr B] saw his role as only consulting on analgesia options."

97. However, Dr Shepherd acknowledged that if Ms A had been admitted overnight with a suspected diagnosis of DVT, it is unlikely that this would have mandated an urgent overnight CT scan, and possibly she would have had anticoagulant medication started overnight. He noted that, ironically, this could have precipitated even more dramatic retroperitoneal bleeding.

98. Dr Shepherd also noted that *Cole's Medical Practice in New Zealand* (page 9) goes on to say: "In providing care you are expected to: consult and take advice from colleagues when appropriate." In respect of Dr B's adherence to this standard, Dr Shepherd stated:

> "It could then be argued that [Dr B] appropriately took the advice of his vascular surgical colleague who was best placed to review the clinical question of '*query proximal vascular obstruction, query arterial?'* In [Dr C's] opinion those diagnoses were not felt to be likely with a re-evaluation of the same diagnosis soon after [Dr C's] assessment representing unnecessary and inappropriate duplication. In a tertiary referral centre setting such as ADHB, compartmentalisation of assessment is widely practised and often not unreasonable in order to administer 'the best' most experienced opinion in the right place. Viewed in that context [Dr B's] consideration (or even potentially the specific request from [Dr C]) to consult on analgesia options alone may not have been entirely unreasonable."

99. Dr Shepherd noted that the information in the discharge summary clearly supports the premise that Dr B saw his role as consulting to provide analgesia options.

100. In considering Dr B's standard of care overall, Dr Shepherd concluded:

> "In my overall opinion, [Dr B's] documented assessment and examination of [Ms A] likely fell short of the expected, targeted, but comprehensive assessment standard of a medical registrar. I would temper the level of departure to a mild deviation from the expected standard, given the complexity of the situation, the clinical distractors present around the back pain, the clinical uncertainty around the sequence of events even in hindsight, and the significant influence of the preceding vascular specialty registrar assessment."

101. I have carefully considered Dr Shepherd's advice. In the circumstances of what Dr B says he knew at the time of these events, and what he has documented in the discharge summary, I accept that he understood that Dr C had asked him to consult on analgesia options for Ms A, and so this is what he did.

102. In my view, it was not unreasonable for Dr B to have been reassured by the fact that Ms A had been seen by a vein specialist and had had an ultrasound scan in the community, and had then been seen twice by Dr C, who had considered that the diagnosis was not vascular.

I do, however, accept that Dr B's assessment and examination, as documented, fell mildly short of the expected standard of a medical registrar, but this does not amount to a breach of the Code.

Opinion: ADHB/Te Whatu Ora Te Toka Tumai Auckland — breach

103. While I have determined that Dr C and Dr B had individual responsibilities in relation to aspects of Ms A's care, I also consider that there were wider issues for which ADHB was responsible at a systemic level. Broadly, these are the overall standard of documentation and referral processes.

Documentation of assessments and referral instructions

104. Vascular registrar Dr C recorded his notes of the first assessment of Ms A in the admission to discharge planner, and no discharge summary was made for this visit to APU. Dr C did not document his second assessment of Ms A or his referral to the medical team, or the reasons for it. Dr B did not document his assessment of Ms A in the admission to discharge planner, but he did make records in the discharge summary of the second admission. ADHB acknowledged: "[T]he formal communication and documentation between our Vascular and General Medical service was not as complete as we might expect."

105. Dr Shepherd commented that the lack of any documented assessment of Ms A's abdomen, pelvis, flanks, or back by any of the doctors involved in her assessment in the first and second admissions "does invite significant doubt and then criticism. It is therefore unknown whether examination red flags might have been found and that the opportunity to consider alternative diagnoses was indeed present and was then missed." Dr Shepherd was critical of the lack of documentation of the following:

a) A clinical examination that would meet the accepted documentation standard for supporting "sciatica" or the differential diagnoses of back pain in the circumstances of Ms A's case.

b) The clinical reasoning for discounting the dramatically elevated D-dimer level.

c) The basis for addressing and then discounting the referral reason from Dr D, which queried a vascular obstruction or an arterial issue.

106. I have carefully considered the statements from Dr B and Dr C as set out at paragraphs 19, 26, and 30 of this report, as well as the clinical records. I am inclined to accept that Dr C undertook a clinical examination to support his first assessment and diagnosis; however, the lack of documentation for both doctors calls into question the extent to which other factors in Ms A's presentation were reasoned — namely, the clinical reasoning for discounting the elevated D-dimer and the basis for addressing and then discounting the reason for referral to hospital.

107. I accept Dr Shepherd's advice and agree that the information he referred to should have been documented in the records. Clinical records reflect a doctor's reasoning, and are an important source of information about the patient's care. The Medical Council requires that

doctors maintain clear and accurate patient records that report relevant clinical findings and decisions made, and the reasons for them.[30] Clear and complete clinical documentation is therefore a cornerstone of good care, and a required standard of professional practice. It enables more effective communication between clinicians to ensure appropriate continuity of care for the patient. In addition, poor clinical notes hamper later inquiry into what happened — thereby compromising the opportunity to address issues raised by or on behalf of a consumer, as well as quality improvement measures that may flow from such inquiry.

108. I also note the inconsistency of where, or if at all, the three medical assessments were recorded in the clinical records. Although each doctor had an individual responsibility to ensure that their assessments were documented adequately, in my view it was ADHB's responsibility to ensure that its staff were well aware of the expectations around where and how medical assessments in, and discharges from, the APU were to be recorded. I note that Te Whatu Ora Te Toka Tumai Auckland acknowledged that its RMO Handbook focused mainly on clinical standards and processes, rather than documentation requirements.

Referral process

109. Te Whatu Ora Te Toka Tumai Auckland acknowledged that at the time of these events, its guidance to RMOs around documentation and referrals was not as process-driven as it would have liked. The lack of clarity around the referral instructions from Dr C to Dr B makes it difficult to determine the exact nature of the referral. While Dr B recorded in the discharge summary that he was asked to consult on analgesia options, this differs from Dr C's recollection that he referred Ms A to the medical team for its opinion. Regardless of what the referral instructions were, clearly there was a breakdown in communication, which meant that both doctors had differing views of what was required of them, and overall this hindered the care provided to Ms A. In my view, the referral instructions should have been understood clearly between both parties. Ultimately, the lack of clarity around the instructions has compromised this Office's assessment of the adequacy of care provided by the individuals.

110. Dr Shepherd stated:

> "In my experience such interactions are a source of frequent conflict between specialty registrars in hospitals particularly when opinions differ about whose 'scope' a patient might fall into. A '*game of hot potato*' can result particularly in large centres as a patient is referred, and re-referred, again and again to differing specialties until 'the right' specialty takes 'ownership'."

111. Dr Shepherd advised that it is critical that hospitals have robust and understood policies around such referral practices, to ensure that there is no ambiguity, and that good safe patient care results. I agree. Dr Shepherd stated:

> "In my view much of the error that occurred in this case was compounded by the lack of clear guidelines and practice in this critical area. The further submissions provided to

[30] https://www.mcnz.org.nz/assets/standards/0c24a75f7b/Maintenance-patient-records.pdf

> me reinforce that view. This is potentially even more exacerbated by out of hours situations where junior staff defer seeking consultant input …
>
> The absence of clear DHB policy and procedure to help guide those involved, and the apparent disconnect between the stated 'referral' expectations of the involved registrars, does not appear to have supported the safest patient journey experience in times of complexity. I would be at least moderately critical of that policy absence."

112. I accept this advice, which is broader than just documentation requirements. I am concerned at the absence of clearly set out expectations from the hospital about when and how the referral between specialties should occur, including making clear the scope of the referral. This must be supported by the recording of relevant instructions in the clinical record. For example, it should be clear under which circumstances verbal or written instructions or requests are required, and, if written, where this information is to be recorded. In my view, the absence of clear expectations around the referral process at Te Whatu Ora Te Toka Tumai Auckland was a contributing factor to the discrepancies in recollections of the referral instructions.

Conclusion

113. Right 4(1) of the Code of Health and Disability Services Consumers' Rights states that every consumer has the right to have services provided with reasonable care and skill. In my view, Te Whatu Ora Te Toka Tumai Auckland, as the overall service provider, had a responsibility to ensure that Ms A received care of an appropriate standard.

114. I find that Te Whatu Ora Te Toka Tumai Auckland breached Right 4(1) of the Code for failing to provide Ms A with care of an appropriate standard, including the inconsistencies in documentation of the medical reviews from Ms A's first two presentations to the APU, and the failure to have set out clearly its expectations for referrals between specialties (which did not support a safe clinical journey for Ms A).

Third presentation — other comment

115. Ms A presented to Auckland City Hospital for a third time on the morning of 17 April 2016, and was found to have a DVT and a retroperitoneal haematoma. She was seen by the on-call vascular consultant and treated in the CVICU.

116. Dr Vasudevan advised that the standard of care given for the treatment of the DVT and the retroperitoneal bleed was entirely appropriate when it eventually occurred. He commented that the actual cause of the retroperitoneal bleed is not clear, but that it would not have been the DVT. He stated: "The unusual complication of a retroperitoneal haemorrhage has added a further dimension to the complexity with [Ms A's] care."

117. I accept Dr Vasudevan's advice, and find that the care provided to Ms A by Te Whatu Ora Te Toka Tumai Auckland, once her DVT and retroperitoneal bleed had been identified, was in accordance with acceptable standards.

Changes made

Dr C

118. Dr C told HDC that he regularly participates in the Northern Health Complex Venous Workshops, which are annual conferences organised by Northern Health (in Victoria, Australia), to analyse complex venous interventions, and discuss and provide constructive critique, with the aim to improve management of complex cases of venous disease.

119. Dr C said that in the six years since Ms A's case, he has developed expertise in managing complex, acute, and chronic venous disease, including deep vein thrombosis cases. He stated that his handling of similar cases in the time since has been heavily informed by learnings from Ms A's case, and the knowledge he has built around the management of chronic venous disease. Dr C said that in similar situations now, he would question test results, likely order further imaging and detailed investigations, and approach management of complex cases with a heightened level of suspicion. Dr C also advised that he has improved his record-keeping significantly.

120. Dr C acknowledged that the changes he has made does not change the outcome for Ms A, but stated that he hopes it provides some consolation to her that he strongly believes he has become a better and more experienced doctor as a result of the learnings and reflections he has taken from his involvement in her care.

Te Whatu Ora – Te Toka Tumai Auckland

121. Following Ms A's experience, and in response to recommendations made during the initial HDC complaint process, Te Toka Tumai undertook to address a number of systems and processes related to its referral processes, SMO escalation, and diagnosis-based specialty referral guidelines. The changes made included the following:

a) An online and mobile application version of the RMO Handbook was developed and is updated regularly.
b) Since 2018, there has been an electronic referral system in use, which allows for referrals within Auckland City Hospital, and across Te Whatu Ora Te Toka Tumai Auckland.
c) An SMO escalation policy was finalised, and SMO escalation plans are being developed for each service (eg, Vascular, Medical).
d) A safety culture survey was completed and, as an outcome, an improvement project was initiated around discharge planning. The project plan is to redesign the electronic discharge summary and improve engagement of whānau in discharge planning.

Dr B

122. Dr B said that he has discussed Ms A's case, specifically his assessment, management, and the subsequent outcome, at great length with clinicians from a range of specialties. He believes that this engagement has given him greater insight and informed changes to the way he practises.

123. Dr B has presented his research on the topic of DVT and pulmonary embolism to other doctors at three hospitals. He noted that the presentation included the formal use of pre-test probability scores, such as the Wells score for DVT and pulmonary embolism. These three hospitals have adopted the protocol that a Wells score must be completed before a request is made for an ultrasound or CTPA scan.

124. Dr B uses Ms A's case in an anonymised manner to teach members of his medical team about diagnosis and treatment of thromboembolism,[31] and cognitive bias.

Recommendations

125. I recommend that Te Whatu Ora Te Toka Tumai Auckland:

a) Provide a written apology to Ms A for the failings outlined in this report. The apology should be sent to HDC, for forwarding to Ms A, within three weeks of the date of this report.

b) Provide HDC with a copy of the finalised SMO escalation plans for the Vascular and Medical services, within three months of the date of this report.

c) Provide HDC with an update on the progress made as part of the discharge planning project, within three months of the date of this report.

d) Confirm to HDC that its current RMO orientation includes clear guidance to RMOs about who is to document internal referrals made by telephone, or face-to-face, and where this information is to be recorded. This should be done within three months of the date of this report.

e) Use Ms A's case (in an anonymised form) as the basis for training of its new registrars in the Medical and Vascular services, focusing on the importance of robust communication around intra-hospital referrals. Confirmation that this is being done should be provided to HDC within three months of the date of this report.

126. I recommend that Dr C provide a written apology to Ms A for the criticisms outlined in this report. The apology is to be sent to HDC, for forwarding to Ms A, within three weeks of the date of this report.

127. I recommend that Dr B provide a written apology to Ms A for the issue outlined in this report. The apology should be sent to HDC, for forwarding to Ms A, within three weeks of the date of this report.

[31] Blood clots that originate in veins.

Follow-up actions

128. A copy of this report with details identifying the parties removed, except the names of ADHB/Te Whatu Ora|Health New Zealand Te Toka Tumai Auckland and Auckland City Hospital, and the advisors on this case, will be sent to the Office of the Ombudsman and the Health Quality and Safety Commission, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

129. A copy of this report with details identifying the parties removed, except the names of ADHB/Te Whatu Ora|Health New Zealand Te Toka Tumai Auckland and Auckland City Hospital, and the advisors on this case, will be sent to the Medical Council of New Zealand, and it will be advised of Dr C's name in covering correspondence.

Appendix A: Independent clinical advice to Commissioner

The following independent advice was obtained from general physician Dr Richard Shepherd:

"My name is Dr Richard Shepherd. I have been asked to provide an opinion to the Commissioner on case number C16HDC01127 regarding the care [Ms A] received from the Auckland District Health Board (ADHB) between 26 April 2016 and 27 April 2016. I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

I am a Consultant General Physician employed full-time by the Waikato District Health Board. I graduated from Otago Medical School in 1997 with Bachelor of Medicine and Surgery (MBChB). I have attained fellowships with the Royal New Zealand College of Urgent Care, The Division of Rural Hospital Medicine and the Australasian College of Physicians. I have subspecialty interests in nephrology, emergency medicine and palliative care. I have completed the Auckland University Postgraduate Diploma of Community Emergency Medicine, the RACP Clinical Diploma in Palliative Medicine and the Otago University Certificate in Physician Performed Ultrasound. I have no conflicts of interest to declare in this case.

I have been requested by the Commissioner to provide expert advice on the following issues:

1/ Given the symptoms [Ms A] presented with at her second admission on 26 April 2016, was [Dr B's] assessment, diagnosis and follow up appropriate?

2/ Should [Ms A's] symptoms at her second admission have initiated the need for further investigations?

3/ Was it appropriate for [Dr B] to rely on the findings of the ultrasound scan undertaken by [the vein clinic]?

4/ Do you consider the decision to discharge [Ms A] to be appropriate?

5/ Recommendations for improvement that may help to prevent a similar occurrence in the future?

For each of the above questions raised, my advice has been sought regarding:

a) What is the standard of care/accepted practice?

b) If there has been a departure from the standard of care or accepted practice, how significant a departure it is in my view.

c) How would the departure be viewed by my professional peers?

Sources of information reviewed in the preparation of this report:

Letter of complaint dated 29 July 2016

Auckland District Health Board's response dated 16 September 2016

Clinical records from Auckland District Health Board

Coles Medical Practice in New Zealand 2013

Up-to-date — Clinical presentation and diagnosis of the non-pregnant adult with suspected DVT of the lower extremity

Overview:

On 26th April 2016, [Ms A] was referred to Auckland City Hospital Vascular Department by [Dr D] at [the vein clinic] with a two day history of left thigh and left sided back pain with nausea and vomiting on the morning of referral. A recent history of sclerotherapy to a left sided varicose vein one month earlier was given. The left leg was noted to be swollen from groin to ankle, cooler than the right leg and discoloured. Arterial pulses in both feet were palpable. An ultrasound of the left leg was performed with the referral documenting the result as *'fibrosed treated left anterior accessory vein as expected post sclerotherapy. Femoral and popliteal vein normal compressible with normal flow. Phasic flow in femoral vein. Femoral artery flow pulsatile.'* The reason for referral queried '*proximal vascular obstruction, query arterial.'* [Ms A] was assessed by a nurse in the acute planning unit at 14:35hrs. A 5cm size difference between the left and right legs was recorded (40cm vs 35cm) together with left lower leg discolouration. Her vital signs were recorded as within normal limits. Blood tests were taken at 14:53hrs which included a D-Dimer. She was then assessed by a junior vascular service doctor. The time and name of the doctor was not recorded with only an illegible signature present. A history of left calf pain for 7 days was recorded together with a history of swelling and redness having developed on the day of presentation after a shower. Her recent history of sclerotherapy one month earlier was documented, involving x20 injections groin to knee. Her examination findings noted soft non-tender calf, similar temperature on both legs, left leg > right leg mild swelling, redness of the left leg, bruising at injection sites and all leg pulses palpable bilaterally from groin to foot. Sciatic stretch test was negative and no loss of sensation was noted. The negative ultrasound result from [Dr D] was also recorded. The impression was given as *'?post sclerotherapy bruising/swelling*', with a plan recorded to discuss with the vascular registrar and for ?discharge.

[Ms A] was then assessed by [Dr C] the on call Vascular Registrar later that evening. The time of assessment was not recorded. A brief history note was made to include her recent history of sclerotherapy, and *'some cramps in left thigh, catching left lower back'.* The negative U/S was noted and *'bloods'* was ticked. No note of the elevated D-Dimer result of >10,000ug/L (Range 0–699) was made. His examination documented normal pulses at the left ankle and foot, left thigh and calf slight swelling > right which was recorded as chronic, and left thigh slightly different colour than right — recorded as secondary to haemosiderosis. Her straight leg raise was recorded as positive with the addition of *'patient states was using back a lot, recent heavy lifting'.* No examination of the back, abdomen, pelvis, or neurological assessment of the legs was documented. A clinical impression was given *of 'Sciatica causing lower back pain and calf cramps. No arterial symptoms'*. A plan was made for discharge home with no vascular follow-up needed and advice given to '*see LMO if symptoms persist'.*

[Ms A] represented shortly after discharge at 22:52hrs after becoming nauseated and vomiting in the hospital car park together with an exacerbation of pain in her left lower back and left leg. She was reassessed by a nurse with her vital signs normal but 8/10 pain noted. In her letter of complaint she states she was reassessed by [Dr C] on her representation, at which stage she was told the diagnosis remained sciatica and *'her case was handed over to the General Medical Team as he couldn't do anymore'*. There is no documentation available which records this second interaction by [Dr C] and no documentation recording the details of any referral to the General Medical Team.

She was assessed by the night on call General Medicine Registrar [Dr B]. A typed discharge summary on 27 April at 00:37hrs records his assessment. The referral reason was stated as *'Failed discharge, feeling faint, vomiting'.* The primary diagnosis from [Dr C] was again recorded as *'Sciatica causing lower back pain and calf cramps. No arterial symptoms'.*

The clinical management details *documented 'briefly reviewed by General Medicine for analgesia options for likely sciatica pain.*' Details from [Dr C's] notes were transcribed into the discharge summary to include the history and examination findings and impression as per vascular. Additional details recorded *'Noted only back pain red flag: on Humira. No cauda equine symptoms.'* No independent reassessment of the blood results or re-examination of [Ms A] was recorded.

Admission was offered for pain relief and potential physiotherapy assessment in the morning. The notes record *'patient happy to go home with analgesia'.* Analgesia advice was given regarding sevredol, tramadol and paracetamol with prescriptions provided. Follow up advice was given to *'see GP if ongoing pain, consideration of referral for physiotherapy/orthopaedic review if ongoing sciatica type pain.'* Medications for severe pain (sevredol) and nausea (ondansetron) were documented as given at 00:48hrs. The nursing notes record her discharge at 01:00hrs with normal vital signs and an early warning score of 0.

[Ms A] was readmitted acutely via ambulance at 03:08hrs on 27 April 2016 to the emergency department resuscitation area. She was found to be shocked with a BP of 60/40. She was resuscitated with IV fluids and inotropes. A CT chest, abdomen and pelvis was urgently performed at 04:07hrs. This showed a large extraperitoneal haematoma with compression of the iliac vessels and obstructing the iliac vein. A left leg U/S performed on 27 April at 08:50hrs showed occlusive thrombosis extending from the pelvic veins down to the calf veins.

Her clinical course was further complicated by pulmonary emboli, and the development of phlegmasia (extreme lower-extremity DVT that causes critical limb ischemia). This required IVC filter placement, surgical thrombectomy and extensive fasciotomy due to the development of compartment syndrome. An extended period of rehabilitation was required with discharge a month later on 31 May 2016.

Advice to the Commissioner:

1/ Given the symptoms [Ms A] presented with at her second admission on 26 April 2016, was [Dr B's] assessment, diagnosis and follow up appropriate?

Regrettably [Ms A] suffered a dramatic life threatening illness with a prolonged recovery period and lasting implications. On the surface there were undoubtedly several opportunities for the correct diagnosis to be made over the afternoon, evening and night at Auckland City Hospital on 26 April. With the knowledge of the diagnosis now evident, it becomes deceptively simple to explain her symptoms and clinical progression, fitting the pieces of the jigsaw into a clear picture. At the time initial decisions were made however things were not so clear. An error in initial diagnosis was clearly made — and made on three occasions, by three separate doctors over an approximately ten hour period. Determining how reasonable, or appropriate, that error was is much more complicated. Over that period [Ms A's] history, physical findings, and clinical condition did not significantly materially change. It was not until her dramatic decompensation with representation to hospital at 03:08hrs that the true diagnosis became much clearer and perhaps the necessary urgent investigation threshold was reached.

I have not been asked to comment specifically on the care provided to [Ms A] prior to her assessment by [Dr B] Medical Registrar. It should be noted however that his assessment was the third in hospital that day and that it was not performed in isolation. Instead it relied heavily on the vascular specialty registrar assessment and opinion before him as the specialty service most appropriately placed to address the referring doctor's concerns of *'query proximal vascular obstruction, query arterial?'* The response by ADHB states *'[Dr B] saw his role as consulting to provide analgesia options'* — rather than a reassessment of the history, examination, investigation results and diagnosis made by the preceding vascular registrar. The information in the discharge summary completed by [Dr B] in my opinion clearly supports that premise.

The question then becomes what is the standard of care/accepted practice in the situation [Dr B] found himself in? Was that a reasonable or appropriate premise?

This could be argued several ways.

1/ Coles Good Medical Practice in New Zealand (Page 9) states *'When you assess, diagnose or treat patients you must provide a good standard of clinical care. This includes: adequately assessing the patient's condition, taking account of the patient's history and his or her views, reading the patient's notes and examining the patient as appropriate.'*

When viewed through that standard of care [Dr B's] assessment would be deemed to have fallen well below accepted practice by not adequately reconsidering the history, examination findings, investigation results (including the previous U/S and D-Dimer result) and then re-evaluating the diagnosis in light of *his* clinical impression. Such an approach seeks to minimise errors and allows good safe practice. This was not done.

That *opportunity* to make a different diagnosis was lost if [Dr B] saw his role as only consulting on analgesia options.

Whether this would have led to an alternative diagnosis, investigation and management plan is of course unknown. Had a component of the correct diagnosis been entertained by [Dr B] at that stage (most likely left leg DVT rather than pelvic haemorrhage) it then becomes speculation as to what difference to the eventual outcome this may even have made. At the time of his assessment (approximately 00:30hrs) in my opinion [Ms A's] clinical condition would have been unlikely to have mandated an urgent overnight scan (either CT abdomen/pelvis or U/S left leg/pelvis). Had the diagnosis of DVT been suspected at that point it is more likely [Ms A] would have been advised to be admitted overnight for analgesia, leg elevation, and potentially even presumptive anticoagulation started, with a view to arranging investigations the following morning. In my opinion such actions in the time frames involved would not have altered the events that subsequently occurred at 03:08hrs. The use of presumptive anticoagulation (given as standard practice and not unreasonably for a diagnosis of 'DVT pending further investigation') ironically may even have precipitated even more dramatic extraperitoneal haemorrhage given that [Ms A's] back pain was already present at that point suggesting some degree of haemorrhage had already occurred.

The exact sequence of events regarding the calf to thigh to iliac thrombosis or vice versa, and extraperitoneal haemorrhage with haematoma, and then compression of the iliac veins causing venous outflow obstruction and subsequent phlegmasia, is a rare sequence of events. It would have been an evolving diagnosis unlikely to have been reasonably considered prior to [Ms A's] collapse. Even with the benefit of hindsight there remains uncertainty as to whether spontaneous haemorrhage (on aspirin) was the initial inciting pathology that then went on to cause reduced venous outflow and then thrombosis and DVT, or if DVT was the initial inciting pathology that then led to an extraperitoneal venous bleed. At the heart of that debate lies the question of what symptoms and signs (and ultrasound findings) were or were not present at what points in time that should have been appropriately assessed, diagnosed and managed.

2/ The alternative argument to what *actually* occurred could also be considered however. Again Coles Good Medical Practice in New Zealand (Page 9) goes on to say:

'In providing care you are expected to: consult and take advice from colleagues when appropriate'.

It could then be argued that [Dr B] appropriately took the advice of his vascular surgical colleague who was best placed to review the clinical question of *'query proximal vascular obstruction, query arterial?'* In [Dr C's] opinion those diagnoses were not felt to be likely with a re-evaluation of the same diagnosis soon after [Dr C's] assessment representing unnecessary and inappropriate duplication. In a tertiary referral centre setting such as ADHB, compartmentalisation of assessment is widely practised and often not unreasonable in order to administer 'the best' most experienced opinion in

the right place. Viewed in that context [Dr B's] consideration (or even potentially the specific request from [Dr C]) to consult on analgesia options alone may not have been entirely unreasonable.

There is however no documentation regarding the referral process and the expectations of the parties involved. There is also no documentation regarding seeking the advice of the senior medical staff on call (the vascular consultant or general medical consultant) before referral and discharge decisions were made.

3/ An additional argument could also consider that a diagnosis of 'sciatica' lay outside a usually considered vascular scope of practice and should have been re-evaluated by another specialty service with experience in diagnosing and treating 'sciatica' if that was the working diagnosis. Review and admission with such a diagnosis in a tertiary referral size hospital would not normally fall under a general medicine scope of practice with orthopaedics generally being consulted. Specific practices do however differ between hospitals and it is unclear (*undocumented*) why [Dr C] felt the most appropriate service to refer to was the general medical service — or why [Dr B] accepted this referral if it was for analgesia alone. I am unaware of the ADHB's specific policy regarding diagnosis based specialty referral guidelines. Again though, such shifting of chairs would in my opinion, have been unlikely to have changed the subsequent sequence of events or the outcome in the time frames involved.

Overall then, in my opinion, and I believe in the majority of my general medicine colleagues, [Dr B's] assessment and examination of [Ms A] did fall short of the expected, targeted, but comprehensive assessment standard of a medical registrar. [Ms A] was not given the benefit of a review of her diagnosis of 'sciatica'. In not meeting that standard [Dr B] relied exclusively on the diagnosis of a colleague which led to a failure to consider alternative diagnoses, and so the cascade of a failure to compel [Ms A] to remain in hospital and erroneous treatment and follow up advice.

I would have to temper that criticism though, given the complexity of the situation, the clinical uncertainty around the sequence of events even in hindsight, and the significant influence of the other involved parties' assessments. In my opinion even had a thorough reassessment been made by [Dr B], and even if the correct diagnosis had been suspected, it would have been unlikely to have altered the *overall* outcome for the reasons discussed above. It is likely however that [Ms A] would have been more strongly advised against going home.

That said, the rare events of this case should not be used as an excuse for not following good safe practice principles as broadly laid out in Coles Medical Practice. In my opinion [Dr B], in principle, did not meet that standard.

2/ Should [Ms A's] symptoms at her second admission have initiated the need for further investigations?

[Ms A] represented a second time shortly after discharge at 22:52hrs. She had suffered an exacerbation of pain in her left lower back and left leg after walking to the car park and becoming nauseated and vomited. In essence these symptoms appear to be similar to those she had been experiencing before her arrival to hospital that afternoon at 14:30hrs. On the second admission she was reassessed by a nurse with her vital signs noted as normal, but 8/10 pain was recorded. There are insufficient notes which address whether this pain settled or worsened, but she was documented as not having received strong pain medication (sevredol) or anti-nausea medication (ondansetron) until 00:48hrs (almost 2hrs later). There is no documentation from [Dr C] regarding this second presentation and therefore of his reassessment of any of her symptoms or re-examination findings. Similarly [Dr B's] notes document very little regarding her representation symptoms and do not document any clinical examination. Her nursing notes at discharge at 01:00hrs do not mention the presence of pain, documenting stable observations, and an early warning score of 0.

Defining the standard of care at this point would be a matter of weighing the perceived diagnosis and its severity, her symptom progression or resolution and then by extension the availability of any further investigations or resources available at the time (midnight) which would change immediate management. Ensuring adequate symptom control (pain and nausea) were clearly indicated and appear to have been considered and managed appropriately — although with some delay.

What is clear at that point in the progression of her illness is that her vital signs had remained stable over some ten hours of observation. What is not so clear is exactly what the status of her symptoms were at the second discharge. There do not appear to have been any immediate clues to the impending cardiovascular collapse which was to follow. In my opinion, her symptoms per se at the second admission did not *mandate* further investigations purely on the basis of a second presentation. The symptoms at that stage were largely similar to the initial presentation, but for an assessment as to the severity of her pain and its unclear progression or improvement. The need for further investigation at that point in time would have been largely driven by concern over the diagnosis. If the diagnosis was accepted as 'sciatica' pain an exacerbation of her pain following walking to the hospital car park would not automatically initiate the need for further immediate investigation. An offer to manage her symptoms, and admit overnight for observation would not have been unreasonable.

Had alternative diagnoses been considered such as DVT (either at the first or second admission) it would likely have also been reasonable to offer admission for symptom control, likely presumptive anticoagulation and overnight observation. In considering such a diagnosis further investigation would have been warranted, likely involving an U/S of the left leg and pelvis and potentially a CT of the abdomen/back/pelvis. In my opinion, given the rare eventual findings in this case, it would be very unlikely a diagnosis of extraperitoneal haemorrhage would have been considered by any

reasonable physician at the time point of the second readmission. It would then have been unlikely an urgent request for CT scan would have been made, and uncertain it would have been approved by the radiology service on an urgent overnight basis, without clinical instability (which did not exist at that point).

That said, the lack of any documented assessment of [Ms A's] abdomen, pelvis, flanks or back by any of the doctors involved in her assessment up to that point, does invite significant doubt and then criticism. It is therefore unknown whether examination red flags might have been found and that the opportunity to consider alternative diagnoses was indeed present and was then missed. Such omissions would then in my opinion, and I believe in the majority of my colleagues, fall well short of the expected standard of assessment, and in doing so, potentially miss the need for further more timely investigations.

3*/ Was it appropriate for [Dr B] to rely on the findings of the ultrasound scan undertaken by [the vein clinic]?*

This potentially involves a number of related issues and is far from being as deceptively black and white as the question invites. Such issues could include: What were the perceived skills of the individual performing the scan to provide an accurate report? Was the right scan performed to an adequate degree? And most critically how should that scan result have been interpreted within the clinical context?

All three doctors who assessed [Ms A] prior to the correct diagnosis being made appear to have relied on the negative ultrasound performed at [the vein clinic]. The ultrasound may have been performed as part of the clinical examination by [Dr D] rather than by a dedicated vascular ultra-sonographer. This is however not at all clear from the documentation. No separate ultrasound report appears to have been produced with her referral containing details of the examination findings in the proximal left leg to the level of the popliteal veins. It does not appear to contain an assessment of the deep calf veins and so was not a whole leg U/S. The pelvic veins were also not examined.

[Dr D's] referral states her qualifications as including '*FACP (phlebology)'.* In my opinion it is likely the majority of reasonable doctors would have assessed the referral from Vein and Laser as a specialist vein service possessing the anticipated expertise in vascular U/S to produce a reliable assessment meeting credentialing and reporting requirements. The addition of the FACP qualification to [Dr D's] referral would in my opinion have further supported that specialist view.

The Australasian college of Phlebology and its associated fellowship is however not recognised as a vocational (specialist) scope of practice by the New Zealand Medical Council. [Dr D] currently holds general (non specialist) registration with the Medical Council of New Zealand. It is unclear what degree of expertise using diagnostic vascular ultrasound [Dr D] has attained and therefore difficult to comment on the 'reliability' of her scanning practice. It is also unclear who actually performed the U/S. It is unlikely such doubts would have been considered at the time of assessing the referral U/S report

however. [Dr B's] discharge summary in fact records *'patient reports that formal U/S done by radiographer at vein clinic today showed no DVT'.* This invites debate as to whether [Dr B] had read the actual referral letter and U/S report contained within it, and considered its scope or reliability at all. This of course returns to the issue of the first question regarding his adequacy of assessment.

U/S is well known as a subjective diagnostic test subject to operator dependent variables. Putting things into perspective though, several randomized trials and meta-analyses have consistently reported that proximal compression U/S is a sensitive test for proximal DVT (95 to 100 percent). For patients with a low probability for DVT, a single proximal compression U/S effectively excludes the diagnosis, with rates of venous thromboembolism during three months follow-up of approximately 0.5 percent. For patients with a moderate to high probability for DVT who have a negative proximal U/S at initial presentation, approximately 2 percent have a proximal DVT when retested seven days later. An assessment of the pre-test probability is critical to decision making. This could either be via clinical gestalt or clinical decision rules, but should be considered in the setting of symptoms raising the possibility of DVT and should be documented.

One of the most widely used and validated clinical decision rules for the diagnosis of DVT involves the use of the Wells score to estimate the pre-test probability of DVT before performing a D-Dimer or U/S. I would be critical that there was no reference to its use (or alternatively an assigned gestalt pre-test probability) by any of the doctors initially assessing [Ms A] with symptoms of calf pain, leg swelling, discolouration and recent sclerotherapy. Applying its use retrospectively to [Ms A] at the time of her initial and second presentation is hampered by the lack of recorded specific examination findings. This again raises concerns of the adequacy of the examinations performed. It is likely she would have scored at least 2 points (1 point for whole leg swelling, 1 point for swelling >3cm difference between legs) and potentially 3 or 4 points depending on the presence of localized tenderness in the deep vein system, or pitting oedema greater in the symptomatic leg (not commented on either way). (I would struggle to include the minus 2 points criteria for 'Alternative diagnosis more likely than DVT' (e.g., Baker's cyst, cellulitis, muscle damage, postphlebitic syndrome, inguinal lymphadenopathy, external venous compression). A score of 2 would be regarded as moderate risk, and a score of 3 or higher high risk of DVT. Applying standard guidelines to either of a moderate, or high pre-test probability scenario, *whole leg* U/S, rather than just *proximal vein compression* U/S, would be required to adequately *exclude* DVT.

(Up-to-date — Clinical presentation and diagnosis of the non-pregnant adult with suspected DVT of the lower extremity.)

In my opinion then [Ms A] should have been adequately examined with respect to Wells clinical examination and a Wells score applied (or Clinical Gestalt) arriving at a pre-test probability for DVT. This would have highlighted either a moderate or high risk pre-test probability of DVT which might (and should) have focussed more attention on an

assessment of the adequacy of the scan which had been performed, rather than merely assessing it as black and white, — positive or negative.

Following DVT diagnosis guidelines would also have invited consideration of her D-Dimer result. This was not negative — preventing exclusion of DVT in a moderate probability scenario. Whilst not validated in the scenario present, the dramatic *profoundly* elevated D-Dimer level should also, in my opinion, have raised a large red flag and given pause for more thought and detailed examination when integrated into the clinical picture and probability assessments. I would accept the degree of elevation and time course of elevation of the D-Dimer one month post sclerotherapy is open to debate. Explaining it away though, merely on the basis of sclerotherapy performed a month earlier, without adequate assessment and examination of [Ms A], was to invite the cognitive diagnostic error of premature closure. Strictly speaking of course the correct course of action was irrelevant to the D-Dimer result as [Ms A] was not low DVT probability — its level of >10,000 though does invite pause as to the likely diagnosis with another potential clue slipping away.

If [Ms A's] *proximal compression* left leg U/S performed by [the vein clinic] was regarded as reliable (which in my opinion it was not unreasonable to do so) it should have been appreciated that this was not a *whole leg* scan, and could not therefore be used to *exclude* a DVT in the setting of moderate to high risk. For that reason it should not have been used to *exclude* a DVT even if it was a 'reliable' scan. The clinical decision making process that resulted therefore would not be in keeping with current guidelines around the diagnosis of suspected DVT, and would therefore fall below the expected standard of assessment and diagnosis. I would consider this to be a mild deviation though given the complex scenario and clinical distractors involved in this case.

4/ Do you consider the decision to discharge [Ms A] to be appropriate?

The complexity of referral pathways and practice, and lines of responsibility can be challenging and confusing within secondary and tertiary hospital services. Clear hospital policies, and knowledge and practice of these by the staff involved, can help minimise errors. Failing to adhere to such principles can remove an extra layer of good safe patient care. Such principles and hospital stated polices underlie what is the expected standard of care when discharging a patient. I am unaware of the ADHB's specific stated policy with regard to this.

In my opinion it was not appropriate for [Dr C] to have discharged [Ms A] from the vascular service and refer her to the General Medicine service with a diagnosis of 'sciatica'. The rationale, intent and details of that referral are however not documented or specifically known which would fall well below the expected standard of referral and transfer of care. I would be critical of the decision to discharge [Ms A] from the vascular service without discussion with the responsible vascular consultant to which service she had been specifically referred by [the vein clinic].

In general principle junior medical staff do work under delegated lines of responsibility and should ensure that their senior supervising colleagues are kept adequately informed of their decisions and management plans. Discharging a patient from their service without discussion, and making their consultant aware, would not normally meet that standard. The issue of the timing of such discussions out of hours remains challenging however, with the reluctance of junior doctors to call their consultants overnight frequently highlighted in adverse HDC findings. In the ADHB's response it is stated that *'the vascular registrar advised that he planned to discuss [Ms A's] situation with the on call Vascular Surgeon first thing in the morning.'* Policies which mandate senior contact prior to discharge have been put in place to add an extra layer of support and safety. Less experienced staff do not always recognise when they do not know, what they do not know. Policies which mandate contacting their supervising consultant before discharge seek to mitigate such risks.

I am aware however that not all senior medical staff support such policies being of the opinion that a blanket mandated policy is unreasonable, results in many unnecessary waking phone calls overnight and should allow room for discretion. The 'culture' of a particular service can therefore significantly vary, despite policies in place, leaving junior staff in a no win situation where they are blamed when things go wrong, but criticised when they follow policies and are deemed to have called 'unnecessarily'.

For [Dr B] Medical Registrar's role such comments hold equally true but the question is more muddied. His discharge letter states '*discussed and offered admission for pain relief and potential physiotherapy assessment mane. Patient happy to go home with analgesia.'* A shared decision making process appears to have been followed in keeping with expectations. Unfortunately such discussions would have been fundamentally flawed and then in retrospect inappropriate. At work were preceding errors of assessment, ultrasound, diagnosis, a rare clinical scenario and a lack of evaluation and senior advice, complicated by the late hour.

If the diagnosis was indeed 'sciatica'; if [Ms A's] pain and nausea were adequately under control; and if [Ms A] was adequately informed and wishing to go home, then such a decision to discharge would have been appropriate. (*Ideally the responsible consultant would also have been contacted and be in agreement.*) That appears to have been the premise [Dr B] was operating on at the time of discharge. Regrettably that premise, and those assumptions, were however not appropriate.

5/ Recommendations for improvement that may help to prevent a similar occurrence in the future?

[Ms A's] case does represent an unusual sequence of events and in the early stages was undoubtedly a challenging diagnosis. Multiple clinical distractors were present. These included back pain with a history of heavy lifting, recent sclerotherapy with potential residual swelling, colour change, and a positive D-Dimer, and an apparent negative U/S. The clinicians involved at the time had sufficient clinical suspicion to diagnose 'sciatica' but unfortunately did not see enough conflicting evidence to sway the diagnosis to

consider something else. It is all too easy to be wise in hindsight. In my opinion, for the reasons stated in question 2 above, and in the time frames involved, it would have been unlikely the *ultimate* outcome which occurred at [Ms A's] third presentation at 03:08hrs would have been altered even had the standard of care been followed. Errors were made though, and in my opinion the standard of care which offered [Ms A] the best opportunities, in principle, were not met. This put [Ms A] at unnecessary risk, and resulted in inappropriate discharge and subsequent distress.

[Ms A's] initial assessment documentation by the involved staff could have been improved. The standards achieved invite uncertainty regarding the adequacy and standard of actual clinical assessment she received.

A review of standard DVT diagnosis guidelines by the involved clinical staff and presentation at a hospital morbidity meeting should be considered. Discussion surrounding heuristic bias and cognitive errors in medical decision making might facilitate an educational component with dissemination of the lessons learned to a wider consciousness.

A review of the ADHB's policies regarding delegation of authority between resident medical officers and senior medical officers, specifically referencing discharge policies should be considered. If already present, review of the dissemination/orientation to such policies should be considered. If that is already in place, examination of the culture within departments might identify issues that are present impacting on communication between junior and senior staff.

Similarly referral guidelines between specialty services, specialty registrars and diagnosis specific referral pathway guidelines might seek to clarify the complexity involved and empower front line staff.

Dr Richard Shepherd Date: 30/05/2017
Consultant Physician General Medicine
Waikato District Health Board
MBChB FRACP"

The following further advice was received from Dr Shepherd:

"My name is Dr Richard Shepherd. I have been asked to provide a further opinion to the Commissioner on case number **21HDC00223 (Formerly 16HDC01127)** regarding the care [Ms A] received from the Auckland District Health Board (ADHB) between 26 April 2016 and 27 April 2016. I had previously provided a report to the commissioner dated 30/05/2017. I have read and agree to follow the Commissioner's Guidelines for Independent Advisors.

I am a Consultant General Physician employed full-time by the Waikato District Health Board. I graduated from Otago Medical School in 1997 with Bachelor of Medicine and Surgery (MBChB). I have attained fellowships with the Royal New Zealand College of

Urgent Care, The Division of Rural Hospital Medicine and the Australasian College of Physicians. I have subspecialty interests in nephrology, emergency medicine and palliative care. I have completed the Auckland University Postgraduate Diploma of Community Emergency Medicine, the RACP Clinical Diploma in Palliative Medicine and the Otago University Certificate in Physician Performed Ultrasound. I have no conflicts of interest to declare in this case.

I have been requested by the Commissioner to provide expert advice on the following issues:

Please review the enclosed documentation and advise whether it causes you to amend the conclusions drawn in your initial advice report of 30 May 2017, or make any additional comments. If you do wish to make changes, you may choose to re-issue that advice with any changes incorporated, or write a separate addendum.

It would be helpful if, in your further advice, you could restate your original conclusions and explain whether they have changed, or not, and your reasons for changing or maintaining your original conclusions.

The Initial Questions posed to me by the commissioner in 2017 being:

1/ Given the symptoms [Ms A] presented with at her second admission on 26 April 2016, was [Dr B's] assessment, diagnosis and follow up appropriate?

2/ Should [Ms A's] symptoms at her second admission have initiated the need for further investigations?

3/ Was it appropriate for [Dr B] to rely on the findings of the ultrasound scan undertaken by [the vein clinic]?

4/ Do you consider the decision to discharge [Ms A] to be appropriate?

5/ Recommendations for improvement that may help to prevent a similar occurrence in the future?

In giving your opinion, please consider:

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

If you note that there are different versions of events in the information provided, please provide your advice in the alternative. For example, whether the care was appropriate based on scenario (a), and whether it was appropriate based on scenario (b).

Documents provided

The following documents were provided with the initial advice request from HDC:

1. *Letter of complaint dated 29 July 2016*
2. *ADHB's response dated 16 September 2016*
3. *Clinical records from ADHB for [Ms A's] three presentations to ADHB*

The following documents have since been received:

4. *Information from [the vein clinic]*
5. *Response from ADHB dated 19 March 2018 and appendices*
6. *Comments from [Ms A's] representative dated 14 May 2018*
7. *Comments from [Ms A] regarding reopened HDC investigation 8 February 2021*
8. *Statement from General Medical Registrar [Dr B] of 24 May 2021*
9. *Response from ADHB dated 1 July 2021 and enclosures:*
    a. *[Dr B's] statement of 13 September 2016*
    b. *Update on improvements*
10. *Vascular Registrar [Dr C's] statement of 5 August 2016*

Further Advice to the Commissioner:

I have reviewed the additional information and responses noted above including those which were not available to me at the time of my initial report in 2017.

I do however note the letter from [the] Barrister for [Dr B], dated 27/05/21 in which he contends that [Dr B] instructed him that until receipt of the Commissioner's letter dated 5th May 2021 he had no knowledge of [Ms A's] complaint, nor that it had been referred to the HDC. [Dr B] did however provide an account on 13/09/2016 which described his recollection of events from the evening of 26th April 2016 which was used and available to me when providing my initial response to the HDC. Consequently I do not agree with his stated opinion that *'It follows that the record upon which Dr Shepherd relied to express his opinion was substantially incomplete'.*

In keeping with the above request I have restated my original conclusions below and explain whether they have changed, or not, and the reasons for changing or maintaining the original conclusions.

1/ Given the symptoms [Ms A] presented with at her second admission on 26 April 2016, was [Dr B's] assessment, diagnosis and follow up appropriate?

In essence then the additional information reviewed above does not cause me to materially alter my initial advice as set out to the commissioner in 2017. I would however offer further clarification.

Depending on the commissioner's ultimate preferred lens view — in my overall opinion, [Dr B's] documented assessment and examination of [Ms A] likely fell short of the

expected, targeted, but comprehensive assessment standard of a medical registrar. I would temper the level of departure to a mild deviation from the expected standard, given the complexity of the situation, the clinical distractors present around the back pain, the clinical uncertainty around the sequence of events even in hindsight, and the significant influence of the preceding vascular specialty registrar assessment. I would accept some of my colleagues might weigh features of this case differently and vary their level of departure from mild to moderate depending on the preferred lens adopted in viewing his assessment.

I set out my reasoning for that view below incorporating aspects of the additional documentation supplied to me and considering the differing viewpoints.

In my original advice to the commissioner I set out three potential sides of enquiry regarding the possible lens through which the standard of care/accepted practice could be viewed in this case. I would acknowledge the application of which lens, or to what mix of degrees they might be applied, is a matter of opinion and the commissioner's preference. Those three potential lenses being:

Lens 1/ *Coles Good Medical Practice in New Zealand (Page 9) states 'When you assess, diagnose or treat patients you must provide a good standard of clinical care. This includes: adequately assessing the patient's condition, taking account of the patient's history and his or her views, reading the patient's notes and examining the patient as appropriate.'*

Lens 2/ *Again Coles Good Medical Practice in New Zealand (Page 9) goes on to say:*

'In providing care you are expected to: consult and take advice from colleagues when appropriate'.

Lens 3/ *An additional argument could also consider that a diagnosis of 'sciatica' (not strictly a medical diagnosis but a symptom however) lay outside a usually considered vascular scope of practice and should have been re-evaluated by another specialty service with experience in diagnosing and treating 'sciatica' if that was the working diagnosis. Review and admission with such a diagnosis in a tertiary referral size hospital would not normally fall under a general medicine scope of practice with orthopaedics generally being consulted. A reframing of the referral of 'severe back pain of unclear cause' might have refocussed lens 1 & 2 and been well within the expected scope of a medical consultation detailed review however.*

From the additional information provided:

I note [Dr B's] additional comments from 24th May 2021 where he states his view *'My understanding of the reason for the referral was recorded in the discharge summary — [patient in her sixties] briefly reviewed by Gen Med for analgesia options for likely sciatica pain'.*

He further states *'Dr Shepherd suggests that I did not do a repeat history, examination findings, investigation results (including the previous U/S and D-Dimer result) and then re-evaluate the diagnosis — That is not so: … when I saw [Ms A] I elicited her clinical history once more. I performed my own physical examination … I did not fully document my examination in the Discharge Summary because my examination findings were unchanged from what I understood to be the findings of the vascular team.'*

He further states in his 2021 recollection statement *'I cannot recall exactly how long I spent with [Ms A] and her daughter but I would estimate it was at least 45 minutes'.*

There is no documentation in the clinical record supplied to me regarding a clinical examination that would in my opinion, and that of my peers, meet the accepted documentation standard for supporting 'sciatica' or the differential diagnoses of back pain in the circumstances of [Ms A's] case.

There is no documentation in the clinical record regarding the dramatically elevated D-Dimer and the clinical reasoning around discounting that result. Such a dramatically abnormal result would be an expected part of the clinical discharge summary and more than worthy of comment and explanation. No clear response regarding that has been provided to me in any of the available subsequent documentation.

There is no documentation in the clinical record regarding the basis for addressing and then discounting the initial referral reason from [the vein clinic] of '*?Proximal vascular obstruction ?Arterial'.*

As set out in my initial advice *'[Ms A's] initial assessment documentation by the involved staff could have been improved. The standards achieved invite uncertainty regarding the adequacy and standard of actual clinical assessment she received.'*

I note [Dr B's] contrary view that he considers such standards were met but not fully documented.

In terms of the potential lens of view:

In my view, I would resolve the apparent tension between Lens 1 and 2 with reference to accepted practice within Secondary and Tertiary Hospitals where nuances of the stated principles from Coles can blur.

If viewed through Lens 2:

In the setting of a **'consultation request'** from one team to another where the original team retains responsibility and therefore management, — it would be expected practice that the 'consulting team' would provide a focussed opinion to the requesting team based on the question asked. That advice would be considered, though not necessarily acted upon, with regard to the patient's overall issues by the primary team. In such circumstances a limited focused specific review of the question asked would be entirely reasonable and standard practice. The primary team would retain overall

responsibility for the patient's management and therefore discharge decision making, any follow-up arrangements and adequate documentation of that discharge. In that setting the lens would justifiably sit in lens 2/ *'In providing care you are expected to: consult and take advice from colleagues when appropriate'.*

In that 'consultation request' setting the vascular team would have asked for the medical team's input but have retained responsibility for the discharge, follow-up arrangements, advice and documentation to accepted standards.

If viewed through Lens 1:

In the setting of a **'referral request'** the referring team initially assesses the patient in hospital, feels the patient's issue falls outside their scope of opinion and requests another inpatient team to review the patient, anticipating that team taking over any management as they deem appropriate and therefore taking responsibility for any subsequent Discharge, Follow-up arrangements and the required documentation. In that setting the standard of assessment would justifiably sit in lens 1/ *'When you assess, diagnose or treat patients you must provide a good standard of clinical care. This includes: adequately assessing the patient's condition, taking account of the patient's history and his or her views, reading the patient's notes and examining the patient as appropriate.'*

In that setting then, the vascular team would transfer all such ongoing investigation, management, discharge and discharge documentation responsibilities to the medical team [Ms A] was referred to. It would be an accepted standard that such decisions would be based on that team's assessment and ultimate preferred diagnosis.

There is no documentation regarding the 'referral' or 'consultation' intent, or specific request from the Vascular Registrar to the Medical Registrar [Dr B] at the time. This appears to have been verbal. I note [Dr C] Vascular Registrar's response from 5/08/2016 where he states *'At this stage I advised the patient to be admitted for observation as I thought she needed further investigation and management of her symptoms. I referred the patient to the medical team immediately for an opinion, who agreed to see her with a view to admission for observation'.*

This does not appear to have been [Dr B's] stated view of the referral — '*briefly reviewed by Gen Med for analgesia options for likely sciatica pain'.*

In [Ms A's] specific case I would not however consider providing *'analgesia options'* alone would fall outside of the vascular registrar's expected competence or scope of practice and would find that an unusual reason alone for referral to General Medicine.

In my experience such interactions are a source of frequent conflict between specialty registrars in hospitals particularly when opinions differ about whose 'scope' a patient might fall into. A '*game of hot potato*' can result particularly in large centres as a patient is referred, and re-referred, again and again to differing specialties until 'the right'

specialty takes 'ownership'. It is critical hospitals have robust and understood policies around such referral practices to ensure there is no ambiguity and good safe patient care results.

In my view much of the error that occurred in this case was compounded by the lack of clear guidelines and practice in this critical area. The further submissions provided to me reinforce that view. This is potentially even more exacerbated by out of hours situations where junior staff defer seeking consultant input.

[Ms A's] complaint itself provides a third perspective *'[Dr C] revisited mum, had another quick look at her leg (lifted the sheet and looked at the leg) and advised he was still convinced this was a sciatic issue. [Daughter] questioned [Dr C] about the swelling and colour of the leg. He said that its likely a compressed nerve in the spine causing the discolouration. [Ms A] asked for some more pain meds. [Ms A] was then put under the care of the Medical Team (prev. Cardiovascular Team) and we were told she may be able to be transferred to [another hospital].*

[Dr B] came in and examined [Ms A], and to me looked very uncomfortable calling it a sciatic problem. However, when I asked him about her symptoms, he always referred back to [Dr C's] diagnosis and the fact the Cardiovascular Team had cleared her.'

In my opinion then, [Ms A] was not given the benefit of a review or second opinion of her '*diagnosis of sciatica*' that had been made by a specialty vascular registrar. Her relevant clinical examination findings were not adequately documented to substantiate that diagnosis, her dramatically elevated D-Dimer result was critically not documented or addressed. A revisit of the original referral letter containing aspects of the correct diagnosis from [the vein clinic], and a Wells Score focussed consideration were not documented as set out in my original advice. The adequacy of the original external U/S in the setting of the clinical question posed by [the vein clinic] was not re-evaluated (see Q3).

In my opinion, sufficient red flags were present to sway a detailed re-evaluation and referral request opinion to that of the first lens stated in Coles Good Medical Practice.

The axiom *'Never ignore extremely elevated D-dimer levels: they are specific for serious illness'* is one supported in the medical literature and a significant component of complaint I would be in agreement with found in [Ms A's] statements.

That said, I would have to temper the level of criticism to a mild deviation from the expected standard, given the complexity of the situation, the clinical distractors present around the back pain, the clinical uncertainty around the sequence of events even in hindsight, and the significant influence of the preceding vascular specialty registrar assessment. The absence of clear DHB policy and procedure to help guide those involved, and the apparent disconnect between the stated 'referral' expectations of the involved registrars, does not appear to have supported the safest patient journey

experience in times of complexity. I would be at least moderately critical of that policy absence.

Whilst not to justify poor practice and documentation, from [Dr B's] position though, even had a thorough reassessment been made with perfect documentation, and even if the correct diagnosis had been suspected and a CT requested, it would still have been unlikely to have altered the *overall* outcome *at the time* he became involved (some 10 hours after her initial arrival at hospital). Perhaps ironically, the use of presumptive anticoagulation (given as standard practice and not unreasonably for a diagnosis of 'DVT pending further investigation') may even have precipitated even more dramatic extraperitoneal haemorrhage.

If the above extrapolation was to be made, it is likely however, that [Ms A] would not have been supported to discharge home and would have been strongly advised to remain in hospital.

I do however note [Dr B's] stated view that such considerations were made, but simply not fully documented. *'It is not accurate therefore to suggest that the diagnosis was not considered; it was. But given the investigations that had been done all ready and that she had just been reviewed for a second time by a senior vascular specialist*. I was satisfied that a diagnosis of DVT was unlikely.'*

(*incorrect — a vascular trainee registrar assessed [Ms A] not a vascular specialist).

2/ Should [Ms A's] symptoms at her second admission have initiated the need for further investigations?

The further information supplied does not cause me to materially alter my initial advice to the commissioner. I would clarify that original view though more clearly in stating: — a response to that question is of course intimately tied to the preferred view taken from question 1 and in part related to question 1.

If viewed through Lens 1:

In my view yes [Ms A's] symptoms (and investigation findings) should have initiated the need for further investigation. (I would not however differentiate that between the first and second presentation) — I would acknowledge that has likely been addressed by the vascular expert advice as the vascular registrar was involved at that point. I would regard that as a moderate departure from the expected standard.

If viewed through Lens 2:

If considering [Dr B's] involvement purely through lens 2, then those decisions had already been made by the preceding vascular registrar and were not being considered by [Dr B]. As he advised purely on analgesia options he would not have been expected, or requested, to initiate further investigations.

In more detail then:

[Ms A] represented a second time shortly after discharge at 22:52hrs. She had suffered an exacerbation of pain in her left lower back and left leg after walking to the car park and becoming nauseated and vomited. In essence these symptoms appear to be similar to those she had been experiencing before her arrival to hospital that afternoon at 14:30hrs. On the second admission she was reassessed by a nurse with her vital signs noted as normal, but 8/10 pain was recorded. There are insufficient notes which address whether this pain settled or worsened, but she was documented as not having received strong pain medication (sevredol) or anti-nausea medication (ondansetron) until 00:48hrs (almost 2hrs later). There is no documentation from [Dr C] regarding this second presentation and therefore of his reassessment of any of her symptoms or re-examination findings. Similarly [Dr B's] notes document very little regarding her representation symptoms and do not document any detailed clinical examination. Her nursing notes at discharge at 01:00hrs do not mention the presence of pain, documenting stable observations, and an early warning score of 0.

Defining the standard of care at this point would be a matter of weighing the perceived diagnosis and its severity, her symptom progression or resolution, and then by extension, the availability of any further investigations or resources available at the time (midnight) which would change immediate management. Ensuring adequate symptom control (pain and nausea) were clearly indicated and appear to have been considered and managed appropriately — although with some delay.

What is clear at that point in the progression of her illness, is that her vital signs had remained stable over some ten hours of observation. There do not appear to have been any immediate clues to the impending cardiovascular collapse which was to follow. In my opinion, her symptoms *per se* at the second admission did not *mandate* further investigations purely on the basis of a second presentation. The symptoms at that stage were largely similar to the initial presentation, but for an assessment as to the severity of her pain and its unclear progression or improvement. The need for further investigation at that point in time would have been largely driven by concern over the diagnosis. If the diagnosis was accepted as 'sciatica pain' an exacerbation of her pain following walking to the hospital car park would not automatically initiate the need for further immediate investigation. An offer to manage her symptoms, and admit overnight for observation would not have been unreasonable. That said such an assessment to offer admission would in my view move the lens to requiring a more detailed assessment in which case I would return to my views in Q1.

Had alternative diagnoses been made (either at the first or second admission), her symptoms and signs correctly clinically interpreted, or her D-Dimer level been adequately assessed, it would likely have also been reasonable to offer admission for symptom control, and overnight observation. In considering such a diagnosis further investigation would have been warranted, likely involving a CT of the abdomen/back/pelvis and/or a repeat U/S of the left leg and pelvis.

In my opinion, given the rare eventual findings in this case, it would be very unlikely a diagnosis of extraperitoneal haemorrhage would have been considered by any reasonable physician at the time point of the second readmission. It would then have been unlikely an urgent request for CT scan would have been made, and uncertain it would have been approved by the radiology service on an urgent overnight basis, without clinical instability (which did not exist at that point).

That said, the lack of any documented assessment of [Ms A's] abdomen, pelvis, or flanks by any of the doctors involved in her assessment up to that point, does invite doubt and then potential criticism.

I note [Dr B's] 2021 recollection that *'I recall she sat up for me to examine her back and I pressed over her spine which was not tender. She was not uncomfortable sitting up indicating to me no abdominal pain …'*

3/ Was it appropriate for [Dr B] to rely on the findings of the ultrasound scan undertaken by [the vein clinic]?

I have modified my original advice provided to the commissioner based on applying similar principles of the application of the standard of care lens to answering question 1.

Further clarification was received from [the vein clinic] with the U/S scan having been performed in house by a sonographer. I have also further considered [Dr B's] 2021 responses.

All three doctors who assessed [Ms A] prior to the correct diagnosis being made appear to have relied on the negative ultrasound performed at [the vein clinic]. No separate ultrasound report was done with her referral containing details of the examination findings in the proximal left leg to the level of the popliteal veins. It did not contain an assessment of the deep calf veins and so was not a *whole leg U/S*. Critically the pelvic veins were also not directly examined.

If viewed through Lens 1:

In my opinion it was not reasonable for [Dr B] to have relied on the findings of the U/S scan undertaken by [the vein clinic]. Quantifying that degree of departure I would acknowledge would be a matter of opinion and could be weighed differently by my colleagues. I would regard a failure to review the detail of that scan result in the context of the [the vein clinic] referral *?'Proximal obstruction*,' the dramatically raised D-Dimer result, and her stated symptoms, as at least a moderate departure from the expected standard.

If performing a detailed review of her diagnosis and providing a second opinion then the level of detail for actively examining the findings of the U/S would be expected to have occurred. Simply taking the patient's statement of *'USS done by radiographer at*

vein clinic showed no DVT' would not meet the required standard of adequate detailed assessment of the investigation that had been performed.

The specific referral from [the vein clinic] included '*?Proximal vascular obstruction ?Arterial.'* The reason for the referral was due to asking the question of '*?Proximal vascular obstruction'.* Given this hadn't been able to be excluded by the in house scan which was included in the referral — the irony of the hospital staff using the provided external scan to exclude the very query on the referral appears to have been missed by those involved. In that respect then, it was inappropriate to rely on the findings of the U/S to rule out the diagnosis raised in that very referral. A rather circular argument.

Ultimately the referral diagnosis provided some 10 hours earlier proved in large part to be the correct diagnosis.

If applying the lens of a detailed review, in my opinion then, [Ms A] should have been adequately examined with respect to Wells clinical examination and a Wells score applied (or Clinical Gestalt) arriving at a methodical pre-test probability for DVT. This would have highlighted either a moderate or high risk pre-test probability of DVT which might (and should) have focussed more attention on an assessment of the adequacy of the scan which had been performed, rather than merely assessing it as black and white,— positive or negative.

Following DVT diagnosis guidelines would also have invited consideration of her D-Dimer result. This was not negative — preventing exclusion of DVT in a moderate probability scenario. Whilst not validated in the scenario present, the dramatic *profoundly elevated* D-Dimer level should also, in my opinion, have raised a large red flag and given pause for more thought and detailed examination when integrated into the clinical picture and probability assessments. I would accept the degree of elevation and time course of elevation of the D-Dimer one month post sclerotherapy is open to debate. Explaining it away though, merely on the basis of sclerotherapy performed a month earlier, without adequate assessment and examination of [Ms A], was to invite the cognitive diagnostic error of premature closure. Its level of >10,000 does invite pause as to the likely differential diagnosis with another potential clue slipping away.

It was simply not recorded or mentioned in the medical notes.

Again I note [Dr B's] 2021 statement *'had I been the first clinical contact to see [Ms A] that day, given her history, symptoms and clinical signs I would have ordered an U/S of the limb and referred her to the vascular team for further management. But this is not what happened. I received the referral after she has been assessed by [Dr D], after she had had an US scan and after she had been assessed twice by the vascular team'.*

Avoiding potential eminence bias resulting in premature closure bias is perhaps at the heart of Coles Good Medical Practice Guidance *'When you assess, diagnose or treat patients you must provide a good standard of clinical care. This includes: adequately assessing the patient's condition, taking account of the patient's history and his or her views, reading the patient's notes and examining the patient as appropriate.'* Application of the word '*adequate'* is a matter of opinion. In my opinion, it should not involve simply accepting a colleague's opinion as fact without performing one's own

adequate assessment and due diligence. In my view that is not the standard of care envisaged by Coles or that was reasonably expected by [Ms A] at the time of her relevant reviews.

If viewed through Lens 2:

If simply consulting on analgesia, as [Dr B] states, then it would not have been expected he would have even considered the issue of the U/S. I note his 2021 statement *'it would have been my assumption reasonable in my view, that this question would have been considered by the vascular team'.*

In that scenario one could not be critical as he would not have essentially been involved in even considering the issue. This is what appears to have occurred.

4/ Do you consider the decision to discharge [Ms A] to be appropriate?

The additional information received does not cause me to alter my initial advice to the commissioner.

Restated: In my opinion it was not appropriate for [Dr C] to have discharged [Ms A] from the vascular service and refer her to the General Medicine service with a diagnosis of 'sciatica'. The rationale, intent and details of that referral were not documented at the time but has been provided by [Dr C] subsequently. I would be critical of the decision to discharge [Ms A] from the vascular service without discussion with the responsible vascular consultant to which service she had been specifically referred by [the vein clinic] with a very specific query that was not adequately investigated. I accept that is perhaps better commented on by the vascular expert advisor but include my view as it forms part of the interaction between the medical and vascular teams with her ultimate diagnosis falling well within a General Medical Scope of practice.

In general principle, junior medical staff do work under delegated lines of responsibility and should ensure that their senior supervising colleagues are kept adequately informed of their decisions and management plans. Discharging a patient from their service without discussion, and making their consultant aware, would not normally meet that standard. The issue of the timing of such discussions out of hours remains challenging however, with the reluctance of junior doctors to call their consultants overnight frequently highlighted in adverse HDC findings. In the ADHB's response it is stated that *'the vascular registrar advised that he planned to discuss [Ms A's] situation with the on call Vascular Surgeon first thing in the morning.'* Policies which mandate senior contact prior to discharge have been put in place to add an extra layer of support and safety. Less experienced staff do not always recognise when they do not know what they do not know. Policies which mandate contacting their supervising consultant before discharge seek to mitigate such risks.

I am aware however, that not all senior medical staff support such policies being of the opinion that a blanket mandated policy is unreasonable, results in many unnecessary waking phone calls overnight and should allow room for discretion. The 'culture' of a particular service can therefore significantly vary, despite policies in place, leaving

junior staff in a no win situation where they are blamed when things go wrong, but criticised when they follow policies and are deemed to have called 'unnecessarily'.

For [Dr B] Medical Registrar's role, such comments hold equally true but the question is more muddied. His discharge letter states '*discussed and offered admission for pain relief and potential physiotherapy assessment mane. Patient happy to go home with analgesia.'* A shared decision making process appears to have been followed in keeping with expectations. Unfortunately such discussions would have been fundamentally flawed and then in retrospect inappropriate. At work were preceding errors of assessment, heuristic cognitive bias, a rare clinical scenario and a lack of evaluation and senior advice — complicated by the late hour.

If the diagnosis was indeed 'sciatica'; if the question posed in the original referral letter had been adequately addressed; if [Ms A's] pain and nausea were adequately under control; and if [Ms A] was adequately informed and wishing to go home; — then such a decision to discharge would have been appropriate. (*Ideally the responsible consultant would also have been contacted and be in agreement.*)

That appears to have been the premise [Dr B] was operating on at the time of discharge. Regrettably that premise, and those assumptions, were however not appropriate.

5/ Recommendations for improvement that may help to prevent a similar occurrence in the future?

Further responses from the ADHB were reviewed from 19th March 2018 and 1st July 2021. The previous suggested areas for improvement appear to have be reviewed and considered.

I note the ADHB's specific response *'As part of the previous responses, ADHB undertook to address a number of our systems and processes related to referral processes, SMO escalation and diagnosis-based specialty referral guidelines. A summary of these changes is attached as an appendix. The guidance documents and care pathways for suspected DVT are in the RMO handbook and these are included in the appendix. The documentation of physical assessments by medical staff is recorded in the written medical record. On admission each patient has an A to D planner (Admission to discharge planner) which is a booklet that provides a proforma template to record clinical information in a systematic manner and the physical examination findings form part of that document with an expectation that admitting doctors complete the template. Further changes within ADHB these are summarised in the appendix. A formal SMO escalation policy has been published and each service has been asked to provide specific guidance about criteria for escalation.'*

I was instructed not to comment further on the specifics of those details by the HDC.

Dr Richard Shepherd Date: 21/09/2021
Consultant Physician General Medicine
Waikato District Health Board
MBChB FRACP FRNZCUC FDRHMNZ"

Appendix B: Independent clinical advice to Commissioner

The following expert advice was obtained from vascular surgeon Dr Thodur Vasudevan:

"Thank you very much for the opportunity to provide a report on this lady and her management at Auckland City Hospital.

I will provide a summary of the events and answer the specific questions raised with respect to her care:

Summary:

[Ms A] had Sclerotherapy at a private establishment 2 weeks prior to her initial presentation at Auckland Hospital.

[Ms A] presented with pain in the left leg, almost 2 weeks post sclerotherapy but feeling well otherwise. She was discharged with advice for pain relief and advice to return if symptoms worsen. She had 2 subsequent admissions with similar symptoms but worsening and on the third occasion, was quite unwell with evidence of shock.

The ultimate diagnosis was of an ileo femoral DVT in the left leg and a spontaneous retro peritoneal haemorrhage of unknown aetiology. She underwent active treatment at this stage with exploration and thrombectomy and fasciotomies for a compartment syndrome.

[Ms A] made a slow recovery from that point.

I will answer the specific questions that have been raised:

1. There was no specific sign or symptom to suggest a Deep vein thrombosis (DVT). Evidence will suggest that the incidence of DVT is very low post sclerotherapy as long as the sclerotherapy is performed peripherally and not close to the deep veins or perforator veins.

   The registrar mentions that an Ultrasound scan was performed at the GP practice. The result of this is not evident in the notes. Further, there is no information about the nature of the sclerotherapy except for the recording of the house surgeon. This mentions that there was quite extensive sclerotherapy amounting to about 20 injections. It is not clear if this was in one session or in multiple sessions.

   The initial presentation to the ED was on the 26th April 2016. The assessment, diagnosis and the initial management and follow up arrangement appear to be appropriate. It is not evident if all the information about the sclerotherapy was evident at that point.

   Literature suggests that patients with thrombophlebitis are at an increased risk of a DVT with one study showing a 28% incidence though this does not specify the cause

of the phlebitis. Phlebitis however is much more common post sclerotherapy and has a much smaller risk of a DVT.

[Ms A's] first admission was appropriately managed. This presentation did not warrant any further investigations particularly since an Ultrasound scan was already performed at the GP practice. The technical competency needed for diagnosis of a DVT would warrant a specialist ultrasound scan as opposed to a GP practice scan. There is no formal report to comment further on this.

2. The decision to discharge [Ms A] in the first attendance was appropriate but in retrospect could raise issues with the reliance of scans performed by non specialist personnel.
3. The second admission to hospital suggests some underlying problem of significance. Given the vague nature of the presentation, the referral to the Medical registrar was appropriate. However, an Ultrasound scan specifically to rule out a DVT would be the standard of care.
4. As stated above, at the second admission, an Ultrasound scan and a CT PA to rule out a pulmonary embolus would be appropriate and was not performed.
5. The unusual complication of a retroperitoneal haemorrhage has added a further dimension to the complexity with [Ms A's] care.

The standard of care for the Ileo femoral DVT and the retro peritoneal bleed was entirely appropriate when it eventually occurred. However, the actual cause of the retro peritoneal bleed is not clear. Anticoagulation is an underlying cause of the severity of this complication though not the cause. It is also clear that the DVT is not the cause of the retro peritoneal bleed.

In summary, the care of [Ms A] appears to be adhering to standards of care with some exceptions mainly not related to the hospital care.

The details of the extent of the sclerotherapy and the quality of the ultrasound scan done at the GP practice need to be further examined to make specific comments as to how management was affected.

Thank you for the opportunity to provide advice on [Ms A's] care. If you need any more information, please do not hesitate to contact me at Waikato Hospital.

With kind regards

Yours sincerely

Thodur Vasudevan
Consultant Vascular Surgeon"

The following further clarification was received from Dr Vasudevan:

> "… It is unfortunate that more information has not been provided from the vein clinic. If, as the House surgeon has recorded that several injections were done as part of sclerotherapy, this would be a risk factor for DVT. In spite of the follow up scan showing no DVT, it would still be an important factor for the DVT.
>
> Large doses of sclerosant do lead to deep venous involvement and the predilection for damage to deep veins. This may make them prone to thrombosis. It will be good to know the exact details of the volume of sclerosant used during the treatment. I am sure that this will be recorded and should be. There are limits to the volume to be used in a single sitting.
>
> In answer to your questions, I would consider the level of departure for the various points outlined:
>
> With regards to the second admission, the deviation from the standard would be medium as the standard will be an US and a CT to rule out a DVT.
>
> The particular issue I have raised is also the community US and the reliance on this in critical cases. This would also be a significant if the person scanning does not have the relevant expertise in diagnosing difficult DVTs. The standard of care would be to repeat the US with a qualified technician that would be available in most vascular centres.
>
> With the response from the vein centre, I am a bit surprised that more information has not been provided and the fact that they do not record more details of the sclerotherapy and the volume used.
>
> Hope this answers your queries. Please let me know if you need more information."

The following further advice was received from Dr Vasudevan:

> "… I have read the documentation and the updated ones you have sent me with further information from [the vein clinic] where [Ms A] had her initial sclerotherapy.
>
> Before I respond to your specific questions, I have read the report of the sclerotherapy. The dosages for the treatment there appear to be well within the limits of what specialists would use in a single session. However, the actual locations of the injections has not been specified and in particular reference to areas close to perforators. Presence of perforators would increase the risk of sclerosant entering the deep veins and causing clotting leading to DVTs.
>
> The incidence of DVTs with sclerotherapy is related to the total dose at any time and can evolve over a period of a few days up to a week. Lack of mobility post sclerotherapy would further lead to deep vein thrombosis in the midst of a nidus caused by the sclerosant entering the deep system of veins.
>
> I will also answer the specific questions you have raised in your latest mail:

1. **The standard of care for Ileofemoral DVT:**
   As several experts have mentioned and have been acknowledged by Auckland DHB, the standard of care for deep vein thrombosis are:

   a. Duplex US scan by qualified vascular technician performed examining the veins of the leg and the iliac veins up to the level of the IVC.
   b. CT and CTPA to rule out a Pulmonary embolus and an abdominal CT to rule out an iliac venous thrombosis.
   c. D-Dimer testing of the blood. This supports the diagnosis in most cases and is not diagnostic by itself as there are other causes for this to be raised.

2. **Departure from standard practice:**
   As Auckland DHB have mentioned in their response, this was a moderate departure from the standard of care. A swollen leg with discolouration in a patient with recent venous intervention and a raised D-Dimer is a Deep vein thrombosis unless otherwise ruled out by testing. And that testing would be a specialist run US and a CT or MR venogram to look at the iliac veins.

3. **How will this be viewed by peers?:**
   Once again, this is hard to answer but as mentioned in the previous response, this day and age, where CT scanning is so prevalent, this will be viewed with some concern given the clinical scenario of [Ms A] when she presented to Auckland ED with significant signs of a DVT. I note the comment of the representative for [Ms A] with regards to my comment of not paying attention to the D-Dimer test. With respect, this is neither a symptom nor sign but a test to complement signs and symptoms.

4. **Recommendations for improvement:**
   I can see from the correspondence from Auckland DHB that the processes are in place for feedback from this case for improvement. The learnings from this are now far and wide as I had looked into the protocols for DVT management in Waikato Hospital while I was there and now having moved to the Alfred Hospital, I have looked critically at the protocols here as well based on my own learnings from this case.

   I can personally reassure [the family] that the learnings of this are truly being disseminated far and wide and specifically across the ditch.

Once again my sincere apologies for not sending this earlier. Please let me know if you need any more information.

Yours sincerely

Thodur Vasudevan FRACS(Vasc) FRACS(Gen) FRCS
Head of Vascular Surgery
Deputy Program Director, Surgical Services."

Appendix C: Independent clinical advice to Commissioner

HDC sought advice from vascular surgeon Dr Richard Evans. The following is a summary of his advice, dated 29 November 2022.

Dr Evans advised that the most common treatment pathway in situations of re-presentation such as this would be admission to hospital for investigation, with investigation likely consisting of a CT scan. He noted that once hospitalised, the patient is under constant supervision and continuous assessment. Dr Evans advised that Dr C's rationale for the treatment plan at the time of the second admission was entirely appropriate, and acknowledged Dr C's justification for referring Ms A to the general medical team for a further opinion and his plan to discuss the case with the consultant first thing in the morning.

Dr Evans advised that a referral to General Medicine for suspected sciatica was unusual, although the intention may have been for a more complete neurology assessment. Dr Evans said that a sudden onset of new sciatica, with no prior history, would be a less likely diagnosis in this context.

Dr Evans agreed with the previous advice of Dr Vasudevan about the issues in relation to the second presentation, and Dr Vasudevan's comment that "[a] swollen leg with discolouration in a patient with recent venous intervention and a raised D-dimer is a [DVT] unless otherwise ruled out by testing".

Dr Evans considered that further testing would be a specialist-run ultrasound scan, and a CT scan or MR venogram to look at the iliac veins. He advised that a CT scan to rule out a pulmonary embolus would be appropriate.

Dr Evans advised that the scan from the vein clinic did not include iliac veins, a common site of DVT that generally would be assessed as part of DVT consideration in the context of a swollen lower limb. Dr Evans said that his expectation would be that a registrar of Dr C's level of experience (third year, with two years' experience of vascular surgery) would know this.

Dr Evans agreed with the Commissioner's following comments in the provisional report:

> "I acknowledge [Dr C's] view that [Ms A's] examination findings and vital signs were unchanged from her first assessment. However, given that she had re-presented to hospital shortly after her first discharge, and was experiencing significant pain, this should have put [Dr C] on notice that something more significant was occurring. In this respect I note the family's concern that [Ms A's] condition was getting worse. Whilst it may have been an appropriate step for [Dr C] to refer [Ms A] to the medical team, I also consider that, as the vascular team member accepting a referral that queried vascular obstruction or an arterial issue, [Dr C] should have arranged for a further ultrasound scan to satisfy himself that the ultrasound scan performed in the community was in fact accurate. It is relevant in this respect, that the community ultrasound was incomplete as it had not imaged or reported on the iliac vessels. In addition, he should have

> arranged a CT scan to exclude a DVT or a pulmonary embolism. I am critical that he did not do so."

Dr Evans advised that it would be fair to say that Dr C should have investigated further, and that an opportunity to investigate the seriousness of this case was missed. Dr Evans considered that these investigations (a further ultrasound and a CT scan) should have been done prior to referring Ms A for general medicine review/admission to hospital, due to the symptoms she had, and that in this case this would be expected of a doctor with Dr C's level of experience.