Waitemata District Health Board

A Report by the

Health and Disability Commissioner

(Case 16HDC00761)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

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Executive summary

1. On 6 March 2016, Mr A presented to Hospital 1's Emergency Department. He had had a sudden onset of left-sided weakness and twitching, and reported a week-long history of dizziness upon standing. A CT scan identified the possibility of a dural arteriovenous fistula and the report recommended a neurological opinion.

2. Mr A was admitted to the general medicine ward with a working diagnosis of an ischaemic stroke. Dr C, the admitting registrar, completed a handwritten neurology referral to DHB2 (which provides neurology services on behalf of Waitemata District Health Board). However, the referral was sent using the process for outpatient referrals, and there was nothing on the referral form to indicate that it was intended to be an inpatient referral. As a result, the referral was not triaged until 9 March 2016.

3. Mr A was noted to have left arm tremors, which progressed to intermittent twitching of the left leg on 6 March 2016. Dr B, the consultant general physician, maintained the working diagnosis of ischaemic stroke when he reviewed Mr A on 7 March 2016. Nursing notes throughout 7 March refer to twitching and "on and off restlessness" in Mr A's left leg.

4. On 8 March 2016, medical registrar Dr D queried in the notes whether Mr A's ongoing left-sided weakness was caused by seizures. This possibility was raised again during the physiotherapy and occupational therapy review in the afternoon, but the matter was not escalated to Dr B.

5. On 9 March 2016, Dr D noted that Mr A had not yet been seen by a neurologist, and made active enquiries about the referral. As a result of these enquiries, Mr A was reviewed by a visiting neurologist later in the morning. The neurologist made a diagnosis of "focal status epilepticus, triggered by presumed [arteriovenous malformation]". Mr A was commenced on intravenous anti-seizure medication, and his involuntary movements improved. He was later transferred to DHB2 and received further treatment.

Findings

6. The Commissioner considered that the deficiencies below constituted a pattern of poor care on a service level, for which WDHB was ultimately responsible:

   a) Dr C did not make an acute referral to the neurology service following an abnormal CT scan result.

   b) Dr C's non-urgent neurology referral was erroneously sent to the outpatient clinic.

   c) Dr B did not discuss the CT report with the neurology service on his ward round the day after admission, when Mr A had been experiencing ongoing involuntary twitching.

   d) Junior staff did not escalate concerns about Mr A's ongoing involuntary movements, and the consultant general physician did not enquire.

7. In addition, the Commissioner considered that there were not adequate safeguards in place to enable the identification of errors in the neurology referral process. For all these reasons, the Commissioner found that WDHB failed to provide services with reasonable care and skill to Mr A, and breached Right 4(1) of the Code.

Recommendations

8. It was recommended that WDHB:

a) Conduct an audit of neurology referrals to ensure that the correct process has been followed.

b) Use this case as an anonymised case study for education on the importance of team communication.

d) Update HDC on the implementation of its "TransforMED" project.

e) Provide Mr A with a formal apology for the deficiencies in care.

Complaint and investigation

9. The Commissioner received a complaint from Mrs A about the services provided to her husband, Mr A, by Waitemata District Health Board (WDHB). The following issue was identified for investigation:

The appropriateness of the care provided to Mr A by Waitemata District Health Board in March 2016.

10. The parties directly involved in the investigation were:

Mrs A	Complainant/consumer's wife
Waitemata District Health Board	Provider

11. Mr A confirmed to HDC that he supported the complaint.

12. Information from the following parties was also reviewed:

DHB2	Provider
Dr B	General physician
Dr C	Medical registrar

Also mentioned in this report:

Dr D	Medical registrar

13. Independent expert advice was obtained from Dr Lucille Wilkinson, a general physician.

Information gathered during investigation

Neurology service referrals

14. WDHB's inpatient neurology service at Hospital 1 is provided by another district health board (DHB2). A neurologist from DHB2 attends Hospital 1 on Monday, Wednesday, and Friday mornings. Requests for consultations are placed in the visiting neurologist's mailbox in the telephone operators' room.

15. An on-call neurology consultant from DHB2 is available by telephone during routine hours for urgent cases that occur when the visiting neurologist is not scheduled to be at Hospital 1. Outside of routine hours, an on-call neurology registrar can be contacted.

16. Outpatient neurology clinics at Hospital 1 are held on Monday and Wednesday mornings and alternate Wednesday afternoons. Requests for routine outpatient consultations are faxed to the Neurological Outpatient Clinic Scheduler at DHB2.

17. These referral processes are documented in WDHB's Resident Medical Officer (RMO) handbook, which is accessible electronically.

18. The RMO handbook also includes the following warning for inpatient requests: "Do not address requests to the Outpatient Clinic as this will result in delays in the patient being seen."

Presentation to Hospital 1

19. On Sunday 6 March 2016, Mr A (aged 62 years at the time of these events) was transported via ambulance to the Emergency Department at Hospital 1. He had had a sudden onset of left-sided weakness and twitching, and reported a week-long history of dizziness upon standing. The Hyper-Acute Stroke Pathway[1] was activated immediately, and Mr A underwent a computerised tomography (CT)[2] brain scan and angiography.[3] No acute intracranial abnormalities were detected, nor was there any evidence of an acute evolving stroke.[4] However, the report identified the possibility of a dural arteriovenous fistula.[5] A neurological opinion was recommended.

20. It was thought that Mr A had had an ischaemic stroke,[6] and he was admitted to the general medicine ward by medical registrar Dr C with this working diagnosis. Dr C placed Mr A on the list to be moved to the stroke ward.

21. WDHB explained that Mr A was not admitted to a speciality stroke bed because of capacity constraints.

[1] A guide for optimal management of patients presenting with stroke symptoms.
[2] Radiography in which a three-dimensional image of a body structure is constructed by computer from a series of plane cross-sectional images made along an axis.
[3] The radiographic visualisation of the blood vessels after injection of a radiopaque substance.
[4] A stroke in which damage to the brain increases over time.
[5] Abnormal connection between an artery and vein in the protective membrane on the outer layer of the brain and spine.
[6] A stroke caused by the narrowing or blockage of a blood vessel supplying the brain.

Inpatient neurology referral

22. At 10.33am, Dr C completed a handwritten neurology referral for Mr A. It stated:

> "Please can you review this man who was admitted on 6/3/16 with an acute episode of left sided weakness and tremors. CT angio found dilated vessels on right hemisphere. No evidence of bleed. Please can you advise whether we need to investigate any further for an [arteriovenous] malformation[7]?"

23. DHB2 told HDC that the referral was incorrectly faxed to the DHB2 outpatient clinic rather than using the "longstanding method of hand delivering it to [Hospital 1's] telephonists office where the consultant neurologist collects them". DHB2 added that there was nothing on the form to indicate that it was intended to be an inpatient referral, and none of the urgency boxes were ticked. It was therefore "put through the usual system" for an outpatient referral. As a result, it was not triaged until 9 March 2016.

24. Dr C does not recall whether he faxed the referral himself or if he asked a colleague to submit it. He stated that he consulted the RMO handbook frequently, but as the referral process for neurology differs from other specialities, it is possible that he made a mistake in faxing the referral rather than leaving it with the telephonists. Dr C recalled that it was a very busy morning and surmised that this may have contributed to the error.

25. DHB2 stated that it would be helpful if the neurology referrals could be marked clearly as inpatient or outpatient.

6 March 2016 onwards

26. Mr A was noted to have left arm tremors during his time in the ED. After he was transferred to the general medicine ward, two nurses observed that Mr A had an intermittent involuntary twitch in his left leg, and documented this in his clinical notes on 6 March 2016.

27. On the morning of Monday 7 March 2016, Mr A was reviewed by Consultant General Physician Dr B during the morning post-acute ward round. Dr B noted the history, CT findings, and symptoms, and planned for Mr A to be reviewed by the stroke team. Dr B said that he did not observe the jerking movements previously documented in Mr A's file, and as they were "not a consistent distinguishing feature at that point in time", he considered the initial diagnosis of ischaemic stroke to be a reasonable working hypothesis. Dr B noted that the treatment and diagnostic plan included consultation by a neurologist, which was expected to occur later that day. However, because the neurology referral had been erroneously sent to the outpatient clinic, the visiting neurologist on Monday was not aware that Mr A required a consultation, and did not review him.

28. Nursing notes throughout 7 March 2016 refer to twitching and "on and off restlessness" in Mr A's left leg.

29. On Tuesday 8 March 2016, the morning nurse documented that Mr A's left leg had been "jerky" throughout her shift. Medical registrar Dr D wrote in the clinical notes that the

[7] A vascular disorder in which arteries and veins are connected directly rather than through capillaries.

whole left side of Mr A's body was twitching, and queried whether Mr A's ongoing left-sided weakness was caused by seizures. This possibility was raised again in Mr A's clinical notes during the physiotherapy and occupational therapy review in the afternoon. On Wednesday 9 March 2016, Dr D noted that Mr A had not yet been seen by a neurologist, and made active enquiries about the referral. As a result of Dr D's enquiries, Mr A was reviewed by a visiting neurologist later in the morning. The neurologist's view was that Mr A had "focal status epilepticus, triggered by presumed [arteriovenous malformation]". Mr A was commenced on intravenous lorazepam and phenytoin,[8] and his involuntary movements improved.

30. Between 8–9 March 2016, Dr B remained responsible for the patients admitted under his general medicine team. However, he did not personally review Mr A over that time, as he was rostered on at the endoscopy rooms at Hospital 2. Dr B told HDC that, although he remained in contact with his medical team every day, he was not informed of Mr A's continued twitching or that a neurology review was still pending. Dr B said that, in the absence of further feedback, he assumed that the neurologist and stroke team had confirmed the original diagnosis.

31. Dr B stated:

> "I certainly try and make sure that my junior staff are comfortable with approaching me for any clinical matter of urgency in or outside ward rounds, whether I am on site or not. I also urge them to be in frequent contact with me about our patients particularly when a patient's condition changes or does not improve as expected."

32. There is no documentation of any communication with any other senior clinician regarding Mr A's continued involuntary twitching.

33. WDHB said that the significance of the CT scan result and ongoing left-sided muscle activity was not fully grasped by the general medicine team. WDHB acknowledged that the 48-hour delay in neurology review delayed the administration of intravenous anti-seizure medications to Mr A, and said it was "less than ideal".

Subsequent events

34. On 10 March 2016, the neurologist told Dr B that DHB2's neuroradiology team had reviewed Mr A's CT angiography and that urgent neurosurgical review was recommended. Mr A was transferred to DHB2 that afternoon.

35. On 12 March 2016, Mr A underwent embolisation[9] of the dural arteriovenous fistula. He was discharged back into the care of WDHB on 21 March 2016, pending the availability of a bed at an inpatient rehabilitation facility. He was transferred to the rehabilitation facility on 24 March 2016.

Further information

36. WDHB told HDC that it has made the following changes:

[8] Anti-seizure medications.
[9] A procedure that stops bleeding by blocking a blood vessel.

- In mid-June 2016, all medical registrars received a "substantially enhanced" orientation process. Registrars were provided with a detailed orientation package that highlighted information on how to refer to specific sub-specialties, including neurology.
- It has implemented an electronic referral system for neurology referrals which will ensure that referrals are sent to, and received by, the correct service.
- It has undertaken a project called "TransforMED", which aims to ensure that time is set aside for subspecialists who participate in General Medicine to undertake a ward round daily on inpatients on their designated ward. The project is in an advanced stage of implementation.
- It has introduced ward-based medical teams and daily ward rounds by the consultants on the ward.
- There is a deficit of theatre capacity to undertake endoscopy at Hospital 1, so endoscopies often occur at Hospital 2. WDHB has submitted a business case to the Ministry of Health and the Capital Investment Committee for a major new build, including four endoscopy rooms, at Hospital 1. This will reduce the need for gastroenterologists (such as Dr B) to travel to Hospital 2.

Responses to provisional opinion

37. WDHB provided a response to the provisional opinion, and Mrs A provided a response to the "information gathered" section of the provisional opinion. Where appropriate, responses have been incorporated into this report.

38. WDHB wished to emphasise that there is no evidence that the delay in treatment had any impact on Mr A's subsequent clinical course or neurological recovery; however, WDHB accepted that it caused concern and upset, and it apologised for this.

Opinion: Waitemata District Health Board — breach

39. District health boards are responsible for the operation of the clinical services they provide, and can be held liable for any service-level failures. In addition, they have a responsibility for the actions of their staff, and an organisational duty to facilitate continuity of care. This includes ensuring that all staff work together and communicate effectively.

40. In my view, Mr A was let down by lapses in clinical judgement, which were exacerbated by systems that did not effectively facilitate the delivery of safe and seamless care.

Maintained diagnosis of ischaemic stroke

41. Mr A was given a working diagnosis of an ischaemic stroke when he presented to Hospital 1's Emergency Department on 6 March 2016. A CT scan on the same morning was suggestive of an underlying dural arteriovenous fistula, and it was documented that he experienced involuntary twitching on the left side of his body between 6–8 March 2016. However, the working diagnosis was not revised until 9 March 2016, when Mr A was reviewed by the visiting neurologist.

42. My expert advisor, general physician Dr Lucille Wilkinson, advised that an acute neurology referral should have been made on the morning of Mr A's admission, given the CT scan report's mention of a vascular abnormality, and Mr A's neurological symptoms. She noted that movement disorders are rarely caused by ischaemic strokes.

43. Dr B's post-acute ward round on 7 March 2016 represented another missed opportunity for earlier discussion with the neurology team. Dr Wilkinson stated that she would have expected Dr B to seek information about the implications of the CT scan finding, and that the lack of acute consultation with the neurology service led to "a substantial delay" in the diagnosis of focal status epilepticus.

44. Dr Wilkinson advised that the lack of direct discussion with neurology services at the time of the CT scan result being available, and at the time of Dr B's ward round, is not consistent with a standard of care that would be expected in acute medical services in New Zealand. I accept this advice and am concerned that Mr A's case was not escalated to the neurology team sooner.

Failure to communicate persistent involuntary twitching

45. Following Dr B's ward round on 7 March 2016, Mr A continued to experience involuntary twitching on the left side of his body. On 8 March 2016, it is documented that Mr A was possibly having seizures, but this concern was not discussed with Dr B or another senior clinician.

46. Dr Wilkinson was critical that Dr B was not notified of Mr A's persistent involuntary movements. She stated: "Overall, there appeared to be a lack of escalation of concerns around [Mr A's] condition and a lack of recognition of the need to seek advice regarding the continued abnormal movements."

47. Dr Wilkinson also stated that she would have expected Dr B to ensure that Mr A had been seen by a neurologist, by reviewing his status with the registrar or house officer. However, she acknowledged that Dr B was working in a particularly challenging situation:

> "[T]he requirement for [Dr B] to work off site, when he is responsible for acutely unwell medical patients, means that he is working in a system that makes it difficult for an adequate standard of care to take place. The system of having to provide supervision for junior medical staff while away from the acute hospital site prevents direct face-to-face communication with the team and fails to promote in-depth discussion around the status of all patients under the care of the consultant physician. "

48. Overall, Dr Wilkinson advised that there appeared to be a lack of coordination and team communication in relation to Mr A's care over the 48 hours after Dr B's first ward round, which led to substantial delay in the treatment of focal status epilepticus. She advised that she considered the lapses in coordination of care and team communication to be a moderate departure from an expected standard of care.

49. I agree with Dr Wilkinson and am concerned that junior medical staff did not communicate with Dr B about Mr A's condition, including when the potential cause of his involuntary twitching was queried, and that Dr B did not review Mr A's status with the registrar or

house officer. However, I acknowledge that the requirement that Dr B work offsite placed him in a difficult situation in terms of his ability to communicate effectively with his team and ensure adequate oversight.

50. WDHB has stated that it is in the process of implementing its project "TransforMED" to ensure that specialists participating in general medicine have time set aside to perform daily rounds on inpatients. I note that it has submitted a business case to build four endoscopy rooms at Hospital 1 to reduce the need for its gastroenterologists to travel to Hospital 2. In my view, these measures are appropriate and necessary.

System of referral

51. Dr C intended for Mr A to be reviewed by the visiting neurologist on 7 March 2016; however, the incorrect process was followed and the referral was faxed to the outpatient clinic instead of being placed in the visiting neurologist's mailbox in the telephone operators' room. In addition, there was nothing on the form that identified it as an inpatient referral. Dr C cannot recall whether he sent the referral or if he asked a colleague to submit the form.

52. The instructions for referrals are contained within WDHB's RMO handbook, and I consider that they are sufficiently clear. However, the manual referral system utilised by WDHB is prone to error in a number of ways. Dr Wilkinson noted that the referrer could incorrectly assess the acuity of the referral, deliver it to the wrong location, or fail to include appropriate information. Furthermore, she identified that there is no auditable process or record of the referral having been made unless it is clearly documented in the clinical notes.

53. I share Dr Wilkinson's concerns about the scope for error in this referral process. In this case, all of the potential errors that Dr Wilkinson referred to were realised. Further, while the referral instructions were clear, in my view there were insufficient safeguards for identifying errors in the referral process. For example, it would have been helpful if the referral form had clearly indicated that it was intended to be an inpatient referral. Without this, DHB2 had no way of knowing that the referral had been mistakenly directed to the outpatient clinic. As a result, I consider that the referral process was a factor that contributed to the delay in Mr A being diagnosed properly and receiving appropriate treatment.

54. I note that electronic referrals have now been implemented at WDHB, which I consider to be an improvement from the manual system in place at the time of Mr A's admission.

Conclusion

55. As detailed above, there were a number of failings in the care provided to Mr A:

- The admitting registrar did not make an acute referral to the neurology service following an abnormal CT scan result.
- The registrar's non-urgent neurology referral was erroneously sent to the outpatient clinic.

- The consultant general physician did not discuss the CT report with the neurology service on his ward round the day after admission, when Mr A had been experiencing ongoing involuntary twitching.
- Junior staff did not escalate concerns about Mr A's ongoing involuntary movements, and the consultant general physician did not enquire.

56. While individual staff hold some degree of responsibility for their failings, these deficiencies indicate a pattern of poor care on a service level, for which WDHB is ultimately responsible. I am most concerned by the lapses in communication within the general medicine team and the lack of safeguards in place to identify errors in the neurology referral process. These factors hindered the coordination of Mr A's care within the team and across specialities, and contributed to the delay in him receiving the neurological review he required. For the above reasons, in my opinion WDHB failed to provide services with reasonable care and skill to Mr A, and, as such, breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights.[10]

Recommendations

57. I recommend that WDHB:

a) Conduct an audit of neurology referrals within the last three months to ensure that the correct process has been followed. The results of the audit, and details of any remedial action taken (if appropriate), should be sent to HDC within three months of the date of this report.

b) Use this case as an anonymised case study for education on the importance of team communication, and report back to HDC on this within three months of the date of this report.

c) Update HDC on the implementation of its "TransforMED" project within three months of the date of this report.

d) Provide Mr A with a formal apology for the deficiencies identified in this report. The apology should be sent to HDC within three weeks of the date of this report, for forwarding.

Follow-up action

58. A copy of this report with details identifying the parties removed, except WDHB and the expert who advised on this case, will be sent to the Health Quality & Safety Commission and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

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

Appendix A: Independent advice to the Commissioner

The following expert advice was obtained from a general physician, Dr Lucille Wilkinson:

> "My name is Dr Lucille Wilkinson. I am a General and Obstetric Physician and presently Clinical Head of Department for the Department of Medicine at Northland District Health Board. I have held this position for 9 months. I am a Fellow of the Royal Australasian College of Physicians and hold Vocational Registration in Internal Medicine with the Medical Council of New Zealand. I have 15 years' experience as a Specialist Physician working in acute medical care, predominantly at Auckland DHB, where I was also the Clinical Director of the Admission and Planning Unit.
>
> I have been asked to provide an opinion on the overall management of [Mr A's] care between his admission on 6 March 2016 until transfer to [DHB2] on 10 March 2016. In particular, I have been asked to consider
>
> 1. Given the CT findings of 6 March 2016 and the observation of [Mr A's] ongoing left sided twitches, was it reasonable to make a diagnosis of ischaemic stroke without seeking immediate neurologist input (verbal) regarding the need for further imaging (such as angiography) to confirm the diagnosis.
> 2. Given [Mr A's] persistent left sided twitching on 7 and 8 March, 2016, and the available imaging results, was it reasonable to retain the working diagnosis of ischaemic stroke and anxiety without attempting to expedite neurologist advice.
>
> I have been provided with a summarised background of [Mr A's] admission to hospital, the clinical notes from that admission, a copy of the complaint from [Mr A's] wife, the response from Waitemata District Health Board and the discharge summary from [DHB2].
>
> I confirm I have read and agree to follow the guidelines for independent advisors to the Health & Disability Commissioner.
>
> Conflict of interest statement: I perform one Obstetric Medicine clinic each month at Waitemata District Health Board. I am not paid directly for this but the Northland District Health Board receives payment for my clinical time.
>
> ***Brief background of [Mr A's] case.***
>
> [Mr A] presented to hospital on Sunday 6 March, 2016 at 10.45am with a history of sudden onset left sided neurological symptoms of both weakness and persistent shaking or tremor. The working diagnosis at admission was of a right middle cerebral artery stroke with basal ganglia involvement. No differential diagnosis was documented at the time of admission. A CT scan of the brain was performed and did not reveal any acute changes. A CT angiography was reported at 11.28am as showing a vascular abnormality consistent with a dural arteriovenous fistula and recommended a neurology opinion. There is no record of any discussion being held with the on call Medical consultant or on call Neurologist at [DHB2] on the day of admission. Written referrals were made to the Stroke service and visiting Neurologist service.

[Mr A] had persistent abnormal movements of the left side of his body over the next three days. These are variably described as twitching or jerking, and rhythmic in nature. The consultant ward round note on 7 March does not document a diagnosis for these movements. It is repeatedly documented in the clinical notes that these movements were causing distress and anxiety to the patient and his family, which is consistent with the complaint received from [Mr A's] wife. On 8 March, 2016 the Medical registrar ward round note does indicate that the potential diagnosis of focal seizures was considered, but no action was taken to address this. An assessment by the physiotherapist and occupational therapist that day also documents the possibility of seizures causing the abnormal movements. The medical registrar ward round on 9 March, 2016 documents the possibility of focal seizures as a diagnosis. No acute treatment is provided for seizures until a Neurology review takes place later in the morning.

Opinion

1. *Given the CT findings of 6 March 2016 and the observation of [Mr A's] ongoing left sided twitches, was it reasonable to make a diagnosis of ischaemic stroke without seeking immediate neurologist input (verbal) regarding the need for further imaging (such as angiography) to confirm the diagnosis*.

   Acute movement disorders are rare at the time of initial presentation of ischaemic stroke (1) and other causes of acute onset involuntary movements, such as a focal seizure activity, should have been considered in the differential diagnosis. Dural arteriovenous fistulae typically present symptomatically in the 5th and 6th decades of life and seizures are described as a clinical presentation of these vascular malformations (2). The presence of an abnormal CT finding, indicating a vascular abnormality, alongside acute neurological symptoms should have resulted in acute referral to Neurology services at the time that this information was available. This would have been possible on the morning of [Mr A's] admission by phoning the on call Neurology registrar or consultant at [DHB2]. The CT scan images would have been able to be reviewed by the Neurology team soon after that referral was made. The Neuroradiology service at [DHB2] also has an on call service that could have provided further advice and assistance on a weekend. The lack of documented discussion of [Mr A's] case with the on call physician on the day of admission would lead me to believe that the medical registrar did not alert the physician of [Mr A's] admission. I also note that the consultant physician, [Dr B], did not undertake to acutely discuss [Mr A's] clinical situation with the Neurology service after review on the post-acute ward round, when [Mr A] continued to have persistent involuntary movements. Such a discussion would have allowed the visiting Neurologist to assess [Mr A] on the day after admission, correcting the misdirected written referral to Neurology.

   Opinion — the lack of direct discussion with Neurology services at the time of the CT scan result being available, and at the time of the post-acute ward round, is not consistent with a standard of care that would be expected in acute medical services in New Zealand. This lack of acute consultation led to substantial delay in making the definitive diagnosis of focal status epilepticus, resulting in documented distress

for both [Mr A] and his family. It is possible that this represented a lapse in clinical reasoning with an anchoring bias towards the initial diagnosis of an ischaemic stroke causing an acute movement disorder**. Although lapses in clinical reasoning do occur in acute medicine, I would still consider this to be a minor departure from an expected standard of care.**

2. *Given [Mr A's] persistent left sided twitching on 7 and 8 March, 2016, and the available imaging results, was it reasonable to retain the working diagnosis of ischaemic stroke and anxiety without attempting to expedite neurologist advice.*

[Mr A] continued to have persistent left sided involuntary movements for 48 hours after being seen on the specialist physician post-acute ward round. On at least three occasions, a member of the care team documented the possibility of seizure activity being responsible for the abnormal movements. [Mr A] was not reviewed by a specialist physician over this time and there is no documentation of any discussion with a senior medical doctor. No specific anti-seizure treatment plan was undertaken during this time although small doses of benzodiazepine (lorazepam) were prescribed to treat [Mr A's] anxiety. There was no documented consideration given to verbally discussing [Mr A's] situation with the Neurology service, despite the fact that [Mr A] had not been reviewed by Neurology on the day after admission, as the team might have expected. Overall, there appeared to be a lack of escalation of concerns around the patient's condition and a lack of recognition of the need to seek advice regarding the continued abnormal movements. Having considered the possibility of seizure activity, it would be expected that a member of the junior medical team would have discussed this with the consultant. I would have also expected the medical consultant responsible for [Mr A's] care to have ensured that [Mr A] had been seen by the Neurology team, by reviewing the status of his/her inpatients daily with the registrar or house officer. This requires the consultant to have sufficient rostered time on-site to be able to review patients daily, if this is required.

Opinion — Overall, there appeared to be a lack of coordination and team communication regarding [Mr A's] care over the 48 hours after the first consultant ward round, leading to a substantial delay in the treatment of focal status epilepticus. The coordination of a patient's care is the prime responsibility of the consultant physician leading the medical team. Effective team communication requires a culture where any member of the care team feels able to escalate concerns about a patient's clinical progress and ensures that these concerns are addressed. The Royal Australasian College of Physicians describes expected behaviours with respect to decision making by specialist physicians. These include implementing decisions within an appropriate timeframe, reconsidering a plan in light of changes in patient condition or when problems occur, calling for assistance if required and routinely following up investigation results and outcomes of therapy and acting accordingly (3). **I would consider the lapses in coordination of care and team communication to be a moderate departure from an expected standard of care, and to be inconsistent with expectations of the RACP performance guidelines.**

This case also highlights issues about referrals between hospital services with regards to mode of communication and reliability. The present method of referral to the visiting Neurology service is by means of paper referral left with a third party. This method has limitations in not being able to be easily trackable and being open to human error, as occurred in this instance. It may be appropriate to consider a review of this referral system.

The opinion I have provided above is limited by it being solely based on the clinical notes and correspondence provided to me. It is also not possible for me to determine if a lack of healthcare resources was contributory to the standard of care that [Mr A] received.

Dr Lucille Wilkinson, MBChB, FRACP

19/9/2016

(1) Mehanna, R. & Jankovic, J. (2013). Movement disorders in cerebrovascular disease. *The Lancet Neurology*, 12(6), 597–608.
(2) Gandhi, D., Chen, J., Pearl, M., Huang, J., Gemmete, J. and Kathuria, S. (2012). Intracranial dural arteriovenous fistulas: Classification, imaging findings, and treatment. Available from http://dx.doi.org/10.3174/ajnr.A2798
(3) Royal Australasian College of Physicians. Supporting Physicians' Professionalism and Performance. Available from http://sppp-guide.racp.edu.au/#sppp-start-0."

The following further advice was received from Dr Wilkinson:

"I have been asked to provide further advice regarding the care provide to [Mr A] by Waitemata District Health Board. Further information has been provided to me including a further response from Waitemata District Health Board, a response from [DHB2], a response from [Dr B] and [Dr C]. I have also received a copy of the original handwritten referral to Neurology services.

I was asked to comment on the following aspects of care:

The adequacy of the referral processes between [DHB2] and Waitemata DHB. The present system of referral to the visiting Neurologist requires several steps and decision processes around the acuity of the patient. Referrals are made in written form and left in a location that is not in the clinical area where the patient is located. The Neurology service is not contacted directly to alert them to the referral having been made. This process will work well if all parties are well-informed about the process and the referrer is accurate in their assessment of the acuity of the referral. It is prone to error in several areas, including:

a. The referrer does not assess the acuity of the referral appropriately,
b. The written referral is not delivered to the correct location,
c. The written referral does not contain appropriate information,
d. There is no auditable process or record of the referral having been made unless someone clearly documents this in the clinical notes.

I note that both [DHB2 and WDHB] recognise that this manual system of referral is prone to human error and that a customised e-referral system would be a much more robust process. I would recommend that, until this new system is in place, that a secondary means of alerting the Neurology Department of inpatient referrals is put in place as a safety net to prevent missed referrals in the future.

Whether the information in [Dr C's] referral to Neurology was adequate. The referral was made on a standardised DHB referral form. It did indicate that [Mr A] was admitted to hospital but did not appear to indicate an assessment of the urgency of the referral. The referral did indicate that the patient had been admitted with weakness and tremor on the left side and that the CT angiogram was abnormal. It did not indicate that the CT report had suggested that the patient had a dural AV fistula. On this basis, the referral is incomplete but is not out of keeping with written referrals between hospital departments using the standardised form. A more complete set of information would have been transmitted had a phone call taken place to the on call Neurology team. Overall, I would consider the content of the referral to be within the bounds of a reasonable standard of care.

Does the additional information received cause me to change my original advice, particularly in relation to the care provided by [Dr C] and [Dr B]? I am now in receipt of statements from both [Dr B] and [Dr C] regarding the care that they provided in this case and these have been helpful in outlining both the circumstances and thinking that surrounded their clinical decision making.

[Dr B] indicates that his direct involvement in the care of [Mr A] began on the post-acute ward round. He indicates that he felt that the CT scan report was ambiguous and that he felt that the admitting working diagnosis and management was reasonable. [Dr B] is clear in his expectation that both a Neurologist and the Stroke service would be reviewing [Mr A] and they would provide advice around ongoing investigations and management. [Dr B] indicates that he subsequently was working in a different hospital for the next two days and therefore was not able to directly review [Mr A] and did not discuss his progress with the junior doctors on his medical team. [Dr B] also notes the rarity of dural arteriovenous fistulae and the low likelihood that an acute General Physician would see such a presentation during their lifetime of practise. I note [Dr B's] sincere apology for the delay in [Mr A] being seen by the subspecialty Neurology or Stroke services. In my initial opinion, I considered the maintenance of the working diagnosis of acute stroke causing a movement disorder to be a minor departure from an expected standard of care. I still consider this to be the case, as the CT scan report is clear in its suggestion of an underlying dural arteriovenous fistula and I feel that this should have prompted [Dr B] to seek further information about the implications of this finding from either an online clinical information source or by directly discussing this with a specialist colleague. In my initial opinion, I did feel that there had been a moderate departure from an accepted standard of care with regards to the coordination of care and team communication. I still believe this to be the case but it is now clear that the requirement for [Dr B] to work off site, when he is responsible for acutely unwell medical patients, means that he is working in a system that makes it difficult for an adequate standard of care to take place. This system of having to provide supervision for junior medical staff while away from the acute hospital site prevents

direct face-to-face communication with the team and fails to promote in-depth discussion around the status of all patients under the care of the Consultant Physician. I would strongly recommend that Acute General Physicians are able to spend some part of every working day physically alongside their teams to ensure that all patients can be discussed and management plans can be kept up to date. Being present on site also allows the Specialist Physician to personally review patients that have an unexpected clinical course.

[Dr C] indicates in his response that he was very busy on the morning that [Mr A] was admitted and that [Mr A] was admitted via ambulance with the working diagnosis of possible acute stroke. A large team of clinicians were initially called to assess [Mr A] but the early hospital course did not suggest a severe neurological deficit. [Dr C] states that he did not inform an on-call consultant about [Mr A] as the patient was stable and there were no specific concerns. I note new information in [Dr C's] letter that indicates that [Mr A] was not admitted to a stroke unit as [Dr C] had requested. This is not commented on in any of the DHB responses and therefore I cannot comment on why [Mr A] was not cared for on a specialised stroke unit, considering that he had a working diagnosis of acute stroke. [Dr C's] response does not indicate why he did not discuss [Mr A] further with [Dr B] over the two days after the post-acute ward round. In particular, [Dr C] does not indicate a reason why he did not inform [Dr B] about the ongoing abnormal left-sided movements or that [Mr A] had not been seen by the Neurology service. While this was certainly a lapse in judgement on [Dr C's] behalf, it still remains the case that [Dr B] was primarily responsible in ensuring that he was adequately aware of the clinical status of the patients under his care, as he was the responsible consultant. Overall, [Dr C] made an unintentional human error in submitting the Neurology referral in an incorrect way. [Dr C] appears to have not communicated clinical information about [Mr A] to [Dr B] that might have allowed [Dr B] to prevent the delay in an accurate diagnosis and this would be considered a minor departure from an expected standard of care. As noted above, a system that physically separates consultant staff from the junior doctors that they are supervising, and the patients they are caring for, will promote such circumstances occurring again.

I hope this additional opinion is helpful in this matter.

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General and Obstetric Physician"