Canterbury District Health Board

A Report by the

Health and Disability Commissioner

(Case 16HDC00072)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Table of contents

Executive summary

1. Mrs A, aged 88 years at the time of these events, was admitted to the Orthopaedic Ward at Hospital 1 on 9 October 2015 following a fall at her rest home.

2. Documentation from Mrs A's rest home showed her daily dose of citalopram (an antidepressant) as 10mg per day, half of a 20mg tablet. Orthopaedic house officer Dr D prescribed Mrs A citalopram 10mg daily by writing this on a paper medication chart. However, initially he wrote "20mg" and then immediately realised that the dose was half of a 20mg tablet, so changed the prescription to "10mg" by writing over the "2". Dr D did not rewrite the prescription, as required by the Canterbury District Health Board (CDHB) policy.

3. Hospital 1 ward pharmacist Ms L undertook a medicine reconciliation for Mrs A's medication. Ms L documented the daily dose of citalopram as 10mg and annotated the paper medication chart by writing "½ x 20mg" underneath the prescription of citalopram, to indicate that each dose was to be half of a 20mg tablet.

4. Throughout Mrs A's admission to Hospital 1, no staff rewrote Dr D's prescription of citalopram or asked him to do so.

5. On 13 October 2015, Mrs A was transferred to Hospital 2. Orthopaedic house officer Dr E completed the electronic discharge summary, listing Mrs A's dose of citalopram as 40mg. Dr E used the paper medication chart dose and misread the altered dose of citalopram as 40mg.

6. Geriatric house officer Dr G admitted Mrs A to Hospital 2 and electronically prescribed her citalopram 40mg daily. Dr G told HDC that she took this dose from the discharge summary.

7. Following Mrs A's admission, the ward pharmacist, Ms J, reviewed Mrs A's medication on 14 October 2015. Ms J compared the electronic medication management system entry to the discharge summary from Hospital 1. Ms J thought that the dose of citalopram was high for an elderly person, but not unusual, so it was not a red flag for her.

8. Mrs A was given 40mg citalopram daily from 14 to 20 October 2015. During this time, she had periods of suspicion, paranoia, delusion, and confusion. None of the staff caring for Mrs A identified the citalopram dosage error. While Dr H realised that 40mg citalopram was a high dose, she did not consider it an abnormal amount for people with depression. On 20 October 2015, nurse practitioner Ms I reviewed Mrs A for a mental health assessment, and identified the error. Mrs A's citalopram dose was immediately reduced to 10mg.

Findings

9. An accumulation of apparently innocuous actions or inactions added up to a failure on behalf of CDHB in that from 14 to 20 October 2015 Mrs A received 40mg instead of the intended 10mg of citalopram. Opportunities to avoid or correct this error were

missed, and the Commissioner is concerned at the lack of critical thinking exhibited in this case. The Commissioner finds that CDHB failed to provide services to Mrs A with reasonable care and skill in relation to the prescribing and administration of citalopram, and breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).[1]

10. The Commissioner is critical of the delay in ensuring appropriate incident reporting, and the delegation of a serious disclosure conversation to a junior house officer.

Recommendations

11. The Commissioner recommends that CDHB:

a) Use this case as an anonymised case study for the education of staff, and report back to HDC on this within six months of the date of this report.

b) Conduct a random audit of the transfer reconciliations performed by pharmacists at the receiving service over a three-month period and, within six months of the date of this report, report back to HDC on the effectiveness of the new process in identifying errors in discharge summaries.

12. CDHB reported on the implementation of electronic prescribing at Hospital 1, as recommended in the provisional opinion. CDHB also provided a letter of apology to Mrs A's family for its breach of the Code, as recommended in the provisional opinion.

Complaint and investigation

13. The Commissioner received a complaint from Ms B and Ms C about the services provided by Canterbury District Health Board to Mrs A. The following issue was identified for investigation:

Whether Canterbury District Health Board provided Mrs A with an appropriate standard of care between 9 October 2015 and 15 December 2015.

14. An investigation was commenced on 3 May 2016.

15. The parties directly involved in the investigation were:

Ms B	Complainant and Mrs A's daughter
Ms C	Complainant and family friend
Canterbury District Health Board	Provider

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

16. Information was also reviewed from:

Medical centre	General practice
Dr D	House officer
Dr E	House officer
Dr F	Consultant orthopaedic surgeon
Dr G	House officer
Dr H	Consultant general physician & geriatrician
Ms I	Nurse practitioner
Ms J	Pharmacist

Also mentioned in this report:

Dr K	Geriatric registrar
Ms L	Ward pharmacist
Dr M	Geriatric registrar
Dr N	Psychiatrist
Dr O	Geriatrician

17. Independent expert advice was obtained from consultant orthopaedic surgeon Dr Simon McMahon (**Appendix A**).

18. Independent expert advice was obtained from consultant general physician and geriatrician Dr David Spriggs (**Appendix B**).

19. Independent expert advice was obtained from pharmacist Pauline McQuoid (**Appendix C**).

20. A copy of Mrs A's Hospital 1 prescription of citalopram is provided as **Appendix D**.

Information gathered during investigation

Background

21. Mrs A, aged 88 years at the time of these events, had a history of type 2 diabetes,[2] hypertension,[3] osteoporosis,[4] and poor vision. Her regular medications included metoprolol,[5] insulin,[6] paracetamol,[7] aspirin,[8] bendrofluazide,[9] colecalciferol,[10] cilazapril,[11] and simvastatin.[12]

[2] A metabolic (digestive) disorder characterised by high blood sugar and a relative lack of insulin, the hormone that assists with the absorption of sugars from the blood to other body tissues.
[3] High blood pressure.
[4] A disorder that causes bones to become weak and brittle.
[5] A beta-blocker that affects the blood flow through the arteries and veins, used to treat hypertension.
[6] The hormone that assists with the absorption of sugars from the blood to other body tissues.
[7] A medication used for the relief of mild to moderate pain.

22. This report addresses the care provided to Mrs A during her admissions to Hospital 1 and Hospital 2 in October 2015.

Community prescription of citalopram[13]

23. On 28 September 2015, Mrs A presented to her general practitioner (GP) at the medical centre. The GP recorded concerns about Mrs A's labile mood,[14] fixed delusions,[15] and deteriorating vision. The GP queried early dementia,[16] ordered a computed tomography (CT)[17] head scan, and commenced Mrs A on citalopram 10mg daily, for her mood.

24. The next day, the medical centre received a letter from Mrs A's daughter, Ms B, outlining her concerns about Mrs A's labile mood, confusion, change in personality, and misperception of reality.

Admission to Hospital 1 and modification of prescription

25. On 9 October 2015, Mrs A was admitted to the Orthopaedic Ward at Hospital 1 with a fractured right collarbone, and fractured pubic ramus[18] and ribs, following a fall at her rest home. Her patient admission questionnaire noted that she was becoming forgetful, was confused at night, and was weepy some of the time.

26. At 12.30pm, orthopaedic house officer Dr D[19] noted that Mrs A was alert, orientated, and talkative. He documented in the clinical records that she was taking citalopram, but did not document a dose. Documentation from Mrs A's rest home showed her daily dose of citalopram as half of a 20mg tablet. A record of the prescribing was also accessible to CDHB staff.[20]

27. Dr D prescribed Mrs A citalopram 10mg daily by writing this on a paper medication chart. However, initially he wrote "20mg" and then immediately realised that the dose was half of a 20mg tablet, so changed the prescription to "10mg" by writing over the "2".

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[8] A medication used for pain relief.
[9] A diuretic (increases the amount of urine passed from the kidneys) used to treat hypertension.
[10] A vitamin D supplement.
[11] An angiotensin-converting enzyme (ACE) inhibitor used for the treatment of hypertension.
[12] A cholesterol-lowering medication that blocks the production of cholesterol.
[13] An antidepressant.
[14] Uncontrollable mood swings.
[15] A false belief based on incorrect inference about external reality that is firmly sustained despite evidence to the contrary.
[16] A term used to describe symptoms associated with a decline in memory or other thinking skills severe enough to reduce a person's ability to perform everyday activities.
[17] A type of X-ray that produces cross-sectional images of the body using X-rays and a computer.
[18] A bone in the pelvis.
[19] At the time of these events, Dr D held provisional registration as a doctor. He is now registered with a general scope of practice.
[20] A secure record that stores health information so that healthcare providers can share vital information. It is used by GPs, nurses, pharmacies, hospices, and rehabilitation and can be accessed by hospital staff at the point of care.

28. Dr D acknowledged that he should have rewritten the prescription, rather than made an amendment, and stated that he was aware of CDHB policy prohibiting modified prescriptions. He told HDC that he was distracted by the busyness of the ward at the time.

29. CDHB stated that the prescription of citalopram should have been rewritten as a new prescription, as per its policy, rather than altered. CDHB told HDC that "there is no substitute for clinicians' own checks to ensure the medication they are prescribing is legible and appropriate for the patient in all circumstances".

Medicine reconciliation at Hospital 1

30. At 3.21pm on 9 October 2015, Hospital 1 ward pharmacist Ms L[21] undertook a medicine reconciliation for Mrs A's medication (comparing the paper medication chart to information from Mrs A's GP, community pharmacy, and rest home) and completed a medication admission form. On the form, she documented the daily dose of citalopram as 10mg. Ms L annotated the paper medication chart by writing "½ x 20mg" underneath the prescription of citalopram, to indicate that each dose was to be half of a 20mg tablet.

Medical reviews at Hospital 1

31. At 4.25pm on 9 October 2015, consultant orthopaedic surgeon Dr F[22] reviewed Mrs A and ordered X-rays. That evening, Mrs A refused the X-rays, along with other cares, and became upset, confused, and aggressive. She remained confused throughout her Hospital 1 admission and was put under a special watch.[23]

32. On 10 October 2015, geriatric registrar Dr K[24] reviewed Mrs A, documenting his impression of cognitive impairment and increased creatinine level.[25] He suggested that her bendrofluazide be discontinued and her cilazapril and metoprolol be withheld.

33. On 11 October 2015, Dr F reviewed Mrs A again. On 12 October 2015, orthopaedic house officer Dr E[26] reviewed Mrs A. Dr E noted Mrs A's cognitive impairment and pain at night, and increased her pain relief medications.

34. Later on 12 October 2015, a social worker contacted Mrs A's rest home and recorded that Mrs A had recently had a gradual decline in cognition, and episodes of unsettledness and aggression. The social worker also called Ms B and documented that Mrs A's personality had changed over the last few months, and she had become increasingly unsettled at night and confused. The social worker also noted that, since being in hospital, Mrs A had become quite aggressive and angry towards Ms B.

[21] Registered pharmacist.
[22] Dr F has been vocationally registered in orthopaedic surgery since 2013.
[23] A Hospital Aide Special stays with the patient to prevent any harm.
[24] Dr K has been registered with a general scope of practice since 2008.
[25] Creatinine levels in the blood are used to assess kidney function. An increased level indicates impaired kidney function.
[26] Dr E trained as a doctor overseas, graduating in 2012. She worked in New Zealand for several months from mid 2015, mainly as a relief paediatric registrar, but also as a relief house officer in various specialties. She held provisional registration.

35. At 10am on 13 October 2015, Dr E reviewed Mrs A again. Dr E's plan was to transfer Mrs A to Hospital 2 for rehabilitation. At 11.20am, Dr K reviewed Mrs A again. He agreed that Mrs A should be transferred to Hospital 2.

36. Throughout Mrs A's admission to Hospital 1, no staff rewrote Dr D's prescription of citalopram or asked him to do so.

Discharge from Hospital 1 and transcription error

37. At 1pm on 13 October 2015, Mrs A was transferred to Hospital 2. Dr E completed the electronic discharge summary. The discharge summary noted Mrs A's fractures, acute on chronic renal impairment, and agitation and aggression at night. It also stated: "[C]ognitive impairment — new diagnosis, mixed picture on recent CT head of hippocampal atrophy[27] and generalised volume loss[28]."

38. The discharge summary listed Mrs A's dose of citalopram as 40mg. Dr E told HDC that, when completing the discharge summary, she used the paper medication chart dose, as the admission notes did not document a dose. She stated that she must have misread the altered dose of citalopram as 40mg and entered this onto the discharge summary. Dr E said that a dose of 40mg citalopram is a relatively common dose in adults, so she would not have thought it particularly out of the ordinary when transcribing the dose. However, in hindsight, she acknowledged that a dose of 40mg citalopram should be used with caution in elderly patients, owing to the risk of causing low sodium and potential cardiac side effects.

Admission to Hospital 2 and prescription error

39. At 2pm on 13 October 2015, Dr G,[29] the admitting geriatric house officer at Hospital 2, reviewed Mrs A. Dr G recorded that Mrs A was orientated, admitting to being forgetful, had been feeling more confused recently, and had been agitated and distressed at night. Dr G also noted that Mrs A had raised inflammatory markers.[30]

40. Dr G documented Mrs A's dose of citalopram as 40mg in her admission note, and prescribed this electronically via CDHB's electronic medication management system.[31] Dr G told HDC that she took this dose from the discharge summary. CDHB stated that, had Dr G taken the citalopram dose from the paper medication chart, then she may have appreciated the error in the discharge summary.

41. Later on 13 October 2015, nursing staff recorded that Ms B informed them that Mrs A had become more confused at night and had been experiencing hallucinations at her rest home, which recently had become worse.

[27] A type of brain damage that is an early marker of Alzheimer's disease (progressive mental deterioration due to generalised degeneration of the brain).
[28] A shrunken brain.
[29] Dr G has been registered with a general scope of practice since 2013. She is not currently practising in New Zealand.
[30] Indicating inflammation and possibly infection.
[31] At the time of these events, this system was in use only at Hospital 2, not at Hospital 1.

42. Also on 13 October 2015, geriatric registrar Dr M[32] reviewed Mrs A. Dr M recorded: "Intermittent confusion [especially] at night but nil real evidence of actual cognitive impairment." Her plan was for Mrs A's blood pressure medications to be reviewed, and she queried restarting cilazapril. The citalopram prescription error was not identified.

43. Overnight, Mrs A was confused and hallucinating.

Medication review at Hospital 2

44. On 14 October 2015, Hospital 2 ward pharmacist, Ms J,[33] reviewed Mrs A's medication by comparing the electronic medication management system to the discharge summary. Ms J made notes on the ward patient list, but did not document anything in Mrs A's clinical records. The ward patient lists are not retained. CDHB told HDC that the electronic medication management system shows that the medication was reviewed, which provides the necessary documentation of the review.

45. Ms J stated that it is not standard practice with transfers to Hospital 2 to review the community records, unless there is a compelling reason to do so (such as a medication prescribed outside of commonly seen doses), as this will already have been done at Hospital 1. CDHB stated that, at the time of these events, its process for a patient transferred from Hospital 1 to Hospital 2, who had undergone a full medicine reconciliation on admission to Hospital 1, was to reconcile the electronic medication management system against one medication information source. CDHB told HDC that the discharge summary was considered an acceptable source because the procedure for the receiving medical team was to chart from the paper medication chart, so the discharge summary was independent of the electronic medication management system.

46. Ms J told HDC that she thought that the dose of citalopram was high for an elderly person, but not unusual for what is seen coming from community practice, so was not a red flag for her. CDHB stated that, having seen this dose many times in her career, it did not stand out as an obvious discrepancy to Ms J. CDHB also stated that 40mg is not an uncommon dose to see in admitted patients, and generally is very well tolerated.

47. Ms J stated that her normal practice is to wait until the patient is stable (following a transfer) and the team has addressed any acute concerns before raising other issues such as drug optimisation (eg, suggesting that Mrs A's citalopram be reduced gradually). CDHB noted that Mrs A had been showing signs of delirium for many days prior to transfer, which can be exacerbated by sudden changes to regular medications.

[32] Dr M has been registered with a general scope of practice since 2012.
[33] Ms J qualified as a pharmacist in 1983.

Medical reviews at Hospital 2

48. Mrs A was given 40mg citalopram daily from 14 to 20 October 2015. On 15 October 2015, consultant general physician and geriatrician Dr H[34] reviewed Mrs A's medications and restarted cilazapril. Dr H noted Mrs A's night-time confusion and hallucinations, and postulated that this might be due to Charles Bonnet Syndrome.[35] Dr H suggested quetiapine[36] to aid Mrs A's night-time agitation. Later on 15 October 2015, Dr M prescribed quetiapine on an as-needed basis. An occupational therapist carried out cognitive screening, and Mrs A scored within the range of mild cognitive impairment.

49. Dr H told HDC that the form completed by pharmacist Ms L at Hospital 1 shows that medications were reconciled from three sources: the GP, the Pharmacy, and the rest home transfer note. Dr H stated that even if a limited reconciliation is undertaken, her interpretation would be that the current prescription is compared against the form, which has been checked previously against primary sources.

50. On 16 October 2015, Dr M reviewed Mrs A again. She suggested medication for Mrs A's osteoporosis. In the afternoon and evening of 16 October 2015, nursing staff recorded that Mrs A was increasingly suspicious and paranoid, and confused and unsettled. On 17 October 2015, Mrs A had some confusion.

51. On 19 October 2015, Dr H reviewed Mrs A again. Dr H reduced Mrs A's insulin, as Mrs A was hypoglycaemic,[37] and also reduced Mrs A's codeine,[38] in case this was impacting on her periods of confusion. Also on 19 October 2015, Dr M reviewed Mrs A, and met with Ms B and family friend Ms C and discussed a referral to Psychiatric Services for the Elderly (PSE). Overnight, Mrs A was noted to be tearful, paranoid, delusional, and suspicious. On 20 October 2015, Mrs A was noted to be confused, and an assessment was undertaken by PSE.

52. None of the staff caring for Mrs A at Hospital 2 up to 20 October 2015 identified the citalopram prescription error. CDHB stated that Dr H and her team felt that Mrs A had a delirium superimposed on her dementia, and looked for multiple causes for this.

53. Dr H told HDC that she realised that 40mg citalopram was a high dose, but not an abnormal amount in people with depression. She stated that it is not uncommon to see people on this amount, as it is still a therapeutic and accepted dose. Dr H said that the literature supports effective doses to be 20–40mg citalopram for depression and anxiety in all ages. She stated that caution is advised with doses of above 20mg in the elderly, for cardiac reasons, but doctors treating the elderly do use doses above 20mg, guided by electrocardiogram (ECG)[39] to ensure that there are no cardiac effects.

[34] Dr H has been vocationally registered in internal medicine since 2015.
[35] A condition where people who have lost a lot of vision experience hallucinations as a result.
[36] An antipsychotic commonly used off-label for agitation and insomnia.
[37] Low blood sugar levels, which can cause confusion.
[38] An opioid pain medication that should be used with caution in the elderly, owing to the increased risk of side effects, including confusion.
[39] A test that monitors the electrical activity of the heart.

54. Dr H told HDC that because Mrs A had a multifactorial delirium on a background of cognitive impairment, it was not obvious that the citalopram dose was incorrect. Dr H explained that if someone is delirious, she tends not to adjust the antidepressant medication as a first line, as it can worsen the confusion, and the effect can take weeks to become obvious because there is a marked time lag between adjustment and effect onset.

Discovery and disclosure of prescription error at Hospital 2

55. On 20 October 2015, nurse practitioner Ms I[40] from PSE reviewed Mrs A for a mental health assessment. Noting the absence of any obvious delirium drivers, Ms I identified recent medications as possibly "implicated in [Mrs A's] rapid decline". Ms I noted the recent prescribing of citalopram at 10mg by Mrs A's GP, and identified the subsequent error in the discharge letter from Hospital 1, documenting the prescription as 40mg. Ms I reported the error to the ward team. Mrs A's citalopram dose was immediately reduced to 10mg, and the Hospital 1 discharge summary was corrected. An ECG and blood tests were undertaken and showed no abnormalities. Ms I told HDC that she informed Ms B of the prescription error later that day.

56. Ms I's impression of Mrs A's confusion was cognitive impairment/possible Alzheimer's type dementia,[41] reduced cognition, and a general reduction in function exacerbated by blindness and possible hallucinations, leading to agitation and distress. Ms I told HDC that, in the absence of any obvious delirium drivers, she recommended review of recently started/restarted medications, as she thought this might be implicated in the rapid decline.

57. On 21 October 2015, Mrs A remained confused, and an interdisciplinary team meeting was held. The citalopram error was noted, and it was recorded: "May explain [increased] paranoid delusions." Dr H told HDC that, at the meeting, she postulated that the increased dose of citalopram may have had an impact on Mrs A's behaviour, and requested that an incident form be completed.

58. CDHB stated that its policy requires incidents to be recorded as soon as practicable, and preferably within 24 hours. It told HDC that a registrar was aware that the incident was to be reported via the incident management reporting system, but this was not completed fully at the time because of an issue logging into the system. CDHB stated that this was completed following Ms B's and Ms C's complaint.

59. On 22 October 2015, Mrs A was noted to be suspicious, paranoid, and confused. Dr H told HDC that she requested that Dr G contact Ms B to discuss the prescription error, but Dr G was unable to get hold of her. On 23 October 2015, Dr G recorded a discussion of the error with Ms B and Ms C.

60. Ms B and Ms C stated that they were informed that the error would not have occurred if Hospital 1 had had electronic prescribing. CDHB apologised that Mrs A's family were told that this error would not have occurred if Hospital 1 had had electronic

[40] Ms I has been a registered nurse since 1981 and a nurse practitioner since 2009.
[41] Progressive mental deterioration due to generalised degeneration of the brain.

prescribing. CDHB stated that electronic prescribing will not stop all medication errors, and staff still need to be vigilant to ensure that the correct medication and dose are given to the patient, which involves careful reconciliation with the previous doses given. CDHB stated that, on reflection, it was not appropriate to delegate discussing the error to a house officer. It said that Dr H has reflected on this and changed her practice to ensure that she is involved directly. Dr H stated that electronic prescribing would have made it impossible to have an unclear prescription, but the prescription was still at risk of being entered wrongly on the digital chart. She apologised that this explanation was given to Mrs A's family.

Further information — Ms B and Ms C

61. Ms B and Ms C stated that, prior to the medication error, Mrs A had an active life, was able to hold a conversation, and was happy. They said that, while being overdosed, she became paranoid, delusional, aggressive, and irrational. Ms B and Ms C told HDC that Mrs A never returned to normal, her quality of life reduced, and they felt as though they had lost her. Mrs A died in 2016.

Further information — Dr D

62. Dr D stated that he is sorry for the medication error, and apologised unreservedly for any harm or distress caused by his actions. He said that he will follow CDHB policy in all future prescribing. Dr D also noted that electronic prescribing will help to improve the accuracy of medication prescribing and its transcription and, ultimately, improve the safety of patients.

Further information — Dr E

63. Dr E apologised for the transcription error. She stated that she is deeply sorry that Mrs A received the wrong dose of medication, and for the distress this caused her and her family.

Further information — Dr H

64. Dr H offered her sincere apology to Mrs A and her family that the medication error occurred and was not identified earlier. Dr H apologised for any detriment caused to Mrs A's condition and the consequent distress to her family.

65. Dr H stated that it appears to her that Mrs A's psychiatric deterioration was the result of multiple factors, and that, while the increased dose of citalopram was notable, it was definitely not the sole cause of the decline in her cognitive health. The other factors that were contributory were her underlying dementia with pre-existing features of paranoia and suspicion, the fractures, the pain, pain relief medications, poor vision, episodes of hypoglycaemia and hyperglycaemia,[42] the transfer between hospitals, inflammation, and the episode of acute renal impairment. Dr H also stated that the hypomania may have been a response to the citalopram in general, in addition to all the other contributory factors, given that Mrs A's most disturbing symptoms started about four weeks after the institution of citalopram. Dr H stated that the effect onset for citalopram is two to four weeks.

[42] High blood sugar levels, which can cause serious side effects.

66. Dr H said that she has reflected on her practice and, when prescribing existing medication, she has ensured cross-referencing with the discharge summary, paper medication chart, and the electronic health information sharing record. She stated that she hopes that transcription errors become rare when electronic prescribing comes into effect across all CDHB hospitals, although they must all endeavour to prescribe safely regardless of the platform used.

Further information — CDHB

67. CDHB apologised that the medication error caused distress to Mrs A and her family at what was already a very difficult and challenging time for them.

68. CDHB stated that new staff are made aware of CDHB policies and procedures through orientation and induction programmes, and the prescribing policy is readily accessible to all staff on the intranet. Medical and nursing staff are also given further orientation on commencement of their work at each hospital. CDHB stated that the pharmacy team is encouraged to discuss concerns with the medical team, and guidelines for doctors include not being offended if pharmacy staff ask them to alter their charting.

69. CDHB noted that Mrs A was confused and agitated at Hospital 1 before the medication error, and had had a change in personality over the preceding months, with unsettledness, confusion, and aggression. CDHB told HDC that Mrs A was at risk of developing a new onset delirium while in the hospital, owing to her pre-existing cognitive impairment and probable dementia, new fractures, pain and pain medication, poor vision, change of environment, possible inflammation, and dehydration.

70. CDHB stated that antidepressants can cause hypomanic states in vulnerable patients, and that this may have occurred in Mrs A's case, as the citalopram was a recent introduction and her behaviour escalated following it. CDHB acknowledged that the erroneous dose did not help this, but stated that it does not consider that it was the sole cause of the delirium and hypomania. CDHB stated that other contributors included her pre-existing cognitive impairment with agitation, new onset delirium, multiple fractures with pain and analgesia, poor vision, hypoglycaemia, change of environment, and dehydration.

71. CDHB obtained an opinion on doses of citalopram from psychiatrist Dr N.[43] Dr N commented:

> "Whilst … doses of 40mg Citalopram should be used with caution in the elderly, the fact is that in the real world of treating mood disorders in the elderly, doses of 40mg citalopram are regularly used with the appropriate precautions. As such, elderly patients will regularly come into general medicine, geriatric as well as psychogeriatric wards on such a dose. I therefore feel due to the commonness of such an occurrence, no fault can accrue to a consultant Geriatrician for not flagging such a dose. I would not expect a geriatrician to be prescribing such a

[43] Dr N has been vocationally registered in psychiatry since 1993.

dose, but I would neither expect a consultant Geriatrician to react with alarm to such a dose."

72. Dr N further stated:

"I have never seen citalopram cause the deterioration in cognition ascribed to [Mrs A] by her daughters and think that a much more likely cause of her unfortunate cognitive decline was her fracture with delirium, than 40mg citalopram."

Changes made — CDHB

73. CDHB told HDC that it is introducing the electronic medication management system to Hospital 1. This system replaces paper medication charts and links prescribing, pharmacy review, and administration processes. CDHB noted that one advantage of this system is that there is no longer a need to transcribe prescriptions between hospitals. It stated that this is a significant step to safeguard against medication errors, and that it also safeguards against poor legibility, which is inherently vulnerable to human error.

74. CDHB stated that, although not in response to this incident, it has also introduced an electronic medicine reconciliation process. When a patient is transferred from one service to another, a transfer reconciliation is performed by the pharmacist at the receiving service, which will preserve the medication list gathered at the time of admission. The discharge summary is also used as a medication information source, in case any medications have been changed or stopped since admission. Details of any changes to medications and the reasons for these changes are now stated in the discharge summary. CDHB said that the pharmacist notes any discrepancies.

75. CDHB stated that staff will be reminded of the incident reporting policy and their reporting responsibilities when an incident such as this occurs.

"Medication & Fluid Prescribing: Administration & Legislation Requirements" — CDHB[44]

76. CDHB's policy "Medication & Fluid Prescribing: Administration & Legislation Requirements" states:

"**Inpatient Prescriber Responsibilities**

During charting …

Each charting must be: …

- Legible …

Modifying Inpatient Prescriptions

If modified, the original charting should be cancelled and the drug regimen re charted completely to avoid misinterpretation or error.

[44] As in place October 2015 (issue date February 2012).

Other staff responsibilities

- The staff/approved persons preparing/checking/administering the medication/fluid must ensure they can read the prescription clearly.
- Do not administer medication/fluids where the prescription or prescriber's name is illegible.
- Refer to the prescriber if possible, or another appropriate prescriber for clarification and re prescribing as required."

Responses to the provisional opinion

77. In response to the provisional opinion, Ms C and Ms B reiterated that, following her discharge, Mrs A's level of functioning, cognitive state, ability to communicate, and her quality of life were all markedly impaired and significantly reduced.

78. CDHB accepted the findings, recommendations, and follow-up actions in my provisional report, and deeply regrets that a medication error occurred while Mrs A was in its care. CDHB advised that the feedback from its senior clinical leaders was that my report is a sobering reminder of the potential for medication errors if the systems in place to prevent these errors are not effective.

79. CDHB advised that the electronic medication management system has now been implemented across Hospital 1 (with the exception of the Emergency Department and Intensive Care). In addition, CDHB has implemented electronic medication reconciliation in other hospitals.

80. Dr G apologised for the errors that she made and for the distress this has caused.

81. Ms L also apologised for the distress that this incident caused to Mrs A and her family.

Opinion: Canterbury District Health Board — breach

Introduction — general comment on care

82. Mrs A was admitted to Hospital 1 on 9 October 2015. She received care at Hospital 1 from that time until her transfer to Hospital 2 on 13 October 2015. Mrs A was transferred to Psychiatric Services for the Elderly on 30 November 2015.

83. This report is concerned with the prescription for citalopram issued at Hospital 1, and the level of medication Mrs A received at Hospital 2 until the identification of a medication error on 20 October 2015.

Modification of prescription, transcription error, and prescription error

Modification of prescription

84. On 9 October 2015, orthopaedic house officer Dr D prescribed Mrs A 20mg daily of citalopram, by writing this on the paper medication chart. He immediately realised that the dose was supposed to be 10mg daily and amended the prescription, rather than re-writing it. Dr D acknowledged that he should have rewritten the prescription, and stated that he is aware of CDHB policy to this effect.

85. CDHB's policy "Medication & Fluid Prescribing: Administration & Legislation Requirements" states: "Charting should NOT be modified, the original charting should be cancelled and the drug regimen re charted completely to avoid misinterpretation or error." CDHB told HDC that new staff are made aware of this policy through orientation and induction programmes, and the policy is available to staff on the intranet.

86. My expert advisor, orthopaedic surgeon Dr Simon McMahon, advised that Dr D's prescribing was a departure from the standard of care, but he acknowledged that it is not uncommon.

87. I note that Dr D has acknowledged that he should have rewritten the prescription, and I am concerned that he did not do so as required by CDHB's policy.

Medicine reconciliation

88. On 10 October 2015, Hospital 1 ward pharmacist Ms L undertook a medicine reconciliation for Mrs A's medication, comparing the paper medication chart with the information from Mrs A's GP, community pharmacy, and rest home. Ms L annotated the citalopram prescription by writing "1/2 x 20mg" underneath it, to indicate that the dose was half of a 20mg tablet. She did not take any other action in respect of the prescription. CDHB told HDC that the pharmacy team is encouraged to discuss concerns with the medical team.

89. My expert advisor, pharmacist Pauline McQuoid, advised:

> "Annotating the medication chart as the [Hospital 1] pharmacist has done would be considered standard practice. Some pharmacists would attempt to get the prescription rewritten by a prescriber. This is also acceptable practice but is often not undertaken due to logistics."

90. I acknowledge Ms McQuoid's advice and, while an opportunity to discuss the potential confusion from Dr D's amendment to the medication chart was not taken, I accept that Ms L acted appropriately in conducting a reconciliation and annotating the prescription.

Medical reviews

91. During her admission to Hospital 1 between 9 and 13 October 2015, Mrs A was reviewed by orthopaedic surgeon Dr F, geriatric registrar Dr K, and orthopaedic house officer Dr E. Mrs A was also cared for by nursing staff and a social worker.

Throughout Mrs A's admission to Hospital 1, no staff rewrote Dr D's prescription of citalopram or asked him to do so.

92. Dr McMahon advised that it was a departure from the standard of care for staff who reviewed the drug chart not to insist that Dr D rewrite his altered prescription. Dr McMahon noted that CDHB's prescribing policy prohibited altered prescriptions, and stated that this system should detect an individual's error and prevent a patient from suffering from that error. Dr McMahon advised that, aside from the prescribing issue, Mrs A's orthopaedic care was appropriate.

93. My expert advisor, general physician and geriatrician Dr David Spriggs, advised: "While [Dr K] might have commented on the poor prescribing hygiene I think it is reasonable to accept that he believed the dose being dispensed was 10mg as was the case." Nonetheless, Dr Spriggs advised that there were many opportunities for Dr D's prescribing to be corrected, and Dr K's reviews of the drug chart should have identified the potential confusion.

94. I am concerned that none of the other staff involved in the care of Mrs A (of which there were several) recognised the potential for confusion resulting from the amended prescription, and either rewrote the prescription or asked Dr D to do so. However, I note that the annotation on the prescription is a mitigating factor in this regard.

Transcription error

95. On 13 October 2015, Mrs A was transferred to Hospital 2. Dr E completed the discharge summary using the paper medication chart dose, as the original admission notes did not document a dose. Dr E told HDC that she must have misread the altered dose of citalopram as 40mg. She entered a dose of 40mg citalopram into discharge summary.

96. Dr E stated that a dose of 40mg citalopram is a relatively common dose in adults, so she would not have thought it particularly out of the ordinary when transcribing the dose. However, she acknowledged in hindsight that such a dose should be used with caution in elderly patients.

97. Dr McMahon advised that the transcription error was a departure from the standard of care with the potential for serious consequences, but stated that it was "once again a very human error which unfortunately the hospital systems have not prevented". He advised that the majority of orthopaedic surgeons would never have prescribed citalopram, and he would not expect it to be identified that 40mg was an incorrect dose.

98. Dr Spriggs advised that "a dose of 40mg citalopram is not uncommonly used for older people with a significant depression".

99. While I note that a dose of 40mg citalopram may not be unusual in elderly patients, I am critical that the wrong dose was listed on the discharge summary. Dr E entered the 40mg dose into the discharge summary having misread the paper medication chart. While I note that the dose had been altered, the pharmacist's annotations should have

alerted Dr E to the correct dose. In the event of any ambiguity, Dr E should have sought clarification. A key opportunity to avoid future error was missed.

Prescribing error

100. On 13 October 2015, geriatric house officer Dr G admitted Mrs A to Hospital 2 and electronically prescribed her citalopram 40mg daily. Dr G told HDC that she took this dose from the discharge summary. CDHB stated that, had Dr G taken the citalopram dose from the paper medication chart, then she may have appreciated the error in the discharge summary.

101. Dr Spriggs advised that it is usual practice for an admitting house officer to transcribe the dose of medication from the discharge summary. However, he stated that it would be expected that the house officer or pharmacist review the community prescriptions at some stage. Dr Spriggs advised that Dr G's failure to reconcile the dose of citalopram with the community prescribing record would not be considered a significant departure from accepted standards.

Electronic prescribing

102. At the time of these events, electronic prescribing was available at Hospital 2, but not at Hospital 1. CDHB told HDC that it is introducing electronic prescribing to Hospital 1, and that one advantage of this system is that there is no longer a need to transcribe prescriptions between hospitals. CDHB stated that this is a significant step to safeguard against medication errors, including poor legibility. It acknowledged that electronic prescribing will not stop all medication errors, and that staff still need to be vigilant to ensure that the correct medication and dose are given to the patient.

103. I consider that, if electronic prescribing had been available to Dr D when he prescribed citalopram to Mrs A, it would have minimised the risk of a prescription error occurring. I acknowledge that medication errors can still occur with electronic prescribing, and that clinicians need to remain alert to this possibility. I encourage CDHB to introduce electronic prescribing at Hospital 1 expeditiously.

Medication and medical review

Medication review

104. Following Mrs A's admission to Hospital 2, the ward pharmacist, Ms J, reviewed Mrs A's medication on 14 October 2015. Ms J compared the electronic medication management system entry to the discharge summary from Hospital 1. CDHB stated that, at the time of these events, its process for a patient transferred from Hospital 1 to Hospital 2, who had undergone a full medicine reconciliation on admission to Hospital 1 (as Mrs A had), was to reconcile the electronic medication management system against one medication information source. CDHB told HDC that the discharge summary was considered an acceptable source because the procedure for the receiving medical team was to chart from the paper medication chart, so the discharge summary was independent of the electronic medication management system.

105. Ms J told HDC that she thought that the dose of citalopram was high for an elderly person, but not unusual for what is seen coming from community practice, so it did

not stand out as an obvious discrepancy. Ms J stated that her normal practice is to wait until the patient is stable before raising issues such as drug optimisation (eg, suggesting Mrs A's citalopram be reduced gradually).

106. Ms McQuoid advised that the 40mg dose of citalopram in an elderly patient should have been investigated further by Ms J. She stated that she would expect a pharmacist to confirm the dose independently, not just pass it on to the medical team to deal with. However, Ms McQuoid advised that some pharmacists would excuse Ms J's failure to investigate further, as occasionally 40mg is used in the elderly. She stated that others "would consider it to be below an acceptable standard of care to make an assumption and not to clarify the dose …".

107. Ms McQuoid also advised that "waiting until the patient is stable to address medicines concerns is not a safe approach when there is a medication error that could itself be preventing stabilisation".

108. I am critical that neither Ms J nor any other staff involved in Mrs A's care at Hospital 2 up to 20 October 2015 queried the 40mg dose of citalopram. I accept that 40mg citalopram is not an unusual dose in adults, but it is higher than is usually seen in elderly patients.

109. I am concerned about Ms J's practice to wait until a patient is stable before raising any issues with medication. As Ms McQuoid advised, the medication itself could be preventing stabilisation. Further, raising an issue does not necessarily mean that the patient's medication will be changed, but allows medical staff making decisions about a patient's medication to be fully informed.

110. Finally, I note Ms McQuoid's advice that a medicines reconciliation should have been carried out when Mrs A was transferred to Hospital 2. Reconciling the electronic medication management system against one medication information source is questionable in terms of patient safety, and this case illustrates its shortcomings. Ms McQuoid advised that transitions of care are well recognised to be high-risk times for medication error.

Medical reviews

111. Between 13 and 20 October 2015, Mrs A was reviewed by geriatric registrar Dr M and consultant general physician and geriatrician Dr H. Mrs A was also cared for by nursing staff and an occupational therapist. Mrs A received 40mg citalopram daily from 14 to 20 October 2015. During this time, she had periods of suspicion, paranoia, delusion, and confusion. None of the staff caring for Mrs A at Hospital 2 up to 20 October 2015 identified the citalopram dosage error.

112. Dr H told HDC that she realised that 40mg citalopram was a high dose, but it is not uncommon to see people on this amount, as it is still a therapeutic and accepted dose. Dr H also stated that, because Mrs A had a multifactorial delirium on a background of cognitive impairment, it was not obvious that the citalopram dose was incorrect. As noted above, Dr H has stated that her interpretation was that the prescription had been

compared against forms in the chart, which had been reconciled from three sources. This was done at Hospital 1.

113. As above, Dr Spriggs advised that citalopram 40mg daily is not an unusual dose in elderly patients, although he also stated that "some patients become more agitated or frankly hypomanic when given citalopram". He advised that "it would be usual practice to ensure a check of the community prescribing record".

114. Dr Spriggs concluded that there was an inadequate drug reconciliation process when Mrs A was transferred to Hospital 2.

Conclusion

115. District health boards are responsible for the operation of the clinical services they provide, and are responsible for any service failures. Mrs A was entitled to have services provided to her with reasonable care and skill. In relation to the prescribing and administration of citalopram, this did not occur. The reasons for this service failure are multifactorial but clear.

116. The following accumulation of apparently innocuous actions or inactions, none of which, taken individually, were a material lapse in care, added up to a failure on behalf of CDHB:

a) The original prescription at Hospital 1 was amended rather than re-written in contravention of the CDHB policy.

b) The prescription was then annotated by the pharmacist to clarify the required dose, but no action was taken to seek to have the prescription re-written.

c) Numerous staff were involved in the administration of the medications, none of whom sought to have the prescription re-written.

d) The house officer who was preparing the discharge summary from Hospital 1 made a transcribing error, having misinterpreted the corrected dose on the prescription (and overlooking the pharmacist's annotation).

e) On admission to Hospital 2, the transcription error became a prescribing error, as the 40mg dose was prescribed based on the Hospital 1 discharge summary.

f) Hospital 2 pharmacist undertook the full medicine reconciliation on Mrs A's admission to Hospital 2 but, while she considered the dose to be high in an elderly patient, she did not investigate further, preferring to wait until the patient was stable rather than alert medical staff to her concerns.

117. In addition to these specific examples, there were numerous opportunities for the error in the dosage to be identified, or at the very least queried, at Hospital 2, from the pharmacist who suspected that the dose was high, to the medical and nursing staff who were caring for Mrs A. Until the error was identified by the nurse practitioner, none of these individuals took the opportunity to question the dose of 40mg despite acknowledgement from various practitioners that it was a high dose for someone of Mrs A's age, and given the fact of Mrs A's deterioration. I am concerned at the lack of critical thinking exhibited in this case.

118. The short point, however, is that a patient who was intended to receive 10mg of citalopram received 40mg. Opportunities to avoid or correct this error were missed. I consider that CDHB failed to provide services to Mrs A with reasonable care and skill in relation to the prescribing and administration of citalopram, and breached Right 4(1) of the Code.

119. I note that CDHB has put in place a system by which a transfer reconciliation will be performed by a pharmacist at the receiving service using additional sources of information. I consider such action to be an appropriate step in light of the issues highlighted in this report.

Disclosure and investigation of prescription error

120. On 20 October 2015, nurse practitioner Ms I from PSE reviewed Mrs A and discovered the prescription error. Mrs A's citalopram dose was immediately reduced to 10mg, and the Hospital 1 discharge summary was corrected. An ECG and blood tests were undertaken and showed no abnormalities. Ms I told HDC that she informed Ms B of the prescription error later that day.

121. The next day, the citalopram error was discussed at an interdisciplinary meeting. Dr H told HDC that she postulated that the increased dose of citalopram may have had an impact on Mrs A's behaviour, and requested that an incident form be completed. CDHB stated that its policy requires incidents to be recorded as soon as practicable, and preferably within 24 hours. It told HDC that a registrar was aware that the incident was to be reported via the incident management reporting system, but this was not completed fully at the time owing to an issue logging into the system. CDHB stated that this was completed following Ms B's and Ms C's complaint.

122. On 22 October 2015, Dr H requested that Dr G contact Ms B to discuss the prescription error, but Dr G was unable to get hold of her. On 23 October 2015, Dr G recorded a discussion of the error with Ms B and Ms C. CDHB stated that, on reflection, it was not appropriate to delegate the discussion of the error to a house officer.

123. Dr Spriggs advised:

> "It would be usual when such errors are identified for the consultant concerned to talk to the patient and family members. This should be done as soon as reasonable and preferably in the form of a face to face meeting."

124. Dr Spriggs also raised concern about CDHB's failure to undertake any internal investigation into this error.

125. I consider that Dr H should have spoken to Ms B and Ms C herself, as soon as she was available to do so, rather than delegate this to a junior officer. I am also concerned at the long delay before an incident report was completed (October 2015 to January 2016), and that the report appears to have been prompted by Ms B's and Ms C's complaint. While a technical issue may have meant that the incident report could not be completed at the time, it should have been completed as soon as possible.

Without an incident report or an internal investigation, learnings from this incident were not maximised.

126. I am critical that this event appeared not to have been taken seriously by CDHB at the time. This is evidenced by both the delay in ensuring appropriate reporting, and the delegation of a serious disclosure conversation to a junior house officer.

Recommendations

127. I recommend that CDHB:

a) Use this case as an anonymised case study for the education of staff, and report back to HDC on this within six months of the date of this report.

b) Conduct a random audit of the transfer reconciliations performed by pharmacists at the receiving service over a three-month period and, within six months of the date of this report, report back to HDC on the effectiveness of the new process in identifying errors in discharge summaries.

128. In the provisional opinion, I recommended that CDHB report to HDC on the implementation of electronic prescribing at Hospital 1. CDHB has informed me of the steps taken to implement electronic prescribing across CDHB.

129. In the provisional opinion, I also recommended that CDHB provide a written apology to Mrs A's family for its breach of the Code. CDHB has now provided a letter of apology.

Follow-up actions

130. A copy of this report with details identifying the parties removed, except CDHB and the experts who advised on this case, will be sent to the Health Quality and Safety Commission, the Medical Council of New Zealand, the Pharmacy Council of New Zealand, Technical Advisory Services, the Pharmaceutical Society of New Zealand, and the New Zealand Pharmacovigilance Centre, and placed on the Health and Disability Commissioner's website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent orthopaedic advice to the Commissioner

The following expert advice was obtained from consultant orthopaedic surgeon Dr Simon McMahon:

> "I have been asked to provide an opinion to the Commissioner regarding [Mrs A], Case Number 16HDC00072 and I have read and agreed to follow the Commissioner's guidelines for independent advisers.
>
> I am an Orthopaedic Surgeon and have been in practice for 23 years. I work part time in private practice in Dunedin and part time at Dunedin Hospital. I have no conflict of interest in regard to this case.
>
> I have been asked by the Commissioner to provide an opinion as to whether the orthopaedic care provided to [Mrs A] at [Hospital 1] was reasonable in the circumstances and why. In particular (and without limiting the scope of this request) I have been asked to comment on the following:
>
> 1. [Dr D] not rewriting the Citalopram prescription when he altered it, as required by CDHB policy;
> 2. Whether any orthopaedic staff, including [Dr F], should have taken any action in regard to [Dr D's] altered prescription;
> 3. [Dr E] listing the incorrect dose of Citalopram on the discharge summary, given the altered prescription, that 1/2 x 20mg was written underneath the prescription on the drug treatment chart and the correct dose was noted on other documentation;
> 4. [Dr F] not identifying the incorrect dose of Citalopram on the discharge summary prepared by [Dr E].
>
> I have been asked to comment on any other aspects of orthopaedic care provided to [Mrs A] that I consider warranting such comment.
>
> For each issue listed above I have been asked to advise:
>
> 1. What the standard of care/accepted practice is;
> 2. If there has been a departure from the standard of care or accepted practice, how significant a departure I consider this is; and
> 3. How the care provided would be viewed by my peers.
>
> I have been provided with and have read the following documents:
>
> 1. Copy of [Ms B] and [Ms C's] complaint [date];
> 2. Copy of [Mrs A's] clinical records from the CDHB;
> 3. Copy of CDHB's response dated 18th March 2016, including attachment;
> 4. Copy of CDHB's response dated 20th June 2016, including attachments;
> 5. Copy of statement from [Dr E] received 12th July 2016;
> 6. Copy of statement from [Dr F] received 27th July 2016;

7. Copy of statement from [Dr G] received 27th July 2016; and
8. Copy of the HDC's Guidelines for Independent Advisors dated June 2016.

Background provided to me by the Commissioner as a summary of events is as follows.

[Mrs A], aged 88 at the time of these events, had a history of Type 2 diabetes, Hypertension and poor vision. On the 28th September 2015, [Mrs A's] General Practitioner commenced her on 10mg daily of Citalopram, for low mood. Possible dementia was also noted.

[Mrs A] was admitted to [Hospital 1] on 9th October 2015 with a fractured right clavicle, right pubic ramus and ribs, following a fall. Orthopaedic House Officer [Dr D] documented in the clinical records that [Mrs A] was taking Citalopram, but did not document a dose. He prescribed 10mg of Citalopram by completing a drug treatment sheet. [Dr D] initially wrote 20mg and then changed this to 10mg by writing a 1 over the 2. This was difficult to read. Canterbury District Health Board prescribing protocol states that any changes to a medication prescription should be rewritten, not altered. A hospital pharmacist later added an annotation to the drug treatment sheet, writing 1/2 x 20mg under [Dr D's] Citalopram prescription. No action was taken in regard to the altered prescription.

The electronic prescribing record on 'Health One' shows the GP prescription of 10mg Citalopram. Documentation from [Mrs A's] rest home shows the dose as 1/2 a tablet of 20mg Citalopram. The medication admission form completed by the hospital pharmacist documented the dose of Citalopram as 10mg. Drug chart reviews were undertaken by [Dr K], Older Persons Health Registrar, on 10th and 13th October 2015 when [Mrs A] developed an acute kidney injury, but no action was taken in regard to the altered Citalopram prescription.

[Mrs A] was transferred to the Older Persons Health — Assessment Treatment and Rehabilitation Service at [Hospital 2] on 13th October 2015. The electronic discharge summary, completed by the Orthopaedic Registrar [Dr E] for consultant orthopaedic surgeon [Dr F] stated 40mg Citalopram, as [Dr E] misread the drug treatment sheet as 40mg. [Dr E] told the HDC that 40mg Citalopram is a relatively common dose for adults so she would not have thought it particularly out of the ordinary at the time.

[Dr G], the admitting House Officer for the [Hospital 2] documented 40mg Citalopram in her admission note and prescribed this via Med Chart. She took the dosage from the discharge summary rather than the drug treatment sheet. The hospital pharmacist reviewed [Mrs A's] medication order on 14th October 2015 but did not identify the prescribing error. The pharmacist did not flag the 40mg dose of Citalopram with the medial team.

[Mrs A] was given 40mg Citalopram daily from 14th to 20th October 2015. On the 15th October 2015, Consultant Physician [Dr H] reviewed [Mrs A's] medication. She told the HDC that she realised that 40mg of Citalopram was a

high dose, but it was still an accepted dose. On the 19th October 2015, [Dr H] reduced [Mrs A's] insulin dose, as well as her Codeine dose as causes of her delirium were being considered. The prescribing error was not identified at this time.

The prescribing error was discovered on the 20th October 2015 when [Mrs A] was reviewed by Nurse Practitioner [Ms I] from Older Person's Health — Psychiatric Service for the Elderly, due to delirium. The dosage was reduced to 10mg until the 3rd November 2015, when [Mrs A] was transferred to the Psychiatric Service for the Elderly and her Citalopram was stopped.

My Opinion:
With regards [Mrs A's] general orthopaedic care.

Aside from the Citalopram prescribing error my review of the notes indicates that [Mrs A's] general orthopaedic care was entirely appropriate. It comprehensively documents a thorough assessment and appropriate management of [Mrs A's] pubic rami, clavicle and rib fractures in association with multiple other pre-existing problems including cognitive and visual impairment and diabetes. This was carried out by the Emergency Orthopaedic Team in conjunction with the Care of the Elderly Physicians.

Regarding the specific questions asked by the Commissioner.

1. *[Dr D] not rewriting the Citalopram prescription when he altered it, as required by CDHB policy.*

Opinion: On the 9th October 2015 as the admitting House Officer for the Acute Orthopaedic Team [Dr D] prescribed on the drug chart [Mrs A's] drugs including Citalopram. I understand that he initially charted 20mg daily but then altered this by writing a 1 over the 2. On viewing the chart this to me looks most like a 1 however it certainly could be misinterpreted as a 2 and perhaps a 4. There is an annotation below [Dr D's] prescription of 10mg daily of Citalopram as 1/2 x 20mg which I understand was made by the pharmacist. I understand it is the protocol for the CDHB that any changes to a medication prescription should be re-written and not altered so this is in breach of that prescribing protocol.

The New Zealand Medical Council prescribing guidelines state that a prescription must be legible and unambiguous. The nurses administering [Mrs A's] Citalopram on the Orthopaedic Ward were able to correctly interpret the prescription as 10mg daily however there was uncertainty in the mind of the pharmacist such that she annotated his prescription. Also when [Dr D's] colleague [Dr E] came to write [Mrs A's] discharge summary on transfer to [Hospital 2] she has incorrectly interpreted the drug chart as indicating that [Mrs A] was on 40mg daily. Thus this prescription has not met the New Zealand Medical Council guidelines of requiring prescriptions to be legible and unambiguous.

My opinion then is that this is a departure from the standard of care and obviously a mistake regarding a drug dosage can have serious consequences.

With regards how this departure from the standard of care would be viewed by my peers, I doubt that there are many doctors in practice who have not done exactly the same thing and this is just another example of the hazards involved with such practice.

2. *Whether any orthopaedic staff, including [Dr F], should have taken any action in regard to [Dr D's] altered prescription.*

Opinion: We do have in place systems which should detect an individual's error and so prevent a patient suffering from that error. In this case the CDHB's prescribing policy is that altered prescriptions should not be accepted but rather they should be rewritten. I would have expected the nursing staff and pharmacy staff directly involved with the administration of these medications to know the CDHB policy and insist that [Dr D] in fact rewrote his prescription completely clarifying the intended dose.

My opinion is that the failure of the nursing and pharmacy staff as well as any other medical staff including [Dr F], who reviewed the drug chart to not insist that [Dr D] rewrite his altered prescription is also a departure from the stand of care.

3. *[Dr E] listing the incorrect dose of Citalopram on the discharge summary, given the altered prescription, that 1/2 x 20mg was written underneath the prescription on the drug treatment chart and that the correct dose was noted on other documentation.*

Opinion: [Dr E] on the discharge summary on transfer of [Mrs A] from [Hospital 1] to [Hospital 2] has listed the dosage of Citalopram as 40mg daily. She looked at [Dr D's] prescription on the drug chart and interpreted this as 40mg daily. As mentioned above the prescription of 10mg daily is not entirely clear or unambiguous and the pharmacist did annotate this prescription as a 1/2 x 20mg because of that. [Dr D's] mistake as well as that by the Orthopaedic Ward staff failing to insist on CDHB policy has led to [Dr E] making a further mistake and misinterpreting the correct dose of [Mrs A's] Citalopram. The correct dose was noted on other documentation but that was not referred to by [Dr E]. I believe that this [is] a departure from the standard of care with the potential for serious consequences. With regards how the care provided would be viewed by my peers, it is once again a very human error which unfortunately the hospital systems have not prevented.

4. *[Dr F] not identifying the incorrect dose of Citalopram on the discharge summary prepared by [Dr E].*

As an Orthopaedic Surgeon I have never prescribed Citalopram and I would expect that would be the same for [Dr F] and the majority of other Orthopaedic Surgeons. If [Dr F] had looked at the discharge summary I would not have expected him to identify that this was an incorrect dose of Citalopram. I understand from the attached documentation that 40mg of Citalopram daily also is not an unusual dose.

> I don't believe that there is a departure from the accepted standard of care on the part of [Dr F]."

The following further expert advice was obtained from Dr McMahon:

> "You have asked me to clarify the seriousness of the departures from standard of care in relation to questions 1, 2 and 3.
>
> I am not sure that I can do this. Certainly these errors have resulted in [Mrs A] receiving an unintended dose of Citalopram. I understand whether this has affected [Mrs A's] long term outcome is debatable. Obviously incorrect dose of drugs can lead to serious problems for the individual concerned …"

Appendix B: Independent general medicine advice to the Commissioner

The following expert advice was obtained from consultant general physician and geriatrician Dr David Spriggs:

> "I have been asked to advise the Commissioner on the medical care provided to the late [Mrs A] at [Hospital 1] and [Hospital 2].
>
> I practise as a General Physician and Geriatrician at Auckland District Health Board and am vocationally registered in Internal Medicine. I have been a Fellow of the Royal Australasian College of Physicians since 1993. I have no conflict of interest in regard to this case and have read and understand the Commissioner's guidelines for independent assessors.
>
> I have been provided with the following documents:
>
> 1. Copy of [Ms B] and [Ms C's] complaint [date];
> 2. Copy of [Mrs A's] clinical records from CDHB;
> 3. Copy of CDHB's response dated 18 March 2016, including attachment;
> 4. Copy of CDHB's response dated 20 June 2016, including attachments;
> 5. Copy of statement from [Dr E] received 12 July 2016;
> 6. Copy of statement from [Dr F] received 27 July 2016;
> 7. Copy of statement from [Dr G] received 27 July 2016; and
> 8. Copy of HDC's Guidelines for Independent Advisors dated June 2016.
>
> My instructions from the Commissioner are to advise whether I consider the medical care provided to [Mrs A] at [Hospital 1] and [Hospital 2] was reasonable in the circumstances, and why. In particular (and without limiting the scope of the request), I have been asked to comment on:
>
> 1. Whether [Dr K], Older Persons' Health registrar at [Hospital 1], should have taken any action when he undertook drug chart reviews on 10 and 13 October 2015, given [Dr D's] prescription had been altered, not rewritten;
> 2. Whether [Dr G], admitting house officer at [Hospital 2], should have identified that the citalopram dose listed on the discharge summary was incorrect. Whether it is usual practice for admitting doctors to rely on the discharge summary when prescribing;
> 3. Whether [Dr H], consultant physician at [Hospital 2], should have identified the citalopram prescription error during her medication review on 15 October 2015; and
> 4. Whether [Mrs A's] delirium was responded to appropriately, including whether the citalopram prescription error should have been identified earlier on this basis.

I have also been asked to comment on any other aspects of the medical care provided to [Mrs A] that I consider warrant such comment.

BACKGROUND:

[Mrs A] was an 88 year old woman living at [a] Retirement Village. On 28/09/15 she was started on Citalopram 10mg/day by her family doctor. On the 09/10/15 she fell while going to the toilet and sustained fractures of her right clavicle, right superior pubic ramus and some ribs. She presented to [Hospital 1] and was admitted to the Orthopaedic Service under the supervision of [Dr F]. [Mrs A's] admission clerk was completed by [Dr D] who was the orthopaedic house officer. When writing up the prescription on the manually completed drug chart [Dr D] initially wrote the dose of citalopram as 20mg. He then 'immediately realised she was on half a 20mg tablet, and so amended that to read 10mg by overwriting a "1" over the original "2"'.

On the day of admission the ward pharmacist, Ms L, performed a medicines reconciliation and I believe it was she that annotated the handwritten prescription by putting '(half x 20mg)' below the dose of citalopram.

During her stay in the orthopaedic ward [Mrs A] received 10mg of citalopram. Sadly she became increasingly agitated and delirious during this admission. A co-lateral history was obtained by the [ward social worker] on the 12/10/15 from the Retirement Village. They stated that [Mrs A's] mobility had been independent prior to the fall but there has been a 'gradual decline in cognition'. She had become more confused and 'unsettled' particularly so at night and at times she had become 'aggressive with medications when staff are giving these and accuses them of drugging her'. [Mrs A] also had times when she believed that her toilet had been moved outside. This history was supported by that given by [Mrs A's] daughter: the social worker's records from that interview state that [Mrs A's] 'personality has changed over the last few months. She's become increasingly unsettled at night'.

Unfortunately, during [Mrs A's] stay on the orthopaedic ward she became increasingly agitated particularly in the evening. On the 10/10/15 [Mrs A] was assessed by the geriatric registrar, [Dr K], who noted the cognitive impairment and the mild rise in creatinine suggesting some dehydration. The registrar suggested that [Mrs A's] diuretic (bendrofluazide) be discontinued and her blood pressure tablets (cilazapril and metoprolol) were to be withheld. [Dr K] further reviewed [Mrs A] on 13/10/15 and arranged for her transfer to [Hospital 2]. That discharge is timed at 1300hrs on 13/10/15. The discharge summary, signed by [Dr E], states that the medications included citalopram 40mg.

[Mrs A] was admitted to [Hospital 2] at 1400hrs on 13/10/15 and was clerked by [Dr G]. [Dr G] transcribed the dose of citalopram from the discharge summary, prescribing 40mg on the electronic prescribing form. [Mrs A] was reviewed that day by [Dr M] (geriatric registrar). She was reviewed two days later by [Dr H] (consultant geriatrician) who was covering at that stage for [Dr O] who was on

leave. Neither the registrar nor the consultant identified the increased dose of citalopram. [Dr H] notes that [Mrs A] was 'unsettled overnight++' and suggested the use of quetiapine.

[Dr H] states in her letter of the 17/06/15 that 'if someone is delirious, I tend not to adjust antidepressant medication as a first line'. [Dr H] goes on to state that 'the ward pharmacist also reviewed the medications the day after admission'. I can see no documentation of this review. [Dr H], who saw [Mrs A] the day after the pharmacist may have performed the reconciliation, had not been made aware of the error in drug prescribing. It was not until 20/10/15 when [Mrs A] was reviewed by the psychogeriatric nurse practitioner, [Ms I], that the error in prescribing the citalopram was identified. [Ms I] says 'Pharmacist review and daughter identifies (sic) citalopram 10mgs on admission'. The citalopram dose was immediately reduced to 10mg, biochemical and cardiac checks were done to ensure that the high dose citalopram had no adverse effects on the sodium in the blood or heart.

On 22/10/15 [Dr G] attempted to contact the daughter but this was not possible and on 23/10/15 [Dr G] discussed the prescribing error with [Mrs A's] daughter. I believe this may have been over the phone. On 27/10/15 [Mrs A] was reviewed by [Dr O], sadly she continued to be delirious and upset, occasionally wandering and aggressive. She was transferred to the Psychogeriatric Unit at [Hospital 2] where her citalopram was eventually discontinued. [Mrs A] could not return to [the retirement village] but was discharged to [another facility] on 15/12/15.

The Health & Disability Commission received a complaint from [Ms B] and [Ms C] ([Mrs A's] daughter [and a friend]) on [date]. They point out that prior to her admission [Mrs A] had been active and happy rating her quality of life at about '8–9/10'. Following her admission they feel that they have 'lost our mother and her quality of life is rated at 0–1/10'. They feel that much of the deterioration was due to the overdose of citalopram. They had been told that 'it would not have occurred if [Hospital 1] had electronic prescribing' and they feel that 'this excuse is woefully inadequate'.

I am told by the Health & Disability Commission that [Mrs A] has since died.

I note that there has been no internal review or investigation into this prescribing error by Canterbury District Health Board.

OPINION:

Specific points:

1. When [Dr K] reviewed [Mrs A] on the 10/10/15 and 13/10/15 on the orthopaedic ward, it would have been usual practice for him to review the prescription. At that stage the handwritten prescription could have been read as 10, 20 or 40mg citalopram. While [Dr K] might have commented on the poor prescribing hygiene I think it is reasonable to accept that he believed the dose being dispensed was 10mg as was the case.

2. When [Dr G] admitted [Mrs A] to [Hospital 2] she transcribed the dose of citalopram from the discharge summary. This would be usual practice for an admitting house officer. However it would be expected that, at some stage, not necessarily on admission, the house officer or pharmacist review the community prescriptions for each patient.

3. [Dr H], on her review of [Mrs A] on 15/10/15, says that she noted the high dose of citalopram. I accept her opinion that this dose is not unusual in older patients. However it would be usual practice to ensure a check of the community prescribing record.

4. [Mrs A's] mental health was clearly declining for some time prior to her admission to [Hospital 1]. I assume that was the indication for the initial prescription by the family doctor of citalopram. There was also clear documentation that her behaviour was declining prior to her fall. In this context it is almost inevitable that any delirium will get worse on admission to hospital. [Dr O's] letter from 18/03/16 identifies the factors that contribute to this including 'pain and associated pain medications, poor vision, change of environment and possible inflammation'. The management of [Mrs A's] delirium on the orthopaedic ward was in keeping with our usual practice. Likewise the management at [Hospital 2] seems satisfactory with the exception of the prescribing error.

Additional points:

1. Poor prescribing.

[Dr D] acknowledges his error in his letter of 17/06/16. The overwriting of the '1' over the '2' is, I believe, the primary error resulting in the excessive dose of citalopram being prescribed when [Mrs A] was transferred to the [Hospital 2]. [Dr D] accepts responsibility for this and apologises unreservedly. There were however many opportunities for this poor prescribing hygiene to be corrected. The pharmacist on the orthopaedic wards identified the issue and annotated the prescription. Reviews of the drug chart by [Dr K] should have identified the potential confusion. Likewise the discharge summary from orthopaedics written by [Dr E] resulted in the transcription error. When the patient was admitted to [Hospital 2] the error was continued. [Dr H] in her note of 16/06/16 states that the prescription was reviewed by the ward pharmacist and my letter from the Health & Disability Commissioner states that this occurred on the 14/10/15. I can find no written contemporaneous evidence that this occurred. Once again this is a missed opportunity.

2. Dose of citalopram.

In their letter to the Health & Disability Commission [Mrs A's] [daughter and friend] feel that 40mg citalopram is greater than the 'maximum dose to be given to the elderly'. In her letter to the HDC, [Dr H] states that she believed the dose of 40mg was possibly appropriate at that time, although she was not aware that the community dose was 10mg. In my experience, a dose of 40mg citalopram is not

uncommonly used for older people with a significant depression. It is usually safe and well tolerated provided care is taken to ensure there are no biochemical or cardiac abnormalities. This care was taken by the staff at both [Hospital 1] and [Hospital 2]. We do, however, recognise that some patients become more agitated or frankly hypomanic when given citalopram and other drugs of the same class. I note conflicting comments from psychiatrists at Canterbury District Health Board about this. [The discharge summary states] as the primary diagnosis 'hypomanic episode induced by high dose citalopram'. The review by Dr N states 'I have never seen citalopram cause the deterioration in cognition ascribed to [Mrs A] by her daughters'.

3. Communication with [Mrs A's] family.

While on the orthopaedic service at [Hospital 1] there is clear documentation of regular contact by the social worker with [Mrs A's] daughter [and friend]. I am however concerned that the prescribing error was noticed and acted on on 20/10/15 but it was left to the house officer, [Dr G], to discuss this with [Mrs A's] daughter on 23/10/15. I recognise the intervening days are weekend days and there was an attempt to contact the family on 22/10/15. It is not clear whether the contact with the daughter on 23/10/15 was face to face or via phone. Open disclosure is an obligation in such cases. It would be usual when such errors are identified for the consultant concerned to talk to the patient and family members. This should be done as soon as reasonable and preferably in the form of a face to face meeting.

4. Follow up investigation.

I can see no evidence that Canterbury District Health Board subsequently contacted the family or initiated any internal investigation.

SUMMARY:

The prescribing of citalopram to [Mrs A] on her admission to the orthopaedic ward by [Dr D] is of poor quality. He has apologised for this and has reviewed his practice. I believe his peers would consider his departure from standard practice to be of **mild severity**.

The failure to transcribe the appropriate dose of citalopram by [Dr E] contributed to this error and I believe her peers would consider this departure from standard practice to be of **mild severity**.

The failure of the house officer [Dr G] to subsequently review the dose of citalopram and reconcile this with the community prescribing record, although unfortunate would not be considered a significant departure from standards.

If there was a formal drug reconciliation process by the ward pharmacist at [Hospital 2] then I would expect [Dr H] and [Dr O] to accept that this has happened and I do not believe their failure to review the prescribing dose was a departure from usual standard. The ward pharmacist however should have made some comment in the clinical record. There is no documentation or further

comment from the Pharmacy Department about this and it is not clear when this occurred and what action the pharmacist took. This would be considered a departure from usual standard of care. I am not able to assess the severity of this departure as I have no information on the usual mechanisms at [Hospital 2] for performing the drug reconciliation.

If no formal drug reconciliation process occurred then it would be expected that [Dr H] and/or [Dr O] review the drugs and their doses. I believe this departure from standard practice to be of **mild severity**.

I find the failure by Canterbury District Health Board to undertake any investigation into this error is surprising. However I have no information from them as to why they chose not to pursue this further.

I am very aware of the devastating effect this illness had on [Mrs A's] family and I wish to extend to them my condolences.

Should you wish for further information please do not hesitate to contact me."

The following further expert advice was obtained from Dr Spriggs:

"Many thanks for your email of 25/10/16. You have included:

1. a statement from [Ms J], Ward Pharmacist at [Hospital 2], dated 03/10/16
2. advice from Canterbury DHB that the pharmacist 'did not document anything in [Mrs A's] notes in regard to the Citalopram dose; she made notes on the ward patient list which is reviewed daily. These lists are not retained'.
3. the General Practitioner's notes from 28/09/15 when 'Citalopram 20mg tab — ½ tablet' was prescribed.

In her statement [Ms J] acknowledges that she does not recollect the particulars of [Mrs A's] prescribing. She states that the 'standard operating procedure, and my usual practice, would be to compare the medication charting [at [Hospital 2]] to the discharge summary produced at [Hospital 1]'. She 'would then wait until the patient was stable … before raising other issues such as drug optimisation'.

Opinion:

Drug reconciliation is a mechanism for reducing prescribing errors. The standard practice for drug reconciliation is for the pharmacist (or other health professional) to check the prescribed drugs against two independent sources. This may include written documentation such as a discharge summary but this should be supplemented by a check against the electronic health information sharing record, the patient's own community dispensed drugs or other independent source.

An essential part of drug reconciliation is the formal record of the process which should be part of the patient's hospital notes. Often this is achieved by having a separate drug reconciliation form. Such a form was not in use at [Hospital 2] and

it appears that only informal documentation was performed on 'the patient list' which is not part of the formal clinical record.

In view of the above it is my opinion that there was an inadequate drug reconciliation process when [Mrs A] was transferred to the [Hospital 2]. I believe it would be appropriate for the Health & Disability Commission to request the opinion of a pharmacist on these matters as I can not give further advice on the appropriate standard of care in this matter.

I note that [Dr H] in her letter of 17/06/15 states that 'the ward pharmacist also reviewed the medication the day after admission'. It is not clear whether [Dr H] understood the limitations of this review or whether she considered this to be a formal drug reconciliation process. Likewise [Dr O] may or may not have believed that the prescribed dose of 40mg citalopram had been appropriately reconciled. If these two doctors had good reason to believe that a formal reconciliation process had checked the dose of citalopram then their failure to review the dose would not be considered a departure from the usual standard. If, on the other hand, the pharmacist's review was never intended or considered to be a 'reconciliation' of the prescribed drugs, [Dr H] and [Dr O] should have reviewed the indication and dose of all [Mrs A's] prescribed medications. Their failure to do so would be a minor departure from accepted standards and this would be viewed with mild disapproval by their colleagues.

Should you require any further information please do not hesitate to contact me."

Appendix C: Independent pharmacy advice to the Commissioner

The following expert advice was obtained from pharmacist Pauline McQuoid:

"• I have been asked to provide an opinion to the Health and Disability Commissioner on case number 16HDC00072. I have read and agree to follow the Commissioner's guidelines for independent advisors.

I am registered as a pharmacist in NZ. I have an undergraduate Diploma in Pharmacy, a Postgraduate Master of Pharmacy (Otago) and two Postgraduate Certificates (one in Supplementary Prescribing and one in Clinical Pharmacy (Prescribing)). I have 26 years work experience as a pharmacist; 18 years in hospital pharmacy (including 3 years as Pharmacy Manager at Capital and Coast DHB and 5 years in the UK) and 8 years in primary care.

I have been asked to comment on:

1. Whether the [Hospital 1] pharmacist who wrote ½ x 20mg underneath [Dr D's] prescription of 10mg citalopram should have taken any other action, given [Dr D's] prescription had been altered, not rewritten;
2. Whether the [Hospital 2] pharmacist who reviewed [Mrs A's] medication order on 14 October 2015 should have raised concerns about the 40mg dose with the medical team;
3. Whether the [Hospital 2] pharmacist who reviewed [Mrs A's] medication order on 14 October 2015 should have identified the citalopram prescription error;
4. The adequacy of the relevant policies and procedures in place at CDHB at the time of the events complained of; and
5. The adequacy of the relevant policies and procedures currently in place at CDHB, including any further changes that you consider may be appropriate.
6. Any other aspects of the pharmacy care provided to [Mrs A] that warrant such comment.

For each issue, I have been asked to advise:

1. What the standard of care/accepted practice is;
2. If there has been a departure from the standard of care or accepted practice, how significant a departure is it; and
3. How the care provided would be viewed by my peers.

1. Should the [Hospital 1] pharmacist who wrote ½ x 20mg underneath [Dr D's] prescription of 10mg citalopram have taken any other action, given [Dr D's] prescription had been altered, not rewritten?

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

It is clear from nationally recognised guidance that [Dr D] should have rewritten (not overwritten) the citalopram dose:

i. 'If a mistake has been made, cross the mistake off completely and re-prescribe again on a new line.' The National Medication Chart User Guide Health Quality & Safety Commission (HQSC). Published October 2012.

ii. 'Medication details are documented in a legal, legible and consistent manner.' HQSC Medication Charting Standards: Safe Medication Management Programme; Standard 2, Version 2 (published January 2011).

The pharmacist has annotated the prescription by writing '1/2 x 20mg'. In this case, the annotation serves two purposes — firstly, to clarify the doctor's overwritten dose and secondly, to inform the nurses to use a 20mg tablet i.e. there is not a 10mg tablet. There is no specific obligation on the pharmacist to get the prescription rewritten.

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

The pharmacist has followed standard accepted practice by annotating the medication chart directly below the dose with '1/2 x 20mg'.

c. How would the care provided be viewed by pharmacist peers?

Annotating the medication chart as the [Hospital 1] pharmacist has done would be considered standard practice. Some pharmacists would attempt to get the prescription rewritten by a prescriber. This is also acceptable practice but is often not undertaken due to logistics i.e. time constraints and the need to prioritise tasks, difficulties contacting surgical doctors as they are often in theatre. Another barrier to pharmacists asking doctors to rewrite prescriptions is the negative response which is often encountered when asking them to carry out tasks which they perceive as minor or unimportant.

2. Should the [Hospital 2] pharmacist who reviewed [Mrs A's] medication order on 14 October 2015 have raised concerns about the 40mg dose with the medical team?

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

The 40mg dose of citalopram in an elderly patient should have been investigated further by the [Hospital 2] pharmacist. Two of the standard medication references used in NZ i.e. Medsafe Data Sheet (www.medsafe.govt.nz) and the NZ Formulary (www.nzf.org.nz) state that the usual maintenance dose in the elderly is 20mg daily. NZ Formulary 'Citalopram: Adult dose 20mg once daily, increased if necessary in steps of 10mg daily at intervals of 2–3 weeks; maximum

40mg daily; elderly 10mg once daily, increased if necessary after 2–3 weeks to a maximum of 20mg daily.' Although the 40mg dose is an acceptable dose in a standard adult, its use in an elderly patient is out of the ordinary and requires investigation to confirm that the higher dose is intentional. I would expect the pharmacist to confirm this independently, not just to pass it on to the medical team to deal with. If the pharmacist found a discrepancy, they should formulate a recommendation which they would then present to the medical team rather than just alerting the medical team.

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

I consider it to be a significant departure from good clinical practice for a pharmacist not to confirm independently that the 40mg dose was correct. I note that the letter from CDHB to HDC dated 20/6/16 states that *'the ward pharmacist agreed that the dose was high for an elderly person, but was certainly not unusual for what pharmacists see coming from community practice, and so it was not a red flag for her at the time of [Mrs A's] transfer. The ward pharmacist's usual practice would be, once the patient had been on the ward for a couple of days and was stable, to flag this to the medical team as an issue and suggest reducing the dose slowly during the patient's stay. However in this instance [Mrs A's] condition was not stable and the clinical judgement was to not make any changes to what was thought were her usual medications until she had stabilized.'* Although the pharmacist has recognised that 'the dose is high for an elderly person', she has relied on what she has seen in the past (custom and practice) rather than using standard reference sources (NZ Formulary and the Medsafe datasheet) to determine whether to investigate the dose or not. To help guide us as to whether this is an acceptable standard of practice, it is helpful to refer to the Pharmacy Council of NZ Competence Standards which outlines areas in which pharmacists must demonstrate competency in order to be registered to practise in NZ:

- COMPETENCY O1.3 REVIEW AND MANAGE PATIENT'S MEDICINE THERAPY
  - Behaviour O1.3.1: Identifies, prioritises and works to resolve medicines management issues
    - O1.3.2: Applies evidence-based guidelines or protocols to reconcile and review a patient's medicine therapy.
    - O1.3.3 Uses professional judgement to determine whether changes to the medication treatment regimen are needed to improve safety, efficacy or adherence.

The way I interpret this is that we as pharmacists are expected by our professional registration organisation to use evidence to review medicines

rather than relying on what is usually seen to guide our professional judgement.

The pharmacist's statement is internally inconsistent. Despite saying that the dose was high but not unusual, she goes on to say that she would wait until the patient was stable then suggest to the medical team that the dose be reduced gradually. This implies that she did not think the dose was appropriate (otherwise why would she suggest reducing it?) but that it didn't raise a red flag for her and she wasn't concerned enough to look into it. Therefore, she has said that she wasn't sufficiently concerned about it to look into it but she was concerned enough about it to suggest reducing it.

c. How would the care provided be viewed by pharmacist peers?

There would most likely be a mixed response and it may not be possible to achieve consensus. Some pharmacists would excuse it by saying that the 40mg dose is occasionally used in the elderly. Others such as myself would consider it to be below an acceptable standard of care to make an assumption and not to clarify the dose, despite the dose being higher than those listed in two of the standard reference sources available in NZ.

3. Should the [Hospital 2] pharmacist who reviewed [Mrs A's] medication order on 14 October 2015 have identified the citalopram prescription error?

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

The standard or care is for a medicines reconciliation to have been carried out when [Mrs A] was transferred to [Hospital 2].

'3.2.1 The organisation will ensure as a minimum that medicine reconciliation is performed at vulnerable points for transfer of care, e.g. admission to hospital, transfer from emergency department or intensive care to home or ward, transfer or discharge to home, aged residential care facility or another hospital. Medicine reconciliation should be completed within 24 hours of transfer of care.' HQSC Medicine Reconciliation Standard VERSION 3, SEPTEMBER 2012

If a medicines reconciliation was unable to be carried out within 24 hours of transfer or care, I would still expect the pharmacist to reconcile the medicines as soon as they were able to. I note that the [Hospital 1] pharmacist had carried out a medicines reconciliation and it would be usual practice for a ward pharmacist to refer to that if it was available, however I do not know what documentation was sent with [Mrs A] when she was transferred from [Hospital 1] to [Hospital 2]. Even if the ward pharmacist decided not to carry out a medicines reconciliation at all, I would still expect them to investigate the 40mg citalopram dose (as explained in the previous answer).

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

Although medicines reconciliation is accepted as being good clinical practice, staffing shortages are common in hospital pharmacies and the success rate for carrying out medicines reconciliations within the recommended 24 hour time frame is highly variable. However, [Mrs A] was in [Hospital 2] for a week before the medication error was detected and this is sufficient time for a medicines reconciliation to be carried out.

c. How would the care provided be viewed by pharmacist peers?

As with Question 2c above, there would most likely be a mixed response. Some would say that their department is too short-staffed to do medicines reconciliation for all patients. Other such as myself would find it unusual not to complete a medicines reconciliation within a week of being admitted to a ward.

4. The adequacy of the relevant policies and procedures in place at CDHB at the time of the events complained of:

The CDHB Medication and Fluids Prescribing policy included in the information I received was dated December 2015 so it is not clear whether this was in place at the time of the incident. The policy states clearly under 'Inpatient prescriber responsibilities' that 'Each charting must be legible' and 'Charting should NOT be modified, the original charting should be cancelled and the drug regimen recharted completely to avoid misinterpretation or error.'

In my opinion, the policy is clear and adequately sets the expected standard of care. What is not clear is how new staff are made aware of the policy.

5. The adequacy of the relevant policies and procedures currently in place at CDHB, including any further changes that you consider may be appropriate.

As stated above, the policy is clear and adequate.

Are there any other aspects of the pharmacy care provided to [Mrs A] that warrant comment?

- It is highly commendable that the first medicines reconciliation was carried out within 24 hours of [Mrs A's] admission to [Hospital 1] on 9/10/1[5].

On a wider level, I have significant concerns about the dismissive attitude from the doctors and pharmacist towards the citalopram dose. The lack of awareness that 40mg is outside the licensed dose range for the elderly amongst specialists working in health of older people and mental health is worrying. The lack of acknowledgement or acceptance that 40mg is outside the licensed dose range for the elderly suggests that lessons have not been learned from this medication error. The assertion that 10mg is ineffective is irrelevant in this case as it misses the

point that the 40mg dose should have been recognised as being outside the licensed dose range in the elderly and as such, should have been specifically investigated rather than accepted without question. The dismissal of the 20mg maximum dose recommendation for citalopram as being for cardiac reasons fails to recognise the altered drug disposition in the elderly, who can have up to twice the level of exposure to citalopram due to age-related changes in body composition (affecting distribution of the medicine) and changes in metabolic capacity (liver and kidney function) which affects the elimination of the medicine. At the time of the incident [Mrs A] was 88 years old, had very poor kidney function and low bodyweight, all of which increases frailty and therefore susceptibility to the adverse effects of medicines. Although citalopram is generally thought to be safe in people with poor kidney function, there is very little information on its use in severe renal impairment (which [Mrs A] had) and this may have compounded the effects of the high dose. This does not appear to have been recognised by any of the specialists involved in [Mrs A's] care.

Dr N:

'… we do not recommend doses of 10mg citalopram in the vast majority of patients of any age as there is no literature to support the effectiveness of citalopram. The literature reports the effective doses to be 20–40mg citalopram for depression and anxiety disorders at all ages. Whilst there are recommendations in existence advising caution with doses above 20mg in the elderly for cardiac reasons, psychiatrists treating the elderly often use doses of citalopram above 20mg per day; we just check the ECG to be sure there are no cardiac issues (which there seldom are).'

[Dr H]:

'When I initially reviewed [Mrs A's] medications on the first ward round, I realised that the 40mg was a high dose, but recognised that this is not an abnormal amount in people with depression. It is not uncommon to see people on this amount as it is still a therapeutic and acceptable dose.' 'Although citalopram 40mg is considered at the higher end of the range, it is a dose used in treating depression. The dose recommendation used in the Preferred Medicines List used by Canterbury DHB is listed as 20–60mg daily. There is no literature to support the effectiveness of 10mg of citalopram in treating depression, although it is often a dose we start on and increase if the medicine is tolerated. The literature supports effective doses to be 20–40mg citalopram for depression and anxiety in all ages. The recommendation that advises caution with doses above 20mg in the elderly are for cardiac reasons; doctors treating the elderly do use doses above 20mg, guided by ECG to ensure that there are no cardiac effects.'

Most of the second statement from [Dr H] is paraphrased from Dr N's statement above. [Dr H] also refers to using MIMS as a prescribing reference — although widely used in NZ this is not a reliable source of prescribing advice and NZ Formulary is preferred.

[Dr E]: 'A dose of 40mg of citalopram is a relatively common dose in adult patients and hence I would not have thought it particularly out of the ordinary when I transcribed that dose in error. However, with the benefit of hindsight I accept a dose of 40mg should be used with caution in elderly patients due to the risk of causing low sodium and potential cardiac side effects.'

[Dr E] is incorrect — 40mg citalopram is not a 'relatively common' dose in adults — it is not unusual but it is certainly not common. However, [Mrs A] was not a typical adult patient — she was a frail, elderly lady.

Other issues which I consider to be noteworthy:

- [Dr E] made the prescribing transcription error despite the medication chart having been clearly annotated '½ x 20mg' barely 2 millimetres below the overwritten dose.
- [Dr E] increased paracetamol dose to 4g/day despite noting that the dose had been deliberately prescribed as 3g/day due to lower body mass index. The dose of 3g daily was appropriate for an elderly lady with renal impairment and low body weight.
- [Dr D] states he was on-call the weekend of [Mrs A's] admission to the ward and because it was busy there was limited time to complete the required tasks. However, [Mrs A] was admitted in the early hours of Friday morning and [Dr D] saw her on the ward at 11am on Friday morning.
- Although the acute-on-chronic renal impairment is mentioned a few times in the medical records, there does not appear to be a clear recognition of the severity of it nor of the effect this acute deterioration in renal function could have on [Mrs A's] ability to metabolise her medication and the potential consequences of accumulating those medicines. The pharmacist Ms L calculated [Mrs A's] renal function using bloods from 12/8/15 and recorded this on the back of the medication admission form, along with [Mrs A's] weight and height. [Mrs A's] estimated renal function was calculated as 25ml/minute using the creatinine result from these bloods (98). This is classified as stage 4 chronic kidney disease and is described as severe renal impairment. When the blood results taken on admission became available on 10/10/15, the doctor noted the deterioration in renal function (creatinine 142) and amended the medications slightly although there was no mention in the medical notes of the estimated renal function. Using the result of creatinine 142, the estimated renal function can be calculated as being 17ml/min, a 33% decrease compared to her result from 12/8/15. This decline in renal function could be expected to affect [Mrs A's] insulin (resulting in hypoglycaemia, which is documented repeatedly throughout the course of the admission and resulted in progressive reductions in her insulin in a reactive manner) and codeine (which is generally recommended to be avoided in severe renal impairment as there is an increased risk of adverse effects such as nausea, vomiting, constipation, dry mouth, palpitation, hallucinations, dysphoria, mood changes, dizziness, confusion, drowsiness, sleep disturbances, vertigo, urinary retention). Later in the admission there are

several recommendations to consider zoledronic acid to treat [Mrs A's] osteoporosis despite the use of this medicine being contraindicated if renal function is less than 35ml/minute. On 1/12/15 metformin was started for [Mrs A's] diabetes as she was refusing all insulin; on 11/12 the metformin dose was increased and she was discharged on it on 29/12/15. Metformin is contraindicated if renal function is less than 30ml/minute. These examples would indicate insufficient attention to detail being paid to the safe and appropriate dosing of medications in a frail, elderly patient with renal impairment.

- Serotonergic effects of increased citalopram dose: the specialist doctors involved with [Mrs A's] care all agreed that the cause of her cognitive decline was most likely multi-factorial and that it was unlikely that the increased dose of citalopram caused her delirium. I agree that the cause of her cognitive decline was multi-factorial but I also note that there was no documented consideration of the possible symptoms of serotonin toxicity. The following information is taken from the NZ Formulary website:

Serotonin Syndrome

Serotonin syndrome (or serotonin toxicity) is a potentially life threatening drug reaction that results from excess serotonergic activity at central nervous system and peripheral serotonin receptors. It can develop from excessive doses of a single serotonergic drug but more commonly occurs when combinations of serotonergic drugs are used together, particularly when these drugs act to increase serotonin via different mechanisms. Examples of drugs that can cause serotonin syndrome include antidepressants (especially SSRIs and clomipramine), lithium, St John's wort, pethidine, tramadol, and linezolid. Serotonin syndrome can arise when switching between antidepressants without an adequate 'washout period'.

The excess serotonin activity produces a triad of specific symptoms including neuromuscular, autonomic and mental status changes. The symptoms may range from barely perceptible to fatal and include:

Neuromuscular effects: hyperreflexia, myoclonus, tremor, ataxia, rigidity, restlessness, nystagmus, trismus.

Autonomic effects: shivering, sweating, fever, hypertension, tachycardia, nausea, diarrhoea, salivation, tachypnoea.

Mental status changes: confusion, hypomania, agitation, headache, coma.

Onset of the syndrome can occur within a few hours of drug initiation or dose change, or can occur after several weeks.

> I hope this information is helpful for the investigation. Please do not hesitate to contact me if you require further information or clarification."

The following further expert advice was obtained from Ms McQuoid:

> "I wouldn't change anything in my report after reading the attached letter and statement. If anything, it confirms that CDHB Pharmacy's internal policies should be reviewed as both practices are questionable in terms of patient safety. Firstly, 'standard practice is not to review the medication history form or community records for a transfer … as this would have been done on admission to [Hospital 1].' Clearly this case illustrates the shortcomings of this policy. Transitions of care are well-recognised to be high-risk times for medication error. This includes transfers within and between hospitals. Secondly, waiting until the patient is stable to address medicines concerns is not a safe approach when there is a medication error that could itself be preventing stabilisation. I have worked in hospital pharmacy for 20 years and fully appreciate how busy it is, however medication safety is a very important part of the job as there is a high incidence of medication errors in hospital. Part of the reason medication errors go undetected is because health professionals in hospital do not find out the background and context behind prescribing decisions."

Appendix D: Hospital 1 prescription of citalopram

Drug, Dose and Directions (capital letters)	Date	Time
CITALOPRAM	9-10	0700
10mg OD (1/2 x 20mg)	Route PO	0800
	Stop date & Initials	1200
Indication		1400
Signature	Pharmacy code	1700
Pager		
Surname (capitals)		2100

Names have been removed (except Canterbury DHB and the experts who advised on this case) to protect privacy. Identifying letters are assigned in alphabetical order and bear no relationship to the person's actual name.