Registered Nurse, RN B

Counties Manukau District Health Board
(now Te Whatu Ora Counties Manukau)

Registered Nurse, RN C

A Report by the

Deputy Health and Disability Commissioner

(Case 19HDC01949)

Health and Disability Commissioner
Te Toihau Hauora, Hauātanga

Contents

Executive summary

1. This report concerns the care provided to a woman who received regular haemodialysis treatment at Middlemore Hospital (Te Whatu Ora Counties Manukau). On the morning of 7 October 2019, the woman was cared for by a nurse, RN B, who assisted the woman by providing her with pain relief and anti-nausea medication before her dialysis began. The woman required the controlled drug fentanyl for her on-going pain relief.

2. After the woman's medication had been removed from the dispensing machine and checked by a second nurse, RN C, the medication was taken to the woman's ward and put aside prior to being prepared for administration. Te Whatu Ora Counties Manukau's policy required controlled drugs to be checked by a second nurse prior to administration.

3. As RN C was busy with other patients that morning, he instructed RN B to call for him when he was ready to administer the fentanyl. However, during the morning, RN B saw that RN C was busy so he decided to administer the woman's anti-nausea medication first before asking for RN C's help. Unfortunately, RN B then mistakenly mixed up the anti-nausea medication and the fentanyl, and administered the wrong medication in an incorrect dose (greater than usual) for the woman.

4. RN B discovered his error shortly afterwards and immediately told the woman and senior staff. The woman was then monitored by multiple nurses and clinicians. The ward doctor discussed the woman's condition with her regular nephrologist, who prescribed her with naloxone to counteract the fentanyl. However, this resulted in a "cold-turkey" withdrawal for the woman, and caused her significant pain. The woman was observed to be significantly distressed, but this was not documented adequately.

5. Sometime later, the woman's nephrologist reviewed the woman further and reintroduced fentanyl and prescribed further pain-relief medication. The woman expressed concern that her care was not escalated to the Acute Pain Service during this time. The woman's pain eventually settled, and she was transferred to the Emergency Department for monitoring. She was discharged later that day.

Findings

6. The Deputy Commissioner found RN B in breach of Right 4(1) of the Code for failing to prepare the fentanyl immediately after removing it from the dispensing machine, and not having it checked by RN C prior to administration. This led to the administration of an overdose of fentanyl to the woman. The Deputy Commissioner also found that the woman's respiratory rate was not monitored, and that RN B did not document the incorrect administration of fentanyl in the woman's medication chart, and did not provide a timeline of her observations after the medication error.

7. The Deputy Commissioner was critical that RN C did not double-check the preparation of the fentanyl as soon as it was removed from the dispensing machine. The criticisms of RN

B's care were also applicable to RN C, although this was mitigated by the fact that RN C had told RN B to find him before he administered the fentanyl.

8. The Deputy Commissioner found Te Whatu Ora in breach of Right 4(1) of the Code. As a result of the woman's complaint, it was apparent that the nursing staff on the dialysis unit had been inappropriately removing medication from the dispensing machine before it was required because the dispensing machine was located in another ward. In addition, multiple staff did not document the woman's care and observations adequately, and the woman's pain was not assessed using an objective pain assessment tool, which may have led to the earlier administration of medication to reduce the woman's pain.

9. The Deputy Commissioner considered that the administration of naloxone was acceptable and reasonable in the circumstances, despite this causing the woman severe pain. It was also considered reasonable not to escalate the woman's care to the Acute Pain Service.

Recommendations

10. The Deputy Commissioner recommended that RN B provide a written apology to the woman and undertake training on documentation and safe administration of medication.

11. The Deputy Commissioner recommended that Te Whatu Ora Counties Manukau provide a written apology to the woman for its breach of the Code; amend the dialysis observation chart by including respiratory rate monitoring; undertake an audit of compliance by nursing staff with its opioid and controlled drug policies when preparing and administering opioid medication; undertake an audit of compliance by nursing staff in documenting detailed progress and observation notes; consider using an objective pain assessment scale; and provide evidence that a medication dispensing machine has been placed in the dialysis unit.

12. The Deputy Commissioner also recommended that Te Whatu Ora Counties Manukau provide training and education to ensure that all clinical staff in the dialysis unit are aware of Te Whatu Ora's naloxone administration policy and expected standards for documentation.

Complaint and investigation

13. The Health and Disability Commissioner (HDC) received a complaint from Mrs A about the services provided by Counties Manukau District Health Board (CMDHB) (now Te Whatu Ora Counties Manukau)[1] and Registered Nurse (RN) B at the dialysis unit[2] at Middlemore Hospital (CMDHB). The following issues were identified for investigation:

- *Whether Counties Manukau District Health Board provided Mrs A with an appropriate standard of care on 7 October 2019.*
- *Whether RN B provided Mrs A with an appropriate standard of care on 7 October 2019.*

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

15. The parties directly involved in the investigation were:

Mrs A	Complainant/consumer
RN B	Provider/registered nurse
CMDHB	Provider/district health board

16. Further information was received from:

RN C	Registered nurse/second checker
Dr D	Renal registrar
Dr E	Renal physician/clinical head

17. Also mentioned in this report:

NPI F	Nurse practitioner intern
Dr G	Senior medical officer

18. Independent advice was obtained from RN Karla Martin (Appendix A) and renal physician Dr Ian Dittmer (Appendix B).

[1] On 1 July 2022, the Pae Ora (Healthy Futures) Act 2022 came into force, which disestablished all district health boards. Their functions and liabilities were merged into Te Whatu Ora|Health New Zealand. All references in this report to CMDHB now refer to Te Whatu Ora Counties Manukau.
[2] The dialysis unit provides renal services.

Information gathered during investigation

19. This report concerns the care provided to Mrs A by RN B[3] and CMDHB on the morning of 7 October 2019, when Mrs A was mistakenly administered with the wrong dose of fentanyl[4] (a synthetic opioid medication used for pain relief). Subsequently, Mrs A was administered naloxone[5] by another clinician to counter the effects of the fentanyl. Mrs A described this as going "cold-turkey",[6] which caused her a great deal of pain and distress.

Background

20. At the time of events, Mrs A, aged in her fifties, was a regular haemodialysis patient at Middlemore Hospital. Mrs A had a complex medical history with multiple co-morbidities, including type 2 diabetes, acid reflux,[7] obstructive sleep apnoea, seizures, and hypertension. In particular, Mrs A was suffering from end-stage chronic kidney disease,[8] which required routine haemodialysis[9] at Middlemore Hospital.

21. Mrs A was prescribed opioid medication (fentanyl and OxyNorm[10]) for chronic pain relief. She was opioid dependent, and it was documented in the progress notes that often she would take pain relief and/or anti-nausea medication before the haemodialysis commenced.

7 October 2019 — routine haemodialysis at Middlemore Hospital

7– 7.30am

22. At 7am on 7 October 2019, Mrs A presented to the dialysis unit at Middlemore Hospital to receive her thrice-weekly haemodialysis.

23. RN B was assigned to the unit and looked after Mrs A with RN C[11] assisting in the unit. RN B told HDC that he had started work in the unit six months previously, and that the usual practice for the registered nurses in the dialysis unit was to arrive around 6.30am before the patient handover started at 7am.

24. CMDHB told HDC that normally there were eight nurses on a shift with 20 dialysis patients. The Shift Coordinator allocated two to three patients to each nurse for the shift. Each

[3] RN B registered as a nurse in 2017 and was employed by CMDHB.
[4] Fentanyl is a powerful synthetic opioid used to relieve moderate to severe pain. It is a controlled drug.
[5] Naloxone is used to reverse an opioid overdose rapidly.
[6] "Cold turkey" refers to the abrupt cessation of a substance on which the user is dependent, and the resulting unpleasant experience.
[7] Gastroesophageal reflux disease (GERD) — a chronic disease in which stomach acid flows back into the food pipe and irritates the lining.
[8] End-stage chronic kidney disease (end-stage renal disease) describes the stage at which the patient's kidneys have failed and the patient requires dialysis or a kidney transplant to survive.
[9] Haemodialysis is a treatment to filter wastes and extra fluid from the blood of a person whose kidneys are not working normally. Each haemodialysis treatment usually lasts about four hours.
[10] OxyNorm is an opioid medication used to treat moderate to severe pain.
[11] RN C had been employed by CMDHB since 2016. At the time of the incident, RN C had been working in the dialysis unit for six months.

patient undergoing dialysis would be allocated a primary nurse or a clinical renal physiologist to oversee the dialysis.

25. RN B was the primary nurse for Mrs A on 7 October, and was responsible for connecting and disconnecting her dialysis machine, undertaking observations and monitoring during her dialysis session, giving medications, and, if required, attending the monthly medical rounds with a renal consultant.

26. CMDHB told HDC that RN C was also a primary nurse for allocated patients on the shift, and his role in respect of Mrs A's care was to support RN B where required.

Usual routine for nurses pre-dialysis

27. The nurses' usual routine would be to prepare the Pyxis machine (an automated medication dispensing system),[12] review the patient notes, and prepare the medication and dialysis charts. Once patients had arrived at around 6.45am, the registered nurses would assess the patient's baseline data[13] and overall appearance, and review the patient's presented weight against their goal weight and determine how much fluid to remove.[14]

28. RN B told HDC that Mrs A preferred to be connected to the dialysis machine before taking her medications, to ensure that she was comfortable and settled during the dialysis treatment. Mrs A's usual medications were OxyNorm, ondansetron,[15] and fentanyl.

29. At around 6.45–7am on 7 October, RN B asked RN C to assist in checking out Mrs A's OxyNorm elixir,[16] intravenous (IV) ondansetron, and IV fentanyl from the Pyxis machine. As per usual practice, the medication was brought to the patient's unit unprepared (as patients were not present in the unit before 7am).[17] Both RN C and CMDHB stated that the practice of removing medications from the Pyxis machine before patients arrived was in place before RN B had started working for CMDHB.

30. The renal ward is located on one side of the building, and the Pyxis machine is located in the centre of a ward that is closer to the main entrance of the dialysis unit. The Charge Nurse Manager[18] had asked the nursing staff in the dialysis unit to remove the medication prior to 7am to avoid queues and delays caused by the two areas sharing the same Pyxis machine.

[12] The Pyxis machine provides clinicians with a central point for distributing and accessing drugs in the hospital.
[13] Weight and vital signs, including blood pressure and pulse.
[14] Fluid can build up between dialysis treatments, and patients may experience fluid overload (hypervolemia). Retention of extra fluid can increase blood pressure.
[15] A medication used to prevent nausea and vomiting.
[16] Oral liquid.
[17] RN C stated that patients could enter the unit only after 7am, and haemodialysis started after the handover at around 7.20–7.30am.
[18] The Charge Nurse Manager was unnamed in the response provided by CMDHB.

31. CMDHB was made aware of this practice during its internal review of Mrs A's complaint. CMDHB stated that the practice did not follow its policies and procedures (discussed further below), as it was unacceptable to:

a) Remove the quantity of medication to supply a patient for more than a single dose;

b) Take the medication unprepared in the ampoule to the dialysis machine; and

c) Remove the medication significantly earlier than it was due to be administered.

32. CMDHB told HDC that the normal practice was for the morning dialysis staff to remove only medication for patients who arrived at 7.00am, and not for other later shifts. On this day, RN C and RN B removed medication only for Mrs A.

Preparation of fentanyl

33. CMDHB told HDC that any removal of medication from the Pyxis machine is recorded automatically when a nurse logs on to remove medication. CMDHB provided HDC with the medication log, which showed that both a fentanyl patch and IV fentanyl were removed by RN B and RN C at 7.04am, which was around 30 minutes before the medication was due to be administered to Mrs A. In the Pyxis machine, the fentanyl for IV administration is stored as 100mcg in a 2ml ampoule.[19] The ondansetron was removed at the same time as the fentanyl.

34. RN B told HDC that he undertook the following steps when preparing Mrs A's medication that morning:

a) He drew up the OxyNorm into a syringe.

b) He did not draw the ondansetron (4mg) and IV fentanyl (100mcg) from the 2ml ampoules into syringes.

c) He placed the medication into an aluminium foil dish, took it to Mrs A's dialysis space, and placed it on top of the dialysis machine.

35. The syringe for the fentanyl was not labelled as "fentanyl", as required under the Intravenous Opioid (Adult) Protocol (see Appendix E), and the foil dish contained several syringes when the nurses took it to the dialysis unit.

36. RN C asked RN B to call him when he was "ready to prepare and administer the medication". CMDHB agrees with the events above, and that RN C advised RN B to call him to double-check the controlled drug when he was ready to administer it.

[19] An ampoule is a small sealed glass capsule containing the liquid medication.

Administration of IV fentanyl

37. Mrs A arrived at the unit around 7am, and RN B observed her to be "stable, alert and oriented on arrival". Before the haemodialysis commenced, routine pre-dialysis observations at 7.30am showed Mrs A's vital signs to be stable.[20]

38. Mrs A told RN B that she did not want any more OxyNorm because she had vomited earlier that morning when she had taken her OxyNorm. She asked RN B to administer the ondansetron before giving her the intravenous fentanyl.

39. Fentanyl is a controlled drug[21] that must be counter-checked by another nurse prior to administration. RN C was intended to be the counter-checker that day, but when RN B went to find RN C, he saw that he was "busy commencing dialysis treatment for his patients in another area of the dialysis unit". Accordingly, RN B decided to administer the ondansetron first, to keep Mrs A settled and comfortable, with the intention of seeking RN C afterwards to double-check the fentanyl before administration.

40. CMDHB agrees with the events above, as RN C was not called to complete a second check because, as per RN B's account, Mrs A asked to be given her ondansetron as soon as she was connected to the dialysis machine, and RN C was busy connecting his patients to the dialysis machine.

7.30–7.50am

41. At around 7.35am, RN B picked up the fentanyl ampoule from the aluminium dish, thinking it was the ondansetron, and drew up the entire amount in the ampoule (100mcg) (the correct dose would have been 10–20mcg of fentanyl) into a syringe. The fentanyl "preparation" was not checked by RN C or another registered nurse, as RN B believed he was administering the ondansetron.

42. RN B told HDC that the ampoule of ondansetron looked similar to the fentanyl medication, hence he accidentally mixed up the medications. RN B administered the full ampoule of IV fentanyl, thinking it was the ondansetron, through the medication administration port.[22] Haemodialysis is recorded to have begun at 7.36am.

43. CMDHB provided HDC with images of the ampoules that stored the ondansetron and fentanyl. Although both ampoules are the same size (2ml), the tops of the bottles are different, with the fentanyl ampoule having red and blue stripes.

44. RN C told HDC that he was not called by RN B before the fentanyl was administered to Mrs A. RN C was working in a different bay at the time, and was neither present nor involved in

[20] Blood pressure 161/85mmHg, heart rate 93 beats per minute (bpm), and target weight 71kg.
[21] Controlled drugs are prescription medicines that are tightly controlled by legislation, including the Misuse of Drugs Act 1975 and the Misuse of Drugs Regulations 1977.
[22] The medicine administration port is a device placed into a vein to facilitate the administration of IV medication.

the administration of medication to Mrs A. He was unaware of the medication error until he saw the clinical coach and other nurses going to Mrs A's bedside to assist.

45. CMDHB told HDC that it is normal practice for registered nurses to prepare the medications together, and for the second checker to witness the administration. The normal workflow with dialysis patients is to connect them onto their dialysis machines as soon as they arrive in order to avoid delays for the next shift of patients.

46. However, CMDHB also stated that under normal practice, RN C would not have been expected to stay with RN B, as RN C had other responsibilities caring for other dialysis patients. CMDHB said that this meant that the nurses did not stay together for a protracted period of time on a busy shift.

Discovery of fentanyl overdose

47. At around 7.40am, Mrs A reported to the nursing staff that she felt dizzy and sleepy.

48. After administering the full ampoule of fentanyl, RN B realised the error he had made. He immediately reported the fentanyl overdose to the clinical coach before informing and apologising to Mrs A about the medication error. The clinical coach then informed the renal registrar, Dr D, who reviewed Mrs A.

49. At 7.45am, Mrs A's baseline recordings[23] were checked and documented in the dialysis observation records. RN B described the recordings as "satisfactory" at the time. The Charge Nurse Manager was made aware of the incident and "came around to ensure the patient was okay and to support [RN B]".

50. RN B told HDC that Mrs A was under the observation of a minimum of two to three nurses at the time, including himself. He stated that he "preferred to stay with [Mrs A] to continue observations and [to] take care of her".

51. Both CMDHB and RN B acknowledged that the administration of the incorrect fentanyl dose was not documented in Mrs A's medication chart, as the nursing staff were trying to provide care to her.

Initial care provided by renal registrar

52. Dr D's clinical notes document the following: "Review of patient after accidentally got 100mcg fentanyl instead of [20]. Feels 'alright'. BP and respiratory status fine. Pupils small. Vague and appears drowsy."

53. The notes also document that Mrs A told Dr D that she did not want her husband to be informed of the incident, and that usually he would call her at about 10.30am and arrive to visit her at around 12pm. Although observations of Mrs A were taken by Dr D, no sedation score was recorded as per CMDHB's Naloxone Administration Guideline (see Appendix C).

[23] Blood pressure 180/85mmHg, pulse 88bpm, oxygen saturation 98%, alert and orientated.

54. Dr D discussed Mrs A's condition with the renal team (including senior medical officers) who were at a handover meeting. Coincidentally, Mrs A's regular kidney specialist and CMDHB's nephrologist, Dr E, was present at this meeting. Dr D informed the renal team of the fentanyl overdose, but the conversation between Dr D and the renal team was not documented.

55. Dr E told HDC that he recalled Dr D saying the following:

a) Mrs A was not in respiratory compromise (oxygen saturation 97%).

b) Mrs A was normotensive (normal blood pressure).

c) Mrs A was drowsy but still verbalising.

56. Dr E and the renal team "made the decision to give naloxone to reverse the fentanyl", and instructed that Mrs A be observed closely.

7.50–8.01am — administration of naloxone

57. According to the Naloxone Administration Guideline (see Appendix C) that applied at the time of events, the correct dosage was 40mcg/mL every two minutes until the desired response was achieved. The guideline requires that the patient is monitored closely and continuously, and states that excessive doses of naloxone may result in a significant reversal of pain relief, thereby causing worsening pain and agitation.

58. At around 7.50am, Dr D returned to Mrs A and proceeded to administer the naloxone. The medication chart and Dr D's progress notes document that 40mcg of IV naloxone was first administered to Mrs A at 7.51am, and a second dose was administered at 8.01am.

Documentation and monitoring after naloxone administration

59. CMDHB told HDC that after the two doses of naloxone had been given, Mrs A remained alert and responsive and had no complaints of pain. CMDHB said that Dr D advised close monitoring of Mrs A, and documented this in the progress notes.[24] CMDHB stated that a pulse oximeter[25] and Dinamap[26] were used to monitor Mrs A's oxygen saturation, pulse and blood pressure continually, and Dr D was in and out of Mrs A's unit constantly, as Dr D was reassessing other patients in the adjacent ward.

[24] The Naloxone Administration Guideline in Opioid Induced Sedation and Respiratory Depression stated that monitoring should include: (a) sedation score to be recorded with respiratory rate, pulse oximetry, heart rate and blood pressure on patient observation chart every 15 minutes for 2 hours; (ii) if patient is stable, and no observed decrease in sedation, continue observations every 30 minutes for 4 hours; and (iii) observe patient closely as further naloxone may be required.

[25] A device used to monitor a person's oxygen saturation.

[26] A device used to measure a range of parameters automatically, including blood pressure, temperature, and pulse.

60. RN B documented the following vital signs for Mrs A:

Time (hours)	Pulse (beats per minute)	Blood Pressure (mmHg)	Oxygen saturation
7.30am	93	161/85	
7.45am	88	180/85	98%
7.58am	90	196/88	99%
8.04am	102	218/88	98%
8.15am	103	209/86	98%
10.40am	84	164/73	

61. According to both CMDHB and RN B, Mrs A's observations[27] were done frequently from 8.15am to 9am with assistance from the clinical coach and nursing staff. However, these observations were not documented in the progress notes.

62. Whilst RN B's progress notes did provide a brief summary of Mrs A's health status throughout the morning, RN B acknowledged that he did not document all of the observations, including a pain score and the assessment tools used, because he was focused on Mrs A's care and wellbeing. When Mrs A's post-dialysis observations were recorded at 10.40am, her respiration rate was 20 breaths per minute.

63. CMDHB acknowledged that the nursing staff, including RN B, omitted to document their observations, which was not best practice, and that a Pain Management Assessment form was not completed, as required under the Naloxone Administration Guideline.

64. CMDHB told HDC that it expects its staff to complete documentation in a timely manner, and that the nurse or clinician directly involved in a patient's care is expected to complete routine documentation. However, CMDHB said that in an emergency, documentation may be recorded by any member of the clinical team.

Pain experienced by Mrs A subsequent to naloxone administration

65. Although the exact timing of when Mrs A began to feel pain is difficult to determine because of the rapidity of the opioid withdrawal following the administration of naloxone,

[27] The observations undertaken included asking Mrs A about her pain and how severe it was. Mrs A was also watched closely by nurses to keep her safe.

both the incident summary[28] and RN B's progress notes document that Mrs A became "agitated afterwards, and complained of pain in both leg[s] and wanted to sit up".

66. Mrs A told HDC:

> "I remember be[ing] in severe pain all over my body, screaming and throwing my body all over the bed … I had gone into severe withdrawal symptoms. My pain in my body and legs were overwhelming … [T]he naloxone IV [had] stripped me [of] all the iv fentanyl in my body and I was going into shock. The pain in my body was off the wall. I just thrashed around while nurses tried to hold me down."

67. At 9am, nurse practitioner intern NPI F was assigned to the dialysis unit for the day and received handover from nursing staff about Mrs A's overdose. He assessed and documented Mrs A's ongoing agitation and leg pain. NPI F was under the supervision of the senior medical officer (SMO) assigned to the renal unit, Dr G.

68. At around 9am, Mrs A asked for further fentanyl for her pain, which was prescribed by Dr G and administered by NPI F.

69. Between 9.10am and 11.15am, Mrs A was administered fentanyl and other medications to treat her pain, with varying effectiveness. A table of the medication prescribed and administered to Mrs A is included at Appendix D.

Monitoring of Mrs A's pain and health status

70. CMDHB told HDC that despite the ongoing pain experienced by Mrs A, reportedly she was coherent and responding to questions throughout the administration of pain relief medication. According to CMDHB, the clinical coach was with Mrs A throughout the treatment, and Mrs A was reviewed and monitored closely by Dr D, NPI F, and Dr G. Their interactions with Mrs A have been documented in their progress notes.

71. Dr D's progress notes record:

> "[Mrs A] [f]eels 'alright' BP and respiratory status fine. Pupils small. Vague and appears drowsy. Plan naloxone pm — give dose now, close monitoring, connect sats monitor, may need more naloxone review by O/a when arrives."

72. NPI F's progress notes record that Mrs A experienced ongoing agitation with chronic leg pain, and that the pain sources were to be reviewed when she was settled. CMDHB told HDC that it does have an objective pain assessment scale and a sedation scoring tool. CMDHB said that during the incident, the nurses asked Mrs A about her pain using a 0–10 pain score, but they did not record her replies at the time.

[28] The incident summary was completed by RN B on 7 October 2019 at 2.53pm. The incident was described as an accidental administration and preparation of the fentanyl with a reported and actual incident severity of moderate (SAC 3).

73. RN B told HDC that he asked Mrs A about her pain and its severity, to which she replied "the worst pain", but he acknowledged that he made no documentation of Mrs A's pain using assessment tools. Dr E also acknowledged that the renal dialysis unit did not use a pain scoring tool with documentation on a routine basis, but rather used only verbal questioning.

74. Mrs A's respiration rate was also not documented by the nurses following the opioid overdose (which can depress the respiratory system).

No use of Early Warning Score

75. An Early Warning Score (EWS) can be used to identify patients at risk of deterioration by measuring vital signs.[29] During Mrs A's dialysis, her vital signs were documented frequently between 7.45am and 8.15am. However, following administration of the naloxone, no vital signs were recorded until 10.40am. According to CMDHB, the nursing staff observed Mrs A closely during this period, but neglected to record their observations.

76. When CMDHB was asked why an EWS or an equivalent tool was not used in the circumstances, Dr E advised that previously CMDHB had trialled using the EWS but it was not practical, as the standard parameters of patients undergoing haemodialysis may fluctuate markedly for short periods of time before normalising spontaneously or being managed by interventions.

77. Specifically, Dr E stated:

> "Several years ago, the Renal Service at CM Health trialed the EWS in one of our out-patient haemodialysis units and it was not helpful due to these issues, so we abandoned this and reverted to the current system, that is, regular observations by the experienced dialysis nurses/physiologists and calling the covering doctor if they are concerned or putting out a medical emergency call if such a scenario mandates it. This is the same system used in the multiple dialysis units I have worked in both in New Zealand and the UK."

No escalation to Acute Pain Service or emergency call-out

78. One of Mrs A's main concerns is that she cannot understand why none of the clinicians escalated her pain to the emergency call team or to the Acute Pain Service team when she was experiencing severe pain. Mrs A told HDC that having experienced previous medical errors in the outpatient Dialysis Unit, she feels that patients in the unit do not receive the same level of care and attention compared to other wards.

79. CMDHB told HDC that during the administration of naloxone by Dr D at 7.50am and 8.01am, and during subsequent monitoring by the various nurses, including RN B, Mrs A was conscious and alert. According to CMDHB, this was in line with expected practice, so no emergency call was necessary. Furthermore, CMDHB advised HDC that the Acute Pain Service is not resourced to see outpatients.

[29] Vital signs to be monitored include heart rate, blood pressure, oxygen saturation, and respiration rate.

80. CMDHB's Naloxone Administration Guideline in place at the time of events has a flowchart showing that the Acute Pain Service or emergency call team should be called only if the patient is not responding to pain relief, or is deeply sedated and arousable only by physical stimulation.[30]

Prescriptions and review by Dr E

81. At around 10.30am, Dr E was doing a ward round in the dialysis unit and was called to see Mrs A, as he was her primary nephrologist.[31] Dr E told HDC that Mrs A was very distressed from her pain and in a "state of some agitation and anxiety". Dr E observed that Mrs A was being monitored and being settled down by the dialysis nurses, Dr G, and NPI F.

82. Dr E told HDC that at first he tried to reassure Mrs A, with limited success. He then prescribed her a small dose of diazepam and gabapentin[32] at around 10.40am to settle her down further (see Appendix D). Soon afterwards, Dr E left Mrs A's care with the rest of the team and continued his ward round.

83. A repeat of the medication was obtained via telephone at 11.15am. Dr E did not document the care he provided, and he provided no further care to Mrs A on this occasion. He told HDC that he had discussions about Mrs A's progress later that day, and was aware that she had been admitted to the Emergency Department for further observations after her haemodialysis had been completed.

Subsequent care provided to Mrs A

84. The clinical notes document that Mrs A's haemodialysis finished at 10.40am. At around 12 noon, Mrs A's husband arrived. According to CMDHB, Mrs A was settled at this point, and her pain was under control. At 12.50pm, Mrs A was transferred to the Emergency Department for further monitoring to ensure that she was safe.

85. Mrs A was discharged from the Emergency Department at 5.48pm. The discharge summary noted that she was monitored for around five hours and discharged with normal observations and with no medications required.

Further information received

86. Mrs A informed HDC that this was not the first time that CMDHB and the haemodialysis unit had made a medication error. Mrs A said that she did not want her experience with the fentanyl overdose to be "covered up" and "sweeped under the rubbish bins like everything else that goes on".

---

[30] The guideline contains a flowchart that requires the administering clinician(s) to review the Physiologically Unstable Patient's Central Nervous Score (CUS) and the University of Michigan Sedation Scale (UMSS) to determine the next steps. If a patient is unable to respond to voice or pain (above CNS 2) or is deeply sedated and arousable only to physical stimulation (UNSS 3 or above), escalation of care is required.

[31] Nephrologists are medical professionals who diagnose, treat and manage acute and chronic kidney problems and disease.

[32] Diazepam is used to treat anxiety, alcohol withdrawal, and seizures, and to relieve muscle spasms and provide sedation.

87. RN B acknowledged that he had made a serious medication error. He told HDC that he then followed the process of reporting the medication incident, ensured that the patient was safe, and completed her dialysis treatment. He also acknowledged the importance of documentation, and said that he has made changes in this respect.

88. CMDHB told HDC that it apologised sincerely for the medication error and for the resulting distress caused to Mrs A and her family. CMDHB said that for any patient who receives a controlled medication, there is a requirement that the medication is checked, prepared, and administered by two registered nurses/a clinical renal physiologist, or one registered nurse/clinical renal physiologist and one pharmacist, or one registered nurse/clinical renal physiologist and one doctor.

89. Dr E told HDC that at the time of prescribing the naloxone to Mrs A, he had considered Mrs A's status in relation to CMDHB's Naloxone Administration Guideline, and he was concerned that "the symptoms of opiate toxicity [might] progress to respiratory compromise", so the naloxone was administered to minimise harm to Mrs A. However, he also acknowledged that in hindsight, allowing Mrs A to "sleep off the fentanyl and dialyse off the drug" may have been a preferable alternative management.

90. Dr E told HDC:

> "The guideline states that indications for naloxone in this setting are 'to reverse significant opioid induced respiratory depression and somnolence[33]'. [Mrs A], although not dropping her oxygen saturations or respiratory rate, was reported as being 'drowsy' i.e. meeting the second part of the indication statement i.e. 'somnolence'. Given her known severe [obstructive sleep apnea], we were concerned the symptoms of opiate toxicity may progress to respiratory compromise and given the unfortunate and iatrogenic[34] nature of the scenario were very keen to avoid this and minimise harm to [Mrs A]."

Responses to provisional opinion

Mrs A

91. Mrs A was given an opportunity to comment on the "information gathered" section of the provisional opinion. Mrs A had no further comments to make but noted that there have been improvements in the administration process by the nurses. However, she said that there have been instances where only one nurse would come to provide her medication.

CMDHB (Te Whatu Ora)

92. CMDHB was given an opportunity to comment on the provisional opinion. CMDHB accepted the findings and recommendations. CMDHB had no further comments to make.

[33] Somnolence is the state of feeling drowsy, ready to fall asleep.
[34] Iatrogenic is the causation of a disease, a harmful complication, or other ill effect by medical activity.

RN B

93. RN B was given an opportunity to comment on the relevant parts of the provisional opinion. He told HDC that the incident happened when he started working at the DHB, and the incident was a "huge learning curve". He sincerely apologised to Mrs A and stated that he has since remained vigilant with medication administration and documentation. RN B had no further comments to make.

RN C

94. RN C was given an opportunity to comment on the relevant parts of the provisional opinion. RN C had no further comments to make.

Opinion: RN B — breach

95. As a registered nurse, RN B had a duty of care to provide services to Mrs A with reasonable care and skill. On the morning of 7 October 2019, RN B was working in the dialysis unit with RN C. As part of the routine care of dialysis patients, RN B was responsible for the preparation of the pain relief (OxyNorm and fentanyl) and anti-nausea medication (ondansetron) for Mrs A. I acknowledge that RN B was forthcoming once he recognised that he had made an error, but I remain concerned about a number of failings in the preparation and administration of Mrs A's medication that led to the fentanyl overdose.

Preparation of fentanyl

96. Fentanyl is a strong opioid that requires careful preparation and administration owing to its potency. RN B had a duty of care to Mrs A to prepare the fentanyl safely, in accordance with CMDHB's Intravenous Opioid Protocol (see Appendix E) that applied at the time.

97. In addition, according to the Nursing Council of New Zealand (NCNZ) Code of Conduct, nurses are required to "[a]dminister medicines and health care interventions in accordance with legislation, [the nurse's] scope of practice and established standards or guidelines"[35] (see Appendix H).

98. My independent nursing advisor, RN Karla Martin, noted that in CMDHB's Intravenous Opioid Protocol, the fentanyl should have been prepared for administration (put into the syringe) as soon as it was taken out of the Pyxis machine, and double-checked by the same staff member who checked out the medication with RN B (i.e., RN C).

99. Specifically, the Intravenous Opioid (Adult) Protocol stated that the administering nurse must:

[35] Standard 4.9 of the Nursing Council of New Zealand Code of Conduct for nurses (June 2012).

"2. Record the prescribed opioid ampoule, taken out under the correct opioid's name and strength in the Controlled (CD) Register or Pyxis as per the management of Controlled Drugs Procedure.

3. Draw the required contents of the ampoule and saline up into a 10mL syringe, add a medication label, and keep the empty ampoule in a kidney dish."

100. RN B acknowledged that he did not draw up the ondansetron and fentanyl into the syringes at the time, as he took them separately into the dialysis room and placed them on top of the dialysis machine. Only the OxyNorm was drawn into a syringe. RN Martin was critical of RN B's practice of not drawing the fentanyl from the ampoule immediately after taking it out of the Pyxis machine, because this was an "essential method to reduce medication errors" and part of good nursing practice.

101. RN Martin further advised that the likelihood of RN B's medication error occurring may have been reduced if the five rights of medication administration[36] (see Appendix F) had been followed. If the fentanyl and ondansetron had been drawn up into syringes immediately, labelled by RN B and double-checked by RN C, it would have reduced the likelihood of RN B accidentally mixing up the medication on the day.

102. I note that both RN B and CMDHB told HDC that there was a practice in the dialysis unit of removing patients' medications from the Pyxis machine prior to the arrival of the patients, on the order of the senior acting charge nurse at the time, to avoid the formation of queues. RN B told HDC that the practice of removing medications from the Pyxis machine before patients arrived was already in place prior to his commencement at CMDHB six months previously. However, subsequent to Mrs A's complaint, it was acknowledged by CMDHB that this was a breach of its policies and procedures. I consider this practice as a separate systemic failure of CMDHB (i.e., the DHB failed to ensure that its staff were compliant with its systems), which is discussed further below.

103. I accept RN Martin's criticisms regarding deficiencies in the preparation of the fentanyl by RN B. I am not critical of RN B's practice of taking the medication from the Pyxis machine prior to the arrival of patients, as this was under the direction of a senior nurse and was common practice in the unit at that time. However, I am critical that RN B did not draw up the contents of the fentanyl ampoule immediately after taking it out of the Pyxis machine, and did not add a medication label. Accordingly, I accept RN Martin's advice that the preparation of the fentanyl by RN B was a moderate departure from accepted standards of care.

Administration of fentanyl

104. After Mrs A's medication had been removed from the Pyxis machine, RN C proceeded to work in a different area in the dialysis unit, and instructed RN B to call him when he was

[36] CMDHB Medication (Medicines) Administration states that the 5 rights of medication administration include the right patient, right medication, right dose, right route, and right time.

ready to prepare and administer the fentanyl to Mrs A. Mrs A asked RN B to provide her with the ondansetron first for her nausea.

105. RN B went in search of RN C, but saw that he was busy commencing dialysis treatment for other patients, and so decided to administer the ondansetron to Mrs A first in order to make her comfortable. RN B told HDC that after giving the ondansetron, he would have asked RN C to double-check the fentanyl.

106. At around 7.35am, RN B picked up the fentanyl ampoule, which he thought was the ondansetron, and drew up the entire amount to administer intravenously to Mrs A via the medication administration port. The quantity and type of medication in the syringe was not double-checked by RN C. RN B told HDC that after administering the medication, he immediately realised his error and reported it to the clinical coach nurse and to Mrs A.

107. I acknowledge that RN B had intended to follow the Intravenous Opioid (Adult) Protocol, as he looked for RN C to ask him to double-check the fentanyl, but saw that he was busy, so did not ask for assistance. Although I accept RN B's explanation that he mistook the fentanyl ampoule for the ondansetron, I remain concerned about the circumstances that contributed to the medication error. I explain my reasoning below.

108. First, I have accepted RN Martin's criticism about the nurses' practice of not drawing up the required medication into the syringes immediately once removed from the machine. This would have allowed RN C to double-check the medication amount and type at the time. As required under the Intravenous Opioid (Adult) Protocol, the syringe containing the fentanyl was to be marked with a medication label to avoid confusion with the ondansetron. However, this could take place only once the fentanyl had been drawn into the syringe, which did not happen immediately the medication was taken out of the machine, which meant that both the ampoules and syringes carried into the unit were not differentiated clearly at the time.

109. RN B acknowledged that both medications look similar when undiluted in their ampoule. However, CMDHB provided HDC with images of both the fentanyl and ondansetron ampoules, which show that the bottle tops are different. Irrespective of how similar the bottles may have appeared to RN B at the time, I remain critical that he failed to follow CMDHB policy by carrying both the fentanyl and ondansetron together in the same dish. This was especially important given RN B's perception that the ampoules looked similar. Had the protocol been followed, the fentanyl that was taken out of the Pyxis machine would have been prepared by drawing up the correct amount from the ampoule into a labelled syringe and having it double-checked by RN C at the same time. This would have reduced the likelihood of an error.

110. I am critical that irrespective of the wider systemic issue of the nurses taking out the medication earlier than warranted, RN B did not apply critical thinking to differentiate the controlled drug in close proximity with the other medication. Patient safety is paramount

to nursing care, especially for vulnerable patients like Mrs A. I consider that RN B failed to exercise due diligence in ensuring that he did not mix up the medications.

111. RN Martin emphasised that medication administration is a "common but complex nursing activity and there is a significant volume of literature that identifies factors which make the possibility of a medication error more likely". RN Martin highlighted RN B's attendance to Mrs A's nausea as a factor that may have distracted him. I acknowledge that RN B was trying to provide the anti-nausea medication to Mrs A as soon as possible. However, my concern is that RN B failed to perform the five rights of medication, as he did not check that he had drawn up the correct medication before administering it to Mrs A. I accept RN Martin's advice, and find RN B's administration of fentanyl instead of ondansetron to be a moderate departure from standard nursing care.

Monitoring of respiration rate

112. RN B told HDC that he stayed with Mrs A afterwards and undertook a baseline set of vital signs as her dialysis had commenced. RN B stated that Mrs A was under the observation of a minimum of two to three nurses during this time. Although HDC was not told when RN B stopped monitoring Mrs A in the morning, she was transferred to the Emergency Department at 12.50pm, so it is likely that RN B's monitoring ceased at this point, as the dialysis finished at 10.40am.

113. RN Martin advised that RN B's actions of alerting the clinical coach and monitoring Mrs A's vital signs after discovering the fentanyl error were "appropriate and consistent with accepted standards". However, RN Martin was critical that the monitoring of Mrs A did not include checking her respiration rate.

114. Whilst RN B observed and documented Mrs A to be "alert and responsive" after the fentanyl overdose, RN Martin was concerned that RN B did not document Mrs A's respiration rate throughout his observations, and that Mrs A could have been breathing too slowly or could even have stopped breathing.

115. RN Martin advised:

> "Opioids depress the respiratory system and symptoms of overdose can include shallow breathing, confusion, lessened alertness and loss of consciousness. In my opinion, [the] Glasgow Coma Score (GCS) and respiration rate assessment should also have been undertaken and documented. I consider that this is required to meet the expected standard of nursing assessment following administration of more opioid than prescribed."

116. RN Martin considered the failure to monitor Mrs A's respiratory rate to be a moderate departure from accepted nursing standards.

117. RN B told HDC that respiratory rate monitoring was not part of routine recordings on the dialysis observation chart. Although RN B's assertion is correct, as the CMDHB dialysis observations and recording sheet did not provide a check-box for monitoring respiration

rate, RN Martin highlighted that under the Intravenous Opioid (Adult) Protocol (see Appendix E), this was required when an opioid such as fentanyl was administered.

118. RN B was required to follow the flow diagram under the protocol and observe whether the patient's "respiratory rate [was] greater than 12, sedation score less than or equal to 2 [and] [b]lood pressure and heart rate within normal range [as] per [the] observation chart" before making any further clinical decisions. This was routine procedure for any intravenous opioid administration, but was not followed by RN B. Therefore, I do not accept RN B's explanation that respiratory monitoring was not part of routine monitoring, as this was a requirement under the Intravenous Opioid (Adult) Protocol.

Documentation

119. During the morning, RN B documented Mrs A's health status at various points. This included observing her baseline set of vital signs (at the start of her dialysis, at regular intervals between 7.45am and 8.15am, and at the end of her dialysis at 10.40am). RN B's clinical notes also contain a summary of events during the morning, including who was prescribing Mrs A's medication and her reaction. RN B explained that he had failed to document observations regularly because his focus had been on Mrs A's care and wellbeing.

120. CMDHB acknowledged to HDC that RN B did not "document any further observations from 8.15am, [as] he completed regular observations". As a registered nurse, under the Nursing Council Standards, RN B had a duty to keep clear and accurate records (see Appendix H).[37]

121. RN Martin was critical of a number of aspects of RN B's documentation. First, the initial incorrect administration of fentanyl by RN B was not documented in Mrs A's clinical notes. Both RN B and CMDHB have acknowledged this omission. RN Martin also advised that RN B did not "[r]ecord the quantity of IV opioid administered on the patient's medication chart (two sets of initials required) when each bolus [was] administered", as required in CMDHB's Protocol: Intravenous Opioid (Adult). CMDHB told HDC that the medication removal from the Pyxis machine was recorded automatically, but the automatic recording did not allow for the "two sets of signatures" as required by the policy.

122. Secondly, RN Martin criticised RN B for not including a timeline of events in his nursing notes. RN Martin stated:

> "In my experience such documentation is part of expected practice and lack of detail can lead to misinterpretation of the care, assessment and findings, interventions provided and the rationale for such intervention."

123. RN B maintains that he made regular observations of Mrs A's health after the fentanyl overdose. RN Martin was critical that the documentation provided was insufficient evidence of these observations. She stated:

[37] The Nursing Council of New Zealand Code of Conduct, Standard 4.8.

> "In any clinical situation documentation serves as a concise evaluation of the care provided. In my opinion, there was a moderate departure from the expected standards of nursing documentation."

Conclusion — breach

124. I have carefully considered RN Martin's advice in light of RN B's explanation of the fentanyl overdose. I note that RN B has made changes to his practice to "ensure that it is safe, competent, professional, and that [he is] fit to look after all patients and their families with sincerity". RN B had a duty of care to provide Mrs A with competent and safe nursing care. Unfortunately, this did not occur on the morning of 7 October 2019. RN Martin identified the following deficiencies in the nursing care provided by RN B:

a) The fentanyl was not prepared immediately after it was taken out of the Pyxis machine and in the presence of RN C.

b) The incorrect medication was administered to Mrs A by her primary nurse.

c) Mrs A's respiratory rate was not monitored, as required by the Intravenous Opioid (Adult) Protocol.

d) There was insufficient documentation of his care, including not documenting the incorrect administration of fentanyl in Mrs A's medication chart, and not providing a timeline of the observations after the fentanyl overdose.

125. Accordingly, I find RN B to have breached Right 4(1) of the Code of Health and Disability Services Consumers' Rights (the Code).[38]

Disclosure of medication error — no breach

126. After the medication was administered to Mrs A, RN B realised that he had incorrectly administered the fentanyl. He immediately reported this to the clinical coach and to Mrs A. The clinical coach then asked the ward registrar, Dr D, to review Mrs A and assist RN B. RN Martin advised that RN B's action of alerting the clinical coach after discovering the fentanyl error was "appropriate and consistent with accepted standards". I also commend RN B for disclosing the error to Mrs A promptly.

Opinion: RN C — adverse comment

Checking preparation and administration of fentanyl

127. RN C assisted RN B to check out Mrs A's medication, including the fentanyl. Although the fentanyl was not prepared immediately after being taken out, RN C asked RN B to call him when he was ready to prepare and administer the medication, as RN C was responsible for double-checking the fentanyl.

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

128. RN Martin noted that CMDHB's protocol "Intravenous Opioid (Adult)" states that the double-check of the administering nurse's preparation should be done immediately after the medication is checked out. RN Martin considered that if both RN B and RN C had followed the relevant policy steps, the likelihood of Mrs A's accidental fentanyl overdose would have diminished significantly.

129. CMDHB acknowledged that it was normal practice for the registered nurses to prepare a medication together and for a second checker to witness the administration of the medication. CMDHB said that under normal practice, RN C would not have been expected to stay with RN B after having checked out the fentanyl from the Pyxis, as RN C had other responsibilities in providing care to other patients.

130. I accept RN Martin's advice in relation to RN C's failure to follow the policy. In my view, RN C retained a responsibility to stay with RN B and double-check the preparation immediately after the medications had been removed from the Pyxis machine, as per the policy.

131. I acknowledge CMDHB's view that RN C was also a primary nurse for allocated patients on the shift, and had other responsibilities. However, I note that RN C had had only six months' experience working as a nurse in the dialysis unit at the time of events, so was not a senior colleague with respect to RN B.

132. In summary, criticisms identified by RN Martin were also applicable to RN C at the time of events. However, I am satisfied that there were sufficient mitigating factors, as follows:

- Despite the written policy, RN C was acting in a way that was considered to be normal practice on the unit at the time.
- RN C had asked RN B to find him to double-check Mrs A's fentanyl before it was administered.
- In addition to providing support to RN B, RN C was responsible for other dialysis patients. Accordingly, he was not with RN B for an extended period of time.
- RN B saw that RN C was busy, so decided to administer the ondansetron first, which did not require a double-check by RN C.

133. Therefore, I am only mildly critical of RN C's actions. I consider it to have been CMDHB's responsibility to ensure that its staff followed its policies, as discussed below.

Opinion: Counties Manukau District Health Board — breach

134. As the group provider overseeing the overall care in the dialysis unit, CMDHB was responsible for providing services in accordance with the Code, and for ensuring that its staff complied with its policies. Mrs A's complaint to HDC highlighted significant deficiencies in the care provided by CMDHB staff in the dialysis unit.

135. I consider that some of the failings identified were systemic issues, which I discuss below.

Practice of taking out medication earlier than required

136. During the course of CMDHB's internal review of Mrs A's complaint, the DHB was made aware that the nursing staff in the dialysis unit had been asked by the Charge Nurse Manager at the time to remove patients' medication prior to their arrival, in order to avoid queues, as the ward shared the same Pyxis machine. CMDHB acknowledged that this was a breach of its policies and procedures.

137. CMDHB did not advise HDC of the name of the Charge Nurse Manager responsible, and did not confirm the duration of the practice, but told HDC that it has now instructed staff in the dialysis unit not to remove patients' drugs before they are physically in the unit. Furthermore, CMDHB advised HDC that the dialysis unit will be supplied with its own Pyxis machine in the future, although it did not specify a date.

138. Upon reviewing CMDHB's response, RN Martin told HDC:

> "I note from [the] Acting Chief Medical Officer that the removal of medications significantly earlier than they are due to be administered is a breach of their policies and procedures and this historical practice has since been stopped. I agree that this is appropriate."

139. I accept RN Martin's advice and the actions taken by CMDHB. However, I remain concerned that the practice went on for an indeterminate period of time without the DHB being aware of it. It is concerning that no other senior staff in the dialysis unit questioned the practice, given that it did not comply with CMDHB's policies and procedures at the time. As highlighted by Mrs A's complaint, the nurses' practice of taking all the unprepared medication from the ward to the dialysis unit increased the risk of administration of the wrong medication.

140. CMDHB was required to ensure that its nursing staff were aware of, and complied with, its policies, guidelines, and protocols. In this case, no audit of the correct application of its policies and guidelines took place until after the error had occurred.

Lack of sufficient documentation by various providers

141. During the morning of 7 October 2019, various staff provided care to Mrs A. RN B was the primary nurse directly responsible for the fentanyl overdose, and my concerns about his documentation are outlined above. However, I also consider that other CMDHB staff who

cared for Mrs A throughout the morning provided insufficient documentation, which I discuss below.

142. After Mrs A was administered the fentanyl overdose by RN B, he informed the clinical coach, and other nurses, including the Charge Nurse Manager, attended to assist Mrs A. The names of the nurses who assisted, and a timeline of the care provided, were not recorded. Although the various medications prescribed for Mrs A throughout the morning were documented correctly, Mrs A's observations were not documented following administration of the drugs.

143. CMDHB's Naloxone Administration Guideline (see Appendix C) stated:

> "Patients must be monitored closely (see below) and continuously as the duration of action of the opioid is likely to exceed that of Naloxone …
>
> Sedation score to be recorded with respiratory rate, pulse oximetry, heart rate and blood pressure on patient observation chart every 15 minutes for 2 hours. If patient is stable and no observed decrease in sedation, continue observations every 30 minutes for 4 hours."

144. Whilst a pulse oximeter and a Dinamap were used to measure vital signs for Mrs A once her haemodialysis had commenced, the information provided to HDC contained only three entries,[39] and no patient observation chart was included (with observations recorded every 15 minutes for 2 hours as per CMDHB's Naloxone Administration Guideline).

145. CMDHB told HDC:

> "[Mrs A] was surrounded by three nurses doing observations after the medication overdose and the staff focused on keeping [Mrs A] safe at this time but omitted the documentation of their observations. CM Health acknowledges that this is not best practice …"

146. There is also a lack of documentation by the providers responsible for Mrs A's prescription of the naloxone and the care she received subsequently. Dr D (renal ward registrar) did not provide a statement to HDC as Dr D could not recall what happened on the day. Dr D documented the following in the incident report:

> "Feels 'alright' BP and respiratory status fine. Pupils small. Vague and appears drowsy. Plan naloxone pm — give dose now, close monitoring, connect stats monitor, may need more naloxone review by O/a when arrives."

147. Dr D was responsible for discussing the opioid overdose with Dr E and the renal team prior to administering the naloxone. Reportedly Dr D returned to observe Mrs A a number of times to check that she was feeling "alright" and that her blood pressure and respiration

[39] At 8.04am, 8.15am and 10.40am post administration of the naloxone.

were satisfactory. Although Dr E was Mrs A's primary nephrologist and was knowledgeable about her health, there was no documentation about the conversation between Dr D and Dr E, including what objective assessments were taken before the naloxone was administered.

148. Dr E told HDC that Dr D reported that Mrs A was not respiratory compromised, had normal blood pressure, and was speaking. However, there is a lack of clinical documentation regarding this, and no incident report was completed by Dr E.

149. My independent renal consultant advisor, Dr Ian Dittmer, reviewed the information and advised that Dr D's notes were adequate and that there was "no failure" in not documenting the matter further. However, he noted that Dr D's medical progress notes were "brief" around the clinical findings and the decision to administer the naloxone. Dr Dittmer could not determine "who physically prescribed the naloxone" (as this was not documented), although Dr E later confirmed to HDC that he had prescribed it.

150. Whilst I accept Dr Dittmer's advice, I remain concerned that Dr D's observations were not documented more frequently. From the time of administration of the naloxone (7.51am to 8.01am) until NPI F and Dr G took over Mrs A's care at around 9.00am, Dr D was the primary clinician with direct oversight of Mrs A's response to the naloxone. I consider that the staff who provided care to Mrs A, including Dr D, should have provided further documentation of their monitoring, as at this time Mrs A was most vulnerable to the effects of the naloxone.

151. CMDHB's Naloxone Administration Guideline states that a sedation score is to be recorded, together with the patient's respiratory rate, pulse oximetry, heart rate and blood pressure, every 15 minutes for 2 hours (or every 30 minutes for 4 hours if the patient is stable). Close observation is needed, as additional naloxone may be required if the patient's condition deteriorates. Whilst I acknowledge that the clinical staff may have been busy with other patients at the time, and that Dr D had instructed the nurses to monitor Mrs A closely, it appears that no clinical staff documented clear instructions to give effect to the monitoring requirements of the Naloxone Administration Guideline, which I consider to be a deficiency in communication.

152. Documentation is an essential component of effective communication. It facilitates continuity of care and provides clinicians with objective information on which to base their decisions. Inadequate documentation of patient observations can lead to misdiagnosis, wrong or delayed treatment, and potential harm to the patient, and I remain concerned about the lack of documentation in this instance.

153. From the information provided by CMDHB, it is difficult to ascertain exactly when Mrs A's agitation and pain began. NPI F and Dr G first administered anti-nausea medication at 9.10am, before fentanyl was reintroduced at 9.15am. Mrs A told HDC that the pain in her body was "off the wall" as she had "gone into severe withdrawal symptoms". Again, I am concerned that close observation and monitoring was not documented immediately following administration of the naloxone.

154. I find that CMDHB breached Right 4(1) of the Code in respect of the following:

- The practice of nursing staff at the dialysis unit taking out medication from the Pyxis machine earlier than required; and
- The failure by multiple staff to document Mrs A's care adequately, in particular her observations.

Objective pain assessment tool — adverse comment

155. As outlined above, the naloxone induced a rapid opioid withdrawal for Mrs A, which caused her significant pain throughout her body, and in particular to her leg. I am concerned that Mrs A's pain was not documented objectively, as required under CMDHB's Naloxone Administration Guideline, especially when Mrs A had a known opioid dependence.

156. The CMDHB Naloxone Administration Guideline that applied at the time of events states: "Excessive doses of naloxone in patients may result in significant reversal analgesia thereby causing worsening pain and agitation."

157. Although no actual pain tool is set out in the Guideline, references are made for the administrator of the naloxone to "notify [the] acute pain service" or to "continue pain management assessment".

158. RN Martin advised HDC:

> "I note that [Mrs A] was not opioid naïve and does take regular prescribed medications in order to relieve her pain. The administration of naloxone at 7.50am and 8.01am would have removed all analgesia from [Mrs A's] system and left her with unresolved pain. I am critical that there is a lack of evidence of an objective pain assessment scale being used to assess [Mrs A's] pain experience when she was in the dialysis unit and would recommend that one be consistently used when a patient expresses or shows signs of pain."

159. RN B confirmed that pain assessment was carried out verbally using a pain score scale of 0–10, where 0 was set as no pain and 10 was considered to be extreme pain. When RN B asked Mrs A about her pain, she responded that she was experiencing the "worst pain", but no numerical pain score was documented in the clinical notes.

160. RN Martin stated that "nursing management of pain and discomfort is enhanced by the use of a pain assessment scale and this should be documented". She noted that the Naloxone Administration Guideline requires the patient's vital signs, sedation score, and pain assessment to be documented. RN Martin considered the lack of an objective pain assessment to be a mild departure from the accepted standard of care.

161. Dr Dittmer made a similar observation in relation to the monitoring required under the Naloxone Administration Guideline. He advised HDC:

> "The patient clinical monitoring that is described in this guideline does not appear to have been performed, however, it would seem that sedation was no longer a concern after the administration of the second dose of naloxone and that the standard observations of a patient undergoing haemodialysis were performed. This is acknowledged in the CMDHB response. In my opinion, this is a minor deviation from the expected practice."

162. Dr Dittmer considered that overall, the attending medical and nursing staff undertook "timely assessment and treatment of Mrs A with respect to the management of her acute distress". However, he noted that Mrs A's pain and agitation were not brought under control until the diazepam and gabapentin were administered at 10.40am and 10.45am respectively. Dr Dittmer stated:

> "In my opinion it was appropriate to administer the fentanyl more frequently than this as it was noted by the staff and [Mrs A] that her symptoms of distress were not controlled. In my opinion, it would be appropriate to have a limit on the number of doses of fentanyl that could be administered before formal medical review of a patient. I note that in this case, [a] review took place."

163. I accept both RN Martin's and Dr Dittmer's advice. However, whilst I cannot ascertain that an objective pain assessment tool would have resulted in the earlier administration of medication to reduce Mrs A's pain, I remain concerned that such a tool was not used by the dialysis unit, as acknowledged by CMDHB.

Use of naloxone — other comment

164. Following the fentanyl overdose, Mrs A was reviewed by Dr D. Although it was documented that Mrs A was feeling "alright" and that both her blood pressure and respiratory status were "fine", Dr D observed that Mrs A had small pupils and appeared to be "vague and drowsy". Dr D communicated these observations to Dr E and the renal team. Dr E then prescribed naloxone to treat the fentanyl overdose.

165. However, Dr E did not review Mrs A physically at the time of events, nor document his clinical reasoning for the prescription of naloxone. I have considered the appropriateness of the prescription and administration of naloxone to Mrs A, given that she was an opioid-dependent patient, and that rapid opioid withdrawal was the direct cause of her severe pain.

166. CMDHB's Naloxone Administration Guideline provided that naloxone should be used for opioid-induced sedation and respiratory depression. The Guideline provides two methods of assessment of sedation,[40] and requires the user to assess the patient's response to stimulation such as pain and voice. However, no sedation score was recorded for Mrs A.

167. Dr E stated that the administration of naloxone was a reasonable course of action, but unfortunately it caused significant pain, distress and anxiety for Mrs A. He reflected that

[40] CNS Score as per PUP and University of Michigan Sedation Scale (UMSS).

with the benefit of hindsight, a preferable alternative management option may have been to allow Mrs A to sleep off the fentanyl and to dialyse off the drug.

168. Dr Dittmer advised HDC:

> "The clinical situation is consistent with receiving an excessive dose of an opiate medication and the administration of naloxone is, in my opinion, an appropriate response. Administration of naloxone would decrease the possibility of an adverse outcome associated with central nervous system depression."

169. Dr Dittmer considered that the notes taken were adequate, and that there was no failure by Dr E in not documenting his decision. With respect to the alternative option of allowing Mrs A to sleep off the fentanyl, Dr Dittmer stated: "[E]ither approach would be an acceptable standard of care and viewed as such by our peers." He considered that appropriate actions were taken by CMDHB's renal team, and that Mrs A received the expected standard of care in terms of the naloxone administered.

170. I accept this advice, and consider that managing the overdose of fentanyl was a balance of risk — to either induce withdrawal causing pain or possible respiratory distress or failure. As such, the administration of naloxone in the circumstances was acceptable and reasonable at the time of the events.

Escalation of Mrs A's care to Acute Pain Service — no breach

171. Mrs A questioned why her care was not escalated to emergency services when she was agitated and in extreme pain. She stated that patients in the dialysis unit did not receive the same level of care and attention as patients in other units.

172. CMDHB told HDC that Mrs A was observed to be conscious and alert, so the providers determined that no emergency call was necessary, and the Acute Pain Service was not resourced to see outpatients.

173. Dr Dittmer's understanding was that an emergency call was to be used in a situation "where there [were] clinical signs … that the patient [was] at significant risk or further clinical deterioration that could result in disability or death". Dr Dittmer advised that although Mrs A was in significant distress at the time, the situation did not necessitate a "code call". I accept this advice, and consider that it was reasonable not to escalate Mrs A's care to emergency services or the Acute Pain Service.

Adequacy of CMDHB's policies, guidelines, and protocols at time of events — no breach

174. CMDHB provided various relevant policies, guidelines, and protocols that applied at the time, together with the current versions.[41] The protocols, guidelines, and policies referred to in this report have been included as appendices.

[41] The policies provided by CMDHB that were relevant at the time were: (a) Intravenous Opioid (Adult) Protocol, (b) Naloxone Administration Guideline, (c) Incident Reporting Investigation Policy, (d) Patient

175. RN Martin advised HDC that CMDHB's policies and procedures at the time of events were adequate and consistent with other relevant hospital policies at the time.

176. Dr Dittmer advised HDC that the Intravenous Opioid (Adult) Protocol, the Naloxone Administration Guideline, the Medication Medicines Policy, and the Medication Administration Procedures were adequate.

Use of Early Warning Score — other comment

177. RN Martin queried why an Early Warning Score (EWS) was not used to monitor Mrs A's health status following the fentanyl overdose. RN Martin recommended that the dialysis unit adopt the EWS, as "this supports the recognition and appropriate response to the patient at risk of clinical deterioration".

178. Dr E, on behalf of CMDHB, told HDC that the dialysis unit had trialled the use of EWS previously but had found it impractical. Dr Dittmer agreed with Dr E's statement, and noted that Auckland District Health Board (ADHB) introduced a modified EWS for patients undergoing haemodialysis treatment (see Appendix G).

Changes made since incident

179. CMDHB told HDC that it made the following changes:

a) CMDHB mandated that staff no longer remove drugs from the Pyxis machine before the patients are physically in the unit, and that drugs are checked out only when it is as close to administration time as is practicably possible.

b) Interim measures were put in place so that the dialysis unit has a locked safe to store its own controlled drugs. The Unit is to be supplied with its own Pyxis machine in the future.

c) Providers in the dialysis unit work closely with the medication safety nurse, and training was arranged on the basics of medication administration, controlled drug administration, review of the controlled drug policy and guideline, and discussions at every handover.

180. RN B told HDC that he took the following action and made the following changes:

a) He undertook the mandatory training for all CMDHB nursing staff, including medication safety training and haemodialysis nursing training.

Incident Reporting and Management Procedure, (e) Medication Medicines Policy, (f) Medication Administration Procedures, and (g) Multi-dose Medication Management Use Handling and Expiry Procedure.

b) He received support from CMDHB and changed his practice so that all relevant clinical conversations with team members and clinical assessments involving the patient are documented in the patient's clinical notes in a timely manner.

c) He practises the "5 Rights" before administrating medication. He ensures that he examines the patient's basic information, assesses that the patient's symptoms are suitable for receiving the medication to be administered, and observes the patient closely for side effects of the drug.

d) He reflected on the importance of documentation of events, including the use of assessment tools (eg, Glasgow coma score, pain score, etc) to demonstrate the care provided in detail.

Recommendations

181. In response to my provisional recommendations, RN B provided HDC with an apology to Mrs A for his breach of the Code. In addition, I recommend that RN B provide HDC with written evidence of the training he has undertaken on documentation and safe administration of medications, within three months of the date of this report.

182. I recommend that Te Whatu Ora Counties Manukau:

a) Provide a written apology to Mrs A for CMDHB's breach of the Code. The apology is to be sent to HDC within three weeks of the date of this report, for forwarding to Mrs A.

b) Consider amending the current dialysis observation chart used, to include respiratory rate monitoring as part of the nursing staff routine recordings.

c) Undertake an audit of compliance by nursing staff in the dialysis unit with the opioid and controlled drug policies, guidelines, and protocols. The audit should review nursing staff preparation and administration of opioid medicine over a three-month period, from the date of this report. Te Whatu Ora Counties Manukau is to provide HDC with the outcome of the audit within six months of the date of this report.

d) Undertake an audit of compliance by the nursing staff in the dialysis unit to document detailed progress and observation notes, including a timeline of events. The audit should be carried out over a three-month period from the date of this report. The outcome of the audit is to be provided to HDC within six months of the date of this report.

e) Provide training and education to ensure that all clinical staff in the dialysis unit are aware of:

   i. The requirements in Te Whatu Ora Counties Manukau's Naloxone Administration Guideline in Opioid Induced Sedation and Respiratory Depression (Adult) policy, in particular that respiratory rate monitoring and Glasgow Coma Score assessment is

required as part of monitoring following the administration of a controlled drug overdose.

ii. The expected standards for documentation.

Te Whatu Ora Counties Manukau is to provide evidence that all relevant staff have received training within six months of the date of this report.

f) Consider the use of an objective pain assessment scale in the dialysis unit.

g) Provide HDC with evidence that a Pyxis machine has now been placed in the dialysis unit.

Follow-up actions

183. A copy of this report with details identifying the parties removed, except CMDHB/Te Whatu Ora Counties Manukau and Middlemore Hospital and the experts who advised on this case, will be sent to the Nursing Council of New Zealand, and it will be advised of RN B's name.

184. A copy of this report with details identifying the parties removed, except CMDHB/Te Whatu Ora Counties Manukau and Middlemore Hospital and the experts who advised on this case, will be sent to the New Zealand Nurses Organisation, the Centre for Adverse Reactions Monitoring (CARM), and the Health Quality & Safety Commission, and placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

Appendix A: Independent nursing advice to Commissioner

The following expert advice was obtained from RN Karla Martin on 21 September 2020:

"Thank you for the request that I provide clinical advice in relation to the complaint from [Mrs A] about the care provided to her by the dialysis unit at Counties Manukau District Health Board. In preparing the advice on this case to the best of my knowledge I have no personal or professional conflict of interest. I have read and agree to follow the Commissioner's guidelines for Independent Advisors.

I have a Bachelor of Nursing Degree and a Post Graduate Certificate in Intensive Care Nursing. I registered in 1998. I have worked for 19 years in general Intensive Care/High Dependency Care and coordinated in the Acting Charge Nurse role when required. I currently am working as a Flight Nurse. My experience includes: Nursing patients from a variety of medical and surgical areas including trauma, neurological, multi-organ failure, organ transplantation, sepsis, elective postoperative cases and cardiac surgery.

I have reviewed the documents on file: the received complaint from [Mrs A], Counties Manukau District Health Board's response and the clinical notes from Staff Nurse [RN B].

For the purpose of brevity I have not repeated [Mrs A's] complaint, or Counties Manukau District Health Board's response.

Provided factual summary

[Mrs A] receives thrice weekly haemodialysis for end stage chronic kidney disease. On 7 October 2019, [Mrs A] attended [the dialysis unit] at Middlemore Hospital for routine haemodialysis.

Two nurses prepared to administer a controlled drug, fentanyl. The fentanyl was checked in the automated medication dispensing system (Pyxis) by the two nurses and taken out and brought to the unit undiluted. The nurse's plan was to dilute the fentanyl just before administration in the presence of the same staff. As [Mrs A] was feeling nauseated, ondansetron was administered first. She was then administered 100mcg of fentanyl instead of the intended dose of 20mcg.

1. Whether the preparation and administration of medication was in keeping with accepted practice and Counties Manukau DHB's policies?

As per Counties Manukau DHB's Opioid guideline and protocol, the fentanyl should have been prepared for administration soon after it was taken out of the Pyxis and in the presence of the same staff member whom [RN B] checked it out with. The policy also requires the quantity of opioid administered on the patient's medication chart to be recorded alongside two sets of initials for each bolus administered. Double-

checking of medications/intravenous fluid is recommended as an essential method to reduce medication errors. These steps were not followed in this case.

The Counties Manukau Intravenous Opioid (Adult) protocol states '*both RN's and RM's remain with the patient during the IV opioid administration and one remains and monitors the patient for a minimum of 10 minutes afterwards*'. There is no evidence that this was done in this case.

Medication administration is a common but complex nursing activity and there is a significant volume of literature that identifies factors which make the possibility of a medication error more likely. In this case [RN B] was delayed in drawing up and administering [Mrs A's] prescribed fentanyl as he needed to attend to her nausea first. Distractions/interruptions is identified by the relevant literature as contributing to a medication administration error. Had [RN B] and [RN C] followed the relevant policy steps, I consider that the likelihood of this error would have diminished significantly.

In my opinion the preparation, administration and expected documentation of fentanyl administration to [Mrs A] was not consistent with accepted nursing practice, relevant legislation or Counties Manukau DHB's policies. I view this as a moderate departure from the accepted standards of nursing care and consider that my peers would support this criticism. This criticism applies to [RN B] and [RN C].

2. Whether Counties Manukau DHB's policies are adequate?

I consider that Counties Manukau DHB's policies are adequate and consistent with other relevant hospital policies.

3. Whether steps taken following identification of the overdose were appropriate?

[RN B] has documented that when he noticed the medication error at 7.35am, he immediately notified the clinical coach. The clinical coach then informed the renal registrar [Dr D]. [RN B] commenced monitoring [Mrs A's] vital signs at 10–15 minute intervals after the medication administration error (100mcg fentanyl instead of 20mcg fentanyl) was realised. [RN B] already had a baseline of some of [Mrs A's] vital signs — heart rate, blood pressure, oxygen saturation and temperature — recorded as part of his initial assessment. In my opinion, [RN B's] actions — alerting the clinical coach and commencing frequent vital sign monitoring of [Mrs A] was appropriate and consistent with accepted standards. However, I am critical that the monitoring of [Mrs A] did not include respiration monitoring and that the only recording of her respiration in the dialysis unit was at 10.40am, some hours after the medication administration error.

In his summary, [the] Chief Medical Officer for Counties Manukau DHB notes:

> '*[Mrs A] was conscious and alert and stated she was "alright". She reported drowsiness though, and with concerns this may progress to a more serious reduced level of consciousness, naloxone was ordered.*'

At 7.50am, [RN B] documented that [Mrs A] was 'alert and responsive'. Opioids depress the respiratory system and symptoms of overdose can include shallow breathing, confusion, lessened alertness and loss of consciousness. In my opinion, Glasgow Coma Score (GCS) and respiration rate assessment should also have been undertaken and documented. I consider that this is required to meet the expected standard of nursing assessment following administration of more opioid than prescribed. In my opinion, the standard of monitoring [Mrs A] received following the medication error was a moderate departure from accepted standards.

I note that [Mrs A] was not opioid naïve and does take regular prescribed medications in order to relieve her pain. The administration of naloxone at 7.50am and 8.01am would have removed all analgesia from [Mrs A's] system and left her with unresolved pain. I am critical that there is a lack of evidence of an objective pain assessment scale being used to assess [Mrs A's] pain experience when she was in [the dialysis unit] and would recommend that one be consistently used when a patient expresses or shows signs of pain.

It is appropriate that [Mrs A] was transferred to the Emergency Department following completion of her haemodialysis for closer observation and monitoring. I note the quality of nursing assessment, monitoring and documentation by Emergency Department Nursing staff was consistent with accepted nursing practice and standards.

I note that all clinical staff involved reviewed the accidental overdose of [Mrs A] and that focused in-service education has been carried out since the incident. I consider this appropriate and necessary.

4. Any other matters I consider to be a departure from accepted standards of care.

The contemporaneous clinical documentation is sparse. I am critical that [RN B] has not clearly included a timeline of events in his nursing notes. In my experience such documentation is part of expected practice and a lack of detail can lead to misinterpretation of the care, assessment findings, interventions provided and the rationale for such interventions. I note it is suggested that other nurses — clinical coach and nurse specialist were consulted or reviewed [Mrs A] but I have not been provided with any documentation that details their input in [Mrs A's] care. I would recommend that Counties Manukau DHB review the standard of clinical contemporaneous documentation in this case and provide focused education to ensure that all clinical staff are aware and comply with the expected and legal standards.

I would recommend that the dialysis unit consider adopting the Early Warning Score (EWS) framework — observation chart and escalation pathway as this supports the recognition and appropriate response to the patient at risk of clinical deterioration, in addition to the actions to be taken in response to the detection of vital sign parameter abnormalities.

I would recommend that peer medical advice is sought on the appropriateness of administering naloxone to a patient that is normally dependent on opioids and whether naloxone was required in this case. In addition I would recommend that peer medical advice be sought on whether the Acute Pain Service should have been consulted for advice and management of [Mrs A]."

RN Martin provided the following further advice to HDC on 13 June 2021:

"Thank you for the request that I provide further clinical advice in relation to the complaint from [Mrs A] concerning the care provided to her by [the dialysis unit] at Middlemore Hospital. In preparing the advice on this case to the best of my knowledge I have no personal or professional conflict of interest with the persons involved. I have read and agree to follow the Commissioner's Guidelines for Independent Advisors. This advice should be read in conjunction with my previous advice on this case.

I have read and reviewed my previous advice and the additional information supplied — CMDHB response including a set of policies that were in place at the time of events and those currently in place, [RN B's], [Dr E's], [Dr G's], [RN C's] and [NPI F's] response.

1. The preparation of Ondansetron and Fentanyl was in keeping with the accepted standard of care and CMDHB's policies and procedures.

As per CMDHB's Opioid guideline and protocol, the fentanyl should have been prepared for administration soon after it was taken out of the Pyxis and in the presence of the same staff member whom [RN B] checked it out with. If the 5 rights of medication administration had been followed the likelihood of [RN B's] drug error occurring may have been diminished.

[RN B] did not follow the relevant policy steps and my fellow colleagues and I would see this as moderate departure from expected standards of care.

2. The administration of Ondansetron and Fentanyl was in keeping with the accepted standard of care and CMDHB's policies and procedures.

In the Counties Manukau Health's Procedure: Medication (Medicines) Administration document, it states — *administration standards are tasks undertaken for each and every administration of a dose of medication and that these standards support the 5 rights of medication administration — Right patient, Right medication, Right dose, Right route and Right time*. Following these five rights of medication administration reduces medication errors from occurring. The CMDHB's protocol on Intravenous Opioid (Adult) clearly states that the administrating RN/RM/EN and checking RN/RM/EN take the syringe with the medication after it has been drawn up to the patient's bedside and perform the five rights of medications administration. [RN B] did not follow the procedural administration rights of medication administration and in my opinion I see this as a moderate departure from expected standards.

3. The steps taken following the identification of the overdose, including monitoring the respiratory rate and pain assessment, were within the accepted standard of care.

I am satisfied that [RN B] immediately reported the medication error and told [Mrs A] of the event. He stayed with the patient and did a baseline set of vital signs. This is appropriate and consistent with accepted standards of practice.

It is appropriate to monitor oxygenation saturations as [RN B] did, however I am critical that respiratory rate monitoring was not undertaken or documented given that when someone has overdosed on an opioid they can breathe slower or stop breathing altogether. I consider that this is an expected standard of nursing assessment following administration of an opioid and my peers and I would see this as a moderate departure of accepted standard of care.

I am still mildly critical that [Mrs A's] pain was not documented using an objective pain scale. In my opinion nursing management of pain and discomfort is enhanced by the use of a pain assessment scale and this should be documented. In the CMDHB's Intravenous Opioid (Adult) protocol it states that along with vital signs and a sedation score, pain assessment should be documented. My peers and I would see this as a mild departure from accepted standard of care.

4. The documentation of the administration and medication, and the events following the administration and medication was adequate.

Documentation was not adequate and not in keeping with CMDHB's guidelines. [RN B] did not document initial administration of fentanyl at 7.35am after he had administered it and this is a departure from expected medicine administration. All medication should be signed for immediately following the administration event.

I am not satisfied that 'regular observations' were done following the event given that there is no documentation of this. In any clinical situation documentation serves as a concise evaluation of the care provided.[42]

In my opinion, there was a moderate departure from the expected standards of nursing documentation.

5. The practice of removing medication early to avoid queues and delays was reasonable and within the accepted standard of care.

No the practice of removing medication early is not acceptable practice and not within accepted standard of care. The CM Health protocol states — *all Fentanyl, Morphine and Oxycodone must be stored in a locked, controlled drug safe or Pyxis medstation when not in immediate use, as these are controlled drugs.* I note from [the] Acting Chief Medical Officer that the removal of medications significantly earlier than they

[42] Nursing Council of New Zealand (NCNZ), *Code of conduct for nurses*. (Wellington: NCMZ, 2012).

are due to be administered is a breach of their policies and procedures and this historical practice has since been stopped. I agree that this is appropriate.

6. The adequacy of the additional relevant policies and procedures that were in place at the time of the events including:

a. 'Protocol: Intravenous Opioid (Adult)'
b. 'Guideline: Naloxone Administration Guideline in Opioid Induced Sedation and Respiratory Depression (Adult)'
c. 'Policy: CM Health Incident Reporting and Investigation'
d. 'Procedure: Patient Related Incident Reporting and Investigation'
e. 'Policy: Medication (Medicines)'
f. 'Procedure: Medication (Medicines) Administration'
g. 'Procedure: Multi-dose medication management — use, handling and expiry'

I consider that CMDHB's policies and procedures were adequate and consistent with other relevant hospital policies at the time.

7. The adequacy of the following policies that are currently in place at CMDHB:

a. 'Protocol: Intravenous Opioid (Adult)'
b. 'Guideline: Naloxone Administration Guideline in Opioid Induced Sedation and Respiratory Depression (Adult)'
c. 'Procedure: Patient Related Incident Reporting and Management'
d. 'Procedure: Medication (Medicines) Administration'
e. 'Procedure: Multi-dose medication management — use, handling and expiry'
f. 'Guideline: Transitional Pain Services'

It is expected practice that regular reviews of policies and practices are undertaken to ensure consistency in clinical practice. They set expectations and proper ways of doing things that reduce mistakes, and keep patients and staff safe. I consider that CMDHB's policies are adequate and consistent with other relevant hospital policies.

8. The adequacy of the changes to [RN B's] practice and of the training he has undertaken.

I am satisfied that [RN B] has undertaken the necessary education and has been given the appropriate support provided by CMDHB. I note that since this complaint [RN B] reports changing his practice so that all relevant clinical conversations with team members and clinical assessments involving the patient are documented in the patient's clinical notes in a timely manner. I agree that this is expected and appropriate.

9. The adequacy of the internal review conducted by CMDHB

I consider that CMDHB's internal review was adequate and all issues relating to the incident have been thoroughly investigated. Further in-service training and support was provided to staff involved and this is expected and appropriate.

10. Any other matter I consider relevant to comment on

I would like [the dialysis unit] to consider amending their dialysis observation chart to include respiratory rate monitoring as part of their routine recordings if this has not already been done.

I would also recommend education to nursing staff in regards to completing documentation correctly as this is part of accepted and legal practice."

Appendix B: Independent advice from renal physician

The following expert advice was received from Dr Ian Dittmer on 18 May 2021:

"I have been asked to provide Independent Advice to the Commissioner regarding complaint 19HDC01949.

I have read the Guidelines for Independent Advisors. I am not aware of any conflicts of interest. I have the following qualifications

- MBChB (Otago) 1986
- Fellowship of the Royal Australasian College of Physicians (1995)
- I have practiced as a specialist Renal Physician in Auckland DHB since 1998.
- I was Service Clinical Director of the Auckland DHB Department of Renal Medicine from 2008 until February 2020
- I was a member of the National Renal Advisory Board 2015 to 2019. Last 2 years as Chair.
- I had a particular clinical interest in the management of complex haemodialysis patients until late 2020.

My instructions regarding this complaint were

Please review the enclosed documentations and advise whether you consider the care provided to [Mrs A] by [Dr E] was reasonable in the circumstances, and why.

In particular, please comment on:

1. *The reasonableness of the decision to administer Naloxone for [Mrs A] in the circumstances.*
2. *The lack of documentation of the decision.*
3. *The compliance of the administration of Naloxone with the CMDHB's policies at the time of events including the following:*
   a. *'Protocol: Intravenous Opioid (Adult)'*
   b. *'Guideline: Naloxone Administration Guideline in Opioid Induced Sedation and Respiratory Depression (Adult)'*
   c. *'Policy: Medication (Medicines)'*
   d. *'Procedure: Medication (Medicines) Administration'*

It was noted that despite the dates on some of the policies, CMDHB has confirmed that these policies were in place at the time of the events.

4. *The adequacy of the following policies that are currently in place at CMDHB:*
   a. *'Protocol: Intravenous Opioid (Adult)'*
   b. *'Guideline: Naloxone Administration Guideline in Opioid Induced Sedation and Respiratory Depression (Adult)'*
   c. *'Procedure: Medication (Medicines) Administration'*
   d. *'Guideline: Transitional Pain Services'*

5. *The reasonableness of the alternative option outlined by [Dr E] in that [Mrs A] could have slept off the Fentanyl.*
6. *The steps taken to manage [Mrs A's] pain following the administration of Naloxone were adequate.*
7. *Any other relevant matter in this case that you consider warrant comment. For each question, please advise:*
   a. *What is the standard of care/accepted practice?*
   b. *If there has been a departure from the standard of care or accepted practice, how significant a departure do you consider this to be?*
   c. *How would it be viewed by your peers?*
   d. *Recommendations for improvement that may help to prevent a similar occurrence in future.*

I received the following documents which I have reviewed

1. *Letter of complaint dated 16 October 2019*
2. *Counties Manukau DHB's (CMDHB's) response dated 18 December 2019*
3. *CMDHB's response to notification dated 10 February 2021*
4. *[Dr E's] statement provided to HDC dated 29 January 2021*
5. *Relevant clinical records from CMDHB*
6. *Relevant policies at the time of events (see below)*
7. *Statements from [RN C], [NPI F] and [Dr G]*

Factual Summary

[Mrs A] is a [woman in her fifties] (at the time of events) who receives thrice weekly haemodialysis for end stage chronic kidney disease. [Mrs A] has multiple complex health needs and is also opioid dependent. On 7 October 2019, [Mrs A] attended [the dialysis unit] at Middlemore Hospital for routine haemodialysis. Two nurses prepared the controlled drug, Fentanyl, to administer to [Mrs A] and brought it to the ward undiluted. However, the nurse proceeded to administer the Fentanyl without it being double checked. [Mrs A] was then administered 100 mcg of Fentanyl instead of the usual dose of 20 mcg. The renal ward registrar ([Dr D]) was informed of the incident and discussed this with [Dr E] who was in a handover meeting adjacent to the ward. [Dr E] is [Mrs A's] primary nephrologist and had known her well since 2014. [Dr E] and the renal team made the decision to give Naloxone to reverse the Fentanyl. Two doses of Naloxone were administered by the renal registrar to reverse the action of the Fentanyl. This precipitated a rapid withdrawal state for [Mrs A] which caused considerable amount of pain and distress for her. [Mrs A] was administered intravenous fentanyl and diazepam (unclear route) in an attempt to manage these symptoms. [Mrs A] was later transferred to Emergency Department for observations before being discharged.

1. Reasonableness of decision to administer naloxone.

a. Following the administration of the 100 microgram dose of fentanyl [Mrs A] was assessed by the Renal Registrar ([Dr D]) as feeling alright but appearing vague and

drowsy. Her observations were satisfactory although her pupils were noted to be small. (Progress note — 7/10/19). A decision was made to administer naloxone.

b. This clinical situation is consistent with receiving an excessive dose of an opiate medication and the administration of naloxone is, in my opinion, an appropriate response. Administration of naloxone would decrease the possibility of an adverse outcome associated with central nervous system depression.

2. Lack of documentation.

a. There is a brief medical progress note from the Renal Registrar ([Dr D]) around the clinical findings and the decision to administer the naloxone. The records of the prescription and administration of the naloxone are clear. I cannot ascertain who physically prescribed the naloxone.

b. In my opinion these notes are adequate and there is no failure to document this decision.

3. Compliance of the administration of naloxone with respect to CMDHB policies.

a. Protocol: Intravenous opioid (Adult). This policy is probably not relevant to this complaint as it clearly states it is not intended for chronic pain patients and I have not been asked to provide advice with respect to the administration of the incorrect dose of fentanyl.

b. Guideline: Naloxone administration guideline in opioid induced sedation and respiratory depression (Adult). The administration of naloxone to [Mrs A] is consistent with this guideline. The prescription of the naloxone should have been limited to 10 doses to be completely compliant with the guideline but as only 2 doses were administered there has not been a deviation. The patient clinical monitoring that is described in the guideline does not appear to have been performed however it would seem that sedation was no longer a concern after the administration of the second dose of naloxone and that the standard observations of a patient undergoing haemodialysis were performed. This is acknowledged in the CMDHB response. In my opinion this is a minor deviation from the expected practice.

c. Policy: Medication (Medicines). In my opinion this policy was followed with respect to the administration of the naloxone.

Procedure: Medication (Medicines) Administration. In my opinion this policy was followed with respect to the administration of the naloxone.

4. Adequacy of current CMDHB policies.

a. Protocol: Intravenous opioid (Adult). This is adequate. It is intended for in-patients and may not be completely applicable to the out-patient haemodialysis setting.

b. Guideline: Naloxone administration guideline in opioid induced sedation and respiratory depression (Adult). This is adequate and clear.

c. Procedure: Medication (Medicines) administration. This is appropriate and clear.

d. Guideline: Transitional pain services. Not relevant to this complaint.

e. As a general comment I note that it is unlikely that all relevant staff will be aware of all policies when in a situation that is unfamiliar and that timeliness/expediency may prevent access. I think that this could be pertinent to the naloxone administration guideline in this case.

5. Reasonableness of alternative opinion outlined by [Dr E] that [Mrs A] could have slept off the fentanyl.

a. This statement was made by [Dr E] in the 2021 CMDHB response to your office.

b. In my opinion the 2 paragraphs of [Dr E's] response adequately summarise the 2 different approaches that could have been taken to the management of the over administration of fentanyl to [Mrs A]. In my opinion either approach would be an acceptable standard of care and viewed as such by our peers. I do not think that at the time of the decision to administer (or not) the naloxone that there would have been a 'preferred' option.

6. Whether the steps taken to manage [Mrs A's] pain following the administration of naloxone were adequate.

a. The nursing note of [RN B] describes the events of [Mrs A's] treatment on 7 October 2019. The naloxone was administered around 0800 hours and the first dose of fentanyl was administered at 0900 as requested by [Dr D]. Five 10 microgram doses of intravenous fentanyl were administered at 15 minute intervals. [Dr E] subsequently prescribed diazepam at 1050. [Dr G's] clinical note states [Mrs A] was administered her usual dose of gabapentin. [RN B's] note states that [Mrs A's] agitation had resolved following this.

b. [Mrs A's] complaint states that she was in distress for some time and that the registrar had been contacted for advice on management but that this (the fentanyl) had not been adequate and there was no improvement until the administration of the diazepam.

c. It is my opinion that the attending medical and nursing staff undertook timely assessment and treatment of [Mrs A] with respect to the management of her acute distress and that unfortunately this took some time to be brought under control.

d. The fentanyl is charted as a prn medication on [Mrs A's] regular dialysis chart. I note that this was initially charted in milligrams and subsequently changed to micrograms. In my opinion this should have been completely rewritten on a new line.

e. The fentanyl is charted as q2hrly/prn. I interpret this as meaning that doses of fentanyl could be administered as required on a 2 hourly basis. In my opinion it was appropriate to administer the fentanyl more frequently than this as it was noted by the staff and [Mrs A] that her symptoms of distress were not controlled. In my

opinion it would be appropriate to have a limit on the number of doses of fentanyl that could be administered before formal medical review of a patient. I note that in this case review took place.

7. Use of the Early Warning Signs (EWS)

a. Mention is made by [Dr E] that the standard EWS assessments are not suited for patients undergoing haemodialysis. I agree with this statement but I note that Auckland DHB have designed a modified EWS for patients undergoing haemodialysis treatments. Appended.

8. Code call

a. [Mrs A] has questioned why a 'code call' was not put out with respect to her ongoing distress after the administration of the naloxone. It is my understanding that code calls are used when a patient is in a situation where there are clinical signs that the patient is at significant risk of further clinical deterioration that could result in disability or death. Although [Mrs A] was in significant distress at the time it is my opinion that the clinical situation did not necessitate a 'code call' being initiated.

9. Administration of incorrect dose of fentanyl.

a. I have not commented on this as the issue seems to have been addressed in previous expert advice that I have not had access to.

10. Summary

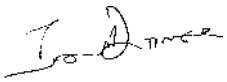
a. I have been asked to address the situation around the distress that [Mrs A] experienced after she received 2 doses of naloxone to treat drowsiness after the incorrect dose of fentanyl had been administered.

b. The medical and nursing notes document the events briefly but clearly.

c. In my opinion the appropriate actions were taken by the CMDHB renal team and that [Mrs A] received the expected standard of care. Unfortunately despite this [Mrs A] continued to experience significant distress for 2–3 hours.

I would be pleased to provide any further clarification regarding my opinion if that is required.

Yours sincerely



Dr Ian Dittmer"

Appendix C: CMDHB's Naloxone Administration Guideline in Opioid Induced Sedation and Respiratory Depression (Adult)

The following relevant excerpts are from the CMDHB Naloxone Administration Guideline that applied at the time of events:[1]

"**Purpose**

The purpose of this guideline is to promote the safe and effective use of Naloxone for the complete or partial reversal of opioid depression. This includes respiratory depression, induced by any oral or intravenous opioids. If the degree of opioid depression presents a medical emergency then the appropriate Medical Emergency Response System should be activated.

Responsibility

Persons entitled to prescribe are clinical practitioners with approved prescribing rights. Areas able to administer are all clinical areas with staff credentialed to administer. Persons entitled to administer are RMOs and nurses on the IV register.

Guideline

Indication: Naloxone is used to reverse significant opioid induced respiratory depression and somnolence whether caused by excessive doses given therapeutically, or by self-administered overdose.

Pharmacology: Naloxone is a short acting competitive antagonist at opioid receptor sites. The duration of action of naloxone can vary between 20 minutes and 4 hours.

Dose & Administration: IV Bolus Use of Naloxone to reverse opioid induced sedation and /or respiratory depression, must be titrated carefully. Taking into consideration the patient's condition and their pain control.

- Dilute 1 ampoule (400mcg/mL) with 9mL 0.9% sodium chloride for a Naloxone concentration of 40mcg/mL)
- 40mcg (1mL) every 2 minutes until the desired response is achieved. If more than 400mcg is needed, a Naloxone infusion needs to be considered.
- Cautious Naloxone titration should not cause pain to return or precipitate opioid withdrawal.
- Patients must be monitored closely (see below) and continuously as the duration of action of the opioid is likely to exceed that of Naloxone. This therefore exposes the patient to the risk of relapse, and need for a continuous Naloxone infusion. If a

[1] Document ID: A2664. Last review date: 19/12/2016. Next Review Date: 19/12/2019. Approved by: Drug and Therapeutics Advisory Group.

continuous infusion is indicated, the patient will need to be transferred to HDU/ICU.

Dosage adjustment required in:

- No specific dosage adjustment of Naloxone is required for patients in renal failure
- Caution should be exercised when Naloxone is administered to patients with hepatic disease and a history of opioid misuse.

Monitoring

- Sedation score to be recorded with respiratory rate, pulse oximetry, heart rate and blood pressure on patient observation chart every 15 minutes for 2 hours.
- If patient is stable and no observed decrease in sedation, continue observations every 30 minutes for 4 hours.
- Observe patient closely as further Naloxone may be required.

As per PUP — CNS score:

0 = Alert

1 = Responds to voice

2 = Responds to pain

5 = Unresponsive

University of Michigan Sedation Scale (UMSS)

0 = Awake and alert

1 = Mild sedation, easy to rouse.

2 = Moderate sedation, Somnolent/sleeping. Easily roused to verbal command or light stimulation.

3 = Deep sedation. Arousable only to physical stimulation.

4 = Unarousable

For a Sedation Score of 3–4 refer to Naloxone algorithm

If on a pain modality the Acute Pain Service/On call Anaesthetist *3534 must be notified that significant sedation/respiratory depression has occurred. They can then establish a further management plan.

Adverse Effects

Adverse reversal of opioid depression may result in nausea, vomiting, sweating, tachycardia, increased blood pressure and tremulousness.

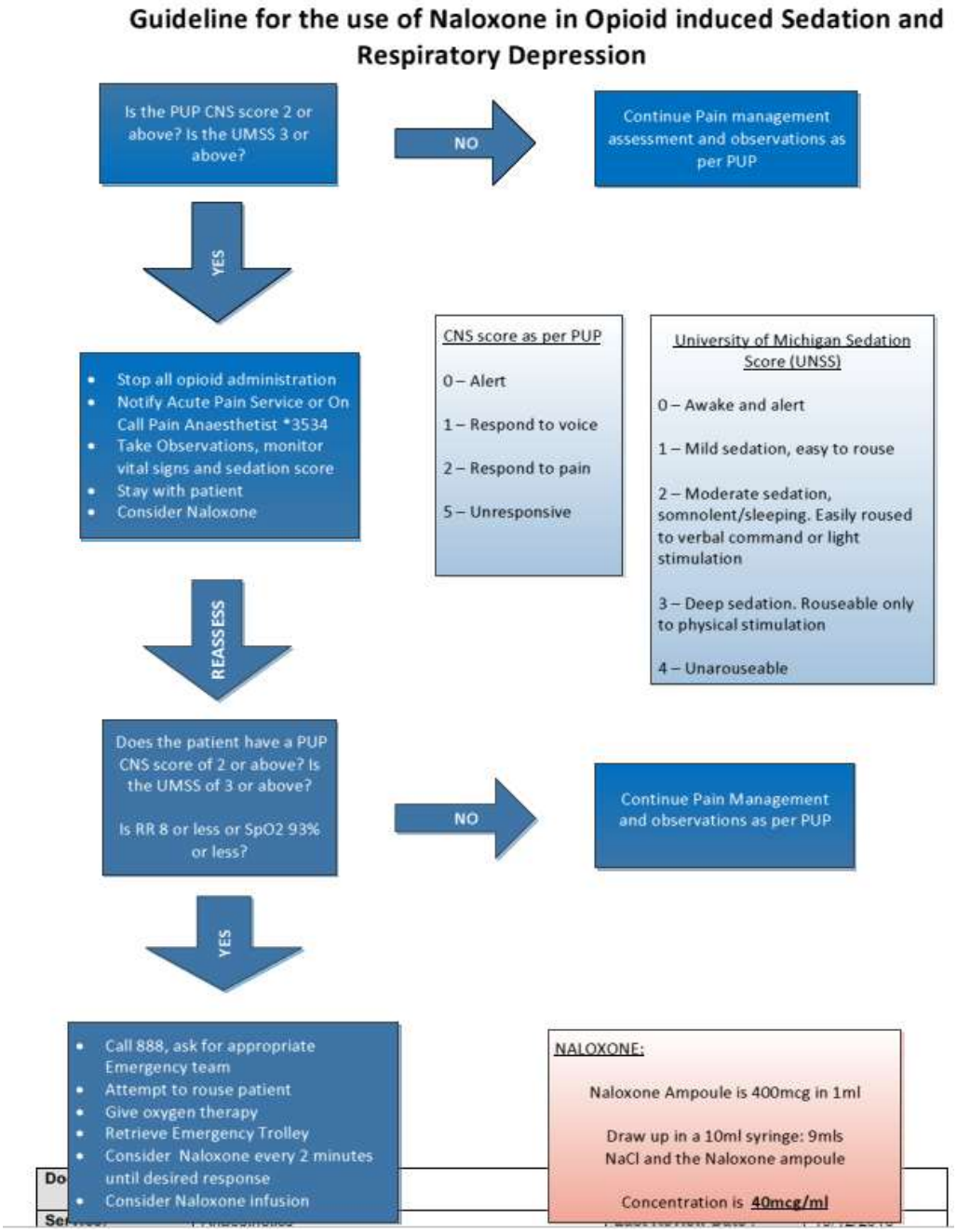
Excessive doses of Naloxone in patients may result in significant reversal of analgesia thereby causing worsening pain and agitation.

The following adverse events have been associated with the use of Naloxone particularly in patients with recent history of opioid abuse or opioid dependence.

Naloxone use can precipitate acute opioid withdrawal in patients who are on chronic high doses of opioid (eg > 100mg/day oral morphine equivalent). These symptoms include:

- Hypotension, hypertension, ventricular tachycardia and fibrillation, dyspnea, pulmonary oedema, and cardiac arrest.
- Encephalopathy, coma and death have been reported as sequelae of these events.

…"



Names have been removed (except CMDHB/Te Whatu Ora Counties Manukau, Middlemore Hospital 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.

Appendix D: Medication Chart for Mrs A on 7 October 2019

Time (Hours)	Medication prescribed and administered	Clinician who saw the patient, prescribed and administered
9.10am	Ondansetron (4mg)	[NPI F] / [Dr G]
9.15	Fentanyl (10mcg)	[NPI F] / [Dr G]
9.15	Fentanyl patch (100mcg)	
9.30	Fentanyl (10mcg)	[NPI F] / [Dr G]
10.05	Fentanyl (10mcg)	[NPI F] / [Dr G]
10.10	Oxynorm (5mg)	
10.15	Fentanyl (10mcg)	[NPI F] / [Dr G]
10.30	Fentanyl given stat[2] (20 mcg)	[NPI F] / [Dr G]
10.40	Diazepam[3] given stat (2.5mg)	[Dr G] / [Dr E]
10.45	Gabapentin[4] (100mg)	
11.15	Diazepam given stat (2.5mg)	[Dr E] (via phone)

[2] A "stat" dose is one that is given as soon as possible.
[3] Used to treat anxiety, muscle spasms and fits (seizures).
[4] Used to treat seizures, nerve pain and restless leg syndrome.

Appendix E: CMDHB's Protocol: Intravenous Opioid (Adult)

The following are relevant excerpts from CMDHB's Protocol for Intravenous Opioid (Adult) that applied at the time of events:[5]

"**Background & Purpose**

To ensure the consistent and safe administration of IV Opioids.

Overview

Consider the patient's co-morbidities, age and general condition when prescribing opioids.

…

Prescribed Medication Diluted as Follows:

100 microgram fentanyl (one ampoule) diluted with Sodium Chloride 0.9% up to 10mL in total (10mcg/ml)

…

Storage

All Fentanyl, Morphine, Oxycodone & Pethidine must be stored in a locked safe or Pyxis Medstation, with the keys kept on a registered nurse or midwife at all times, as these are Class B Part 1 Controlled Drugs (Regulation 28, Misuse of Drugs Act). See Management of Controlled Drugs Procedure.

Protocol

Administration of IV Fentanyl, Morphine, Oxycodone or Pethidine Using the Adult IV Opioid Protocol.

1. Assess patient for pain according to the Adult IV Opioid Flow Diagram. Two RNs or RMs (registered nurses or midwives) or EN's (IV credentialed Enrolled Nurses) check the IV opioid prescription and medication.
2. Record the prescribed opioid ampoule, taken out under the correct opioid's name and strength, in the Controlled Drug (CD) Register or Pyxis as per the Management of Controlled Drugs Procedure. If using Oxycodone discard 10mg as per the dilution instructions. Record the discarded 10mg (1 mL) of Oxycodone in the CD register or Pyxis waste function.
3. Draw the required contents of the ampoule and saline up into a 10mL syringe, add a medication label, and keep the empty ampoule in a kidney dish.

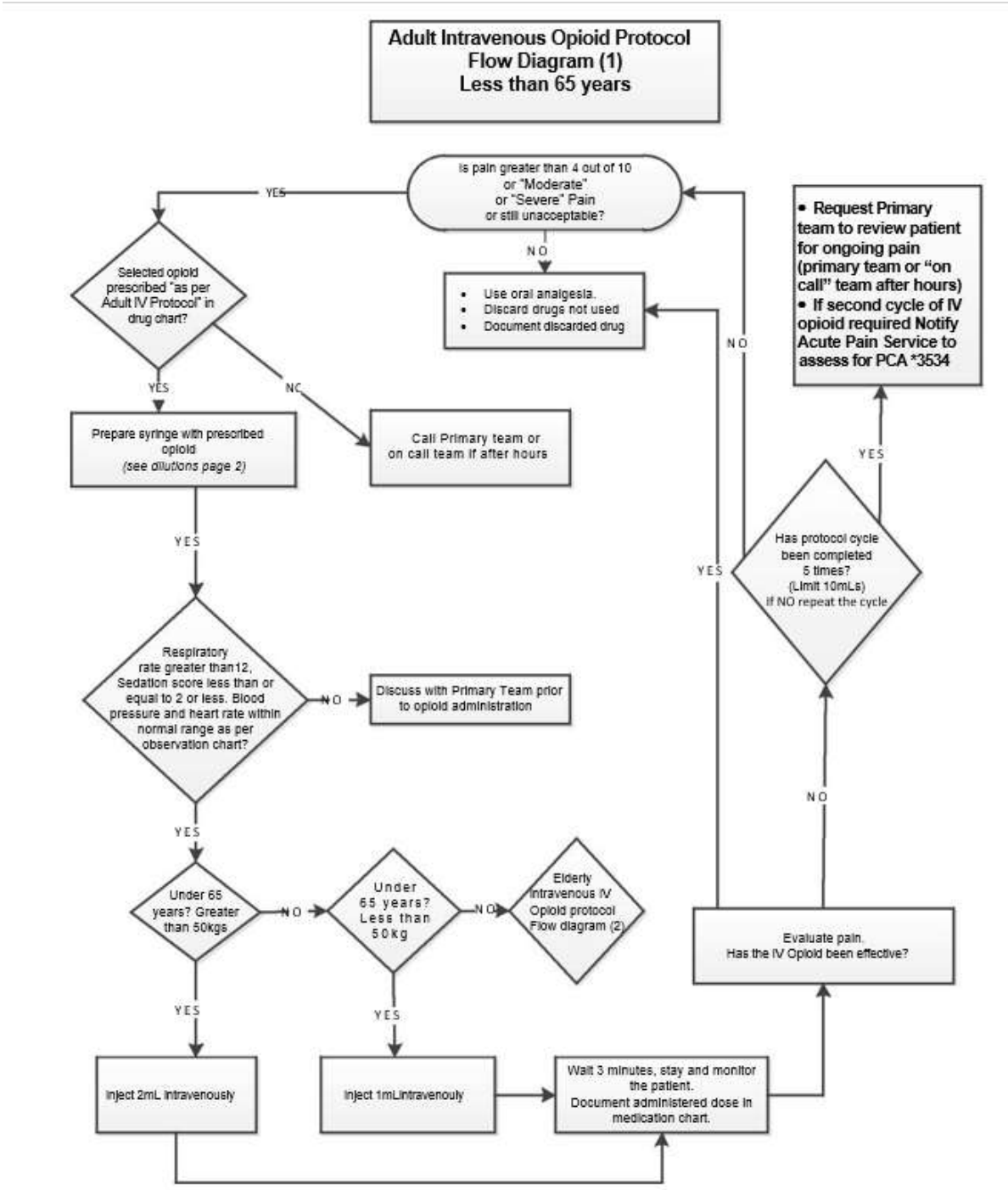
[5] Document ID: A22395. Approved by Drug and Therapeutics Advisory Group (DTAG). Last review date 2/05/2016. Date First Issued: 1/09/2001.

4. The checking and administering persons take the syringe to the patient's bedside, and perform the required checks according to CMH medication administration policy. Choose the appropriate flowchart (Flowchart 1 or Flowchart 2), and administer a dose as clinically appropriate and as per the flowchart.
5. Both RNs and RMs remain with the patient during the IV opioid administration, and one remains and monitors the patient for a minimum of 10 minutes afterwards. After administration of the IV bolus, assess all vital signs and complete a pain assessment. Document on the observation chart (PUP/MEWS).
6. Record the quantity of IV opioid administered on the patient's medication chart (two sets of initials required) when each bolus is administered.
7. If the patient is still in pain, repeat steps 5 and 6 until the patient is comfortable or the flow diagram cycle has been completed 5 times. NOTE: The total limit will be 2.5mL, 5mL or 10mL within one hour, depending upon the patient's weight and/or age.
8. If the patient's pain remains unrelieved after 5 cycles, a review by the primary or on-call team is required.
9. If the patient's pain is within acceptable limits (a pain score of less than 3 out of 10, or patient satisfaction with an improvement) at 5 minutes after administering a bolus dose, then discard the remainder of the drug by flushing the remaining opioid solution in the syringe down the sink and discarding the empty syringe in the rubbish bin. **The amount wasted must be witnessed by two RNs or RMs or IV credentialed EN who will enter this amount in and sign the Controlled Drug Register (or carry out the Pyxis Waste Function) according to the Management of Controlled Drugs Procedure.**
10. Review the patient after 20 minutes to again check the vital signs and perform a pain assessment. Document on the PUP/MEWS observation chart. Please refer to the flow chart Sedation Score for details of level of sedation scoring.
11. If further IV opioid doses are judged required, a new cycle can be commenced one hour **after the last dose of I.V. protocol or oral opioid**. A new syringe must be prepared and all the above steps repeated.
12. The Primary or on-call team **should be notified and a review requested** if there is ongoing poorly controlled pain.

At Middlemore the team can contact the Acute Pain Service (APS) on *3023 or on-call anaesthetist on *3534 for further advice or management. For MSC call the Perioperative Care Unit (PCU) anaesthetist on *3220.

Please note: For the two flow charts below

1. Use chart ONE for adults < 65 years of age (page 4).
2. Use chart TWO for elderly adults > 65 years and/or < 50kg in weight (page 5)."



Names have been removed (except CMDHB/Te Whatu Ora Counties Manukau, Middlemore Hospital 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.

Appendix F: Procedure: Medication (Medicines) Administration

The following are relevant excerpts from CMDHB's procedure that applied at the time of events:[6]

"**Objectives**

Use of consistent process steps when administering medication to patients will:

- Reinforce process and knowledge to improve patient safety and thus decrease the number of medication errors made on administration.
- Ensure a patient is informed of their medication and its purpose in their treatment.

Scope of use

This procedure must be followed on each and every occasion that medication is administered to a patient.

…

Administration standards

The Administration Standards are tasks undertaken for each and every administration of a dose of medication.

These standards support the 5 Rights of medication administration within the framework of Right patient, Right medication, Right dose, Right route and Right time.

…

Compliance with prescription:

- The administrator must adhere to the prescription.
- The administration must know the medication is appropriate for the diagnosis/ treatment indication and the condition of the patient, as well as knowing the usual dose, frequency and route of the medication.
- The administrator must check the medication for contraindications, any special precautions and monitoring requirements prior to administration.

…

The administrator of medication must:

- Check the dose against the prescription.
- Check the route and time of administration against the prescription

[6] Document ID: A24915. Approved by: Drug and Therapeutics Advisory Group (DTAG). Last Review Date: 24/11/2016. Date First Issued: 15/06/2011.

…

- Remain with the patient:
  - For 10 Minutes following community based administration of any medication.
- Document dose given, date & time administered, and signature immediately following the administration event
  - In the appropriate place in the patient's record (usually on the patient's medication chart) to record that the medication has been given.

…

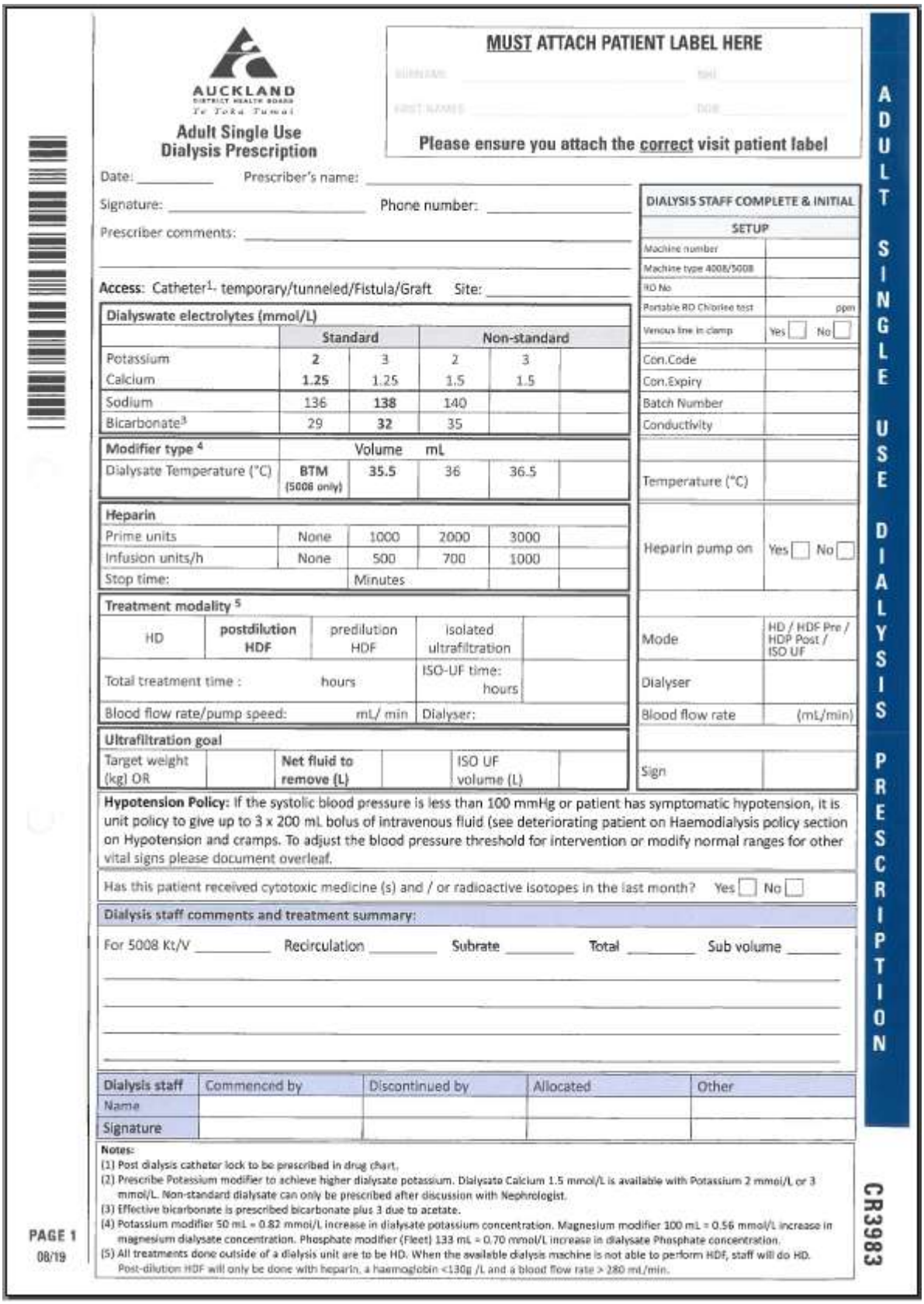
Oral Syringe Use

International best practice recommends use of oral syringes to prevent inadvertent injection of oral liquids. It is not possible to accidentally connect an oral syringe to a parenteral port — an action which could be inadvertently fatal.

Any area preparing, administering or supplying oral or enteral liquid medications to patients must:

- Procure the necessary oral and/or enteral syringes
- Store those syringes in medication rooms or suitable storage separately from equipment used to administer medications parenterally
- Label those syringes 'For oral/enteral use only'
- Use oral/enteral syringes to prepare and/or administer oral/enteral liquid medications as necessary for the following:
  - Need to withdraw oral/enteral medications by 'drawing up' the liquid (NEVER use a parenteral syringe)
  - Requirement for accurate dose measurement (e.g. controlled drug oral liquids)"

Appendix G: Auckland DHB's Adult Single Use Dialysis Prescription



AUCKLAND DISTRICT HEALTH BOARD
Te Toka Tumai

Adult Single Use Dialysis Prescription

MUST ATTACH PATIENT LABEL HERE

Please ensure you attach the correct visit patient label

ADULT SINGLE USE DIALYSIS PRESCRIPTION

Date: _____ Prescriber's name: _____

Signature: _____ Phone number: _____

Prescriber comments: _____

Access: Catheter[1]- temporary/tunneled/Fistula/Graft Site: _____

Dialyswate electrolytes (mmol/L)	Standard		Non-standard		
Potassium	**2**	3	2	3	
Calcium	**1.25**	1.25	1.5	1.5	
Sodium	136	**138**	140		
Bicarbonate[3]	29	**32**	35		

Modifier type [4]	Volume mL				
Dialysate Temperature (°C)	**BTM** (5008 only)	**35.5**	36	36.5	

Heparin					
Prime units	None	1000	2000	3000	
Infusion units/h	None	500	700	1000	
Stop time:		Minutes			

Treatment modality [5]

HD	**postdilution HDF**	predilution HDF	isolated ultrafiltration	
Total treatment time :	hours		ISO-UF time: hours	
Blood flow rate/pump speed:	mL/ min		Dialyser:	

Ultrafiltration goal

Target weight (kg) OR		**Net fluid to remove (L)**		ISO UF volume (L)	

DIALYSIS STAFF COMPLETE & INITIAL	
SETUP	
Machine number	
Machine type 4008/5008	
RO No	
Portable RO Chlorine test	ppm
Venous line in clamp	Yes ☐ No ☐
Con.Code	
Con.Expiry	
Batch Number	
Conductivity	
Temperature (°C)	
Heparin pump on	Yes ☐ No ☐
Mode	HD / HDF Pre / HDF Post / ISO UF
Dialyser	
Blood flow rate	(mL/min)
Sign	

Hypotension Policy: If the systolic blood pressure is less than 100 mmHg or patient has symptomatic hypotension, it is unit policy to give up to 3 x 200 mL bolus of intravenous fluid (see deteriorating patient on Haemodialysis policy section on Hypotension and cramps. To adjust the blood pressure threshold for intervention or modify normal ranges for other vital signs please document overleaf.

Has this patient received cytotoxic medicine (s) and / or radioactive isotopes in the last month? Yes ☐ No ☐

Dialysis staff comments and treatment summary:

For 5008 Kt/V _____ Recirculation _____ Subrate _____ Total _____ Sub volume _____

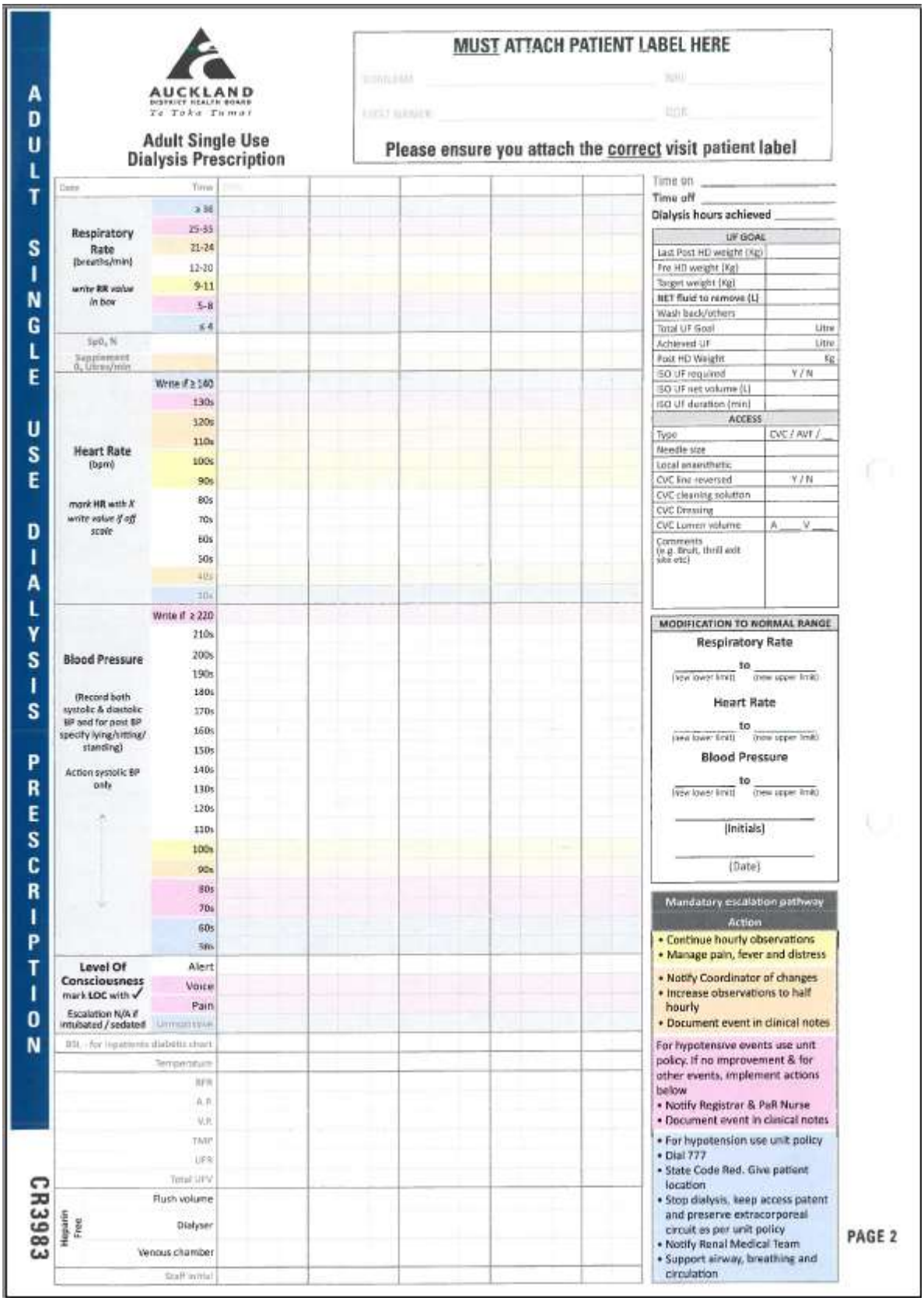
Dialysis staff	Commenced by	Discontinued by	Allocated	Other
Name				
Signature				

Notes:
(1) Post dialysis catheter lock to be prescribed in drug chart.
(2) Prescribe Potassium modifier to achieve higher dialysate potassium. Dialysate Calcium 1.5 mmol/L is available with Potassium 2 mmol/L or 3 mmol/L. Non-standard dialysate can only be prescribed after discussion with Nephrologist.
(3) Effective bicarbonate is prescribed bicarbonate plus 3 due to acetate.
(4) Potassium modifier 50 mL = 0.82 mmol/L increase in dialysate potassium concentration. Magnesium modifier 100 mL = 0.56 mmol/L increase in magnesium dialysate concentration. Phosphate modifier (Fleet) 133 mL = 0.70 mmol/L increase in dialysate Phosphate concentration.
(5) All treatments done outside of a dialysis unit are to be HD. When the available dialysis machine is not able to perform HDF, staff will do HD. Post-dilution HDF will only be done with heparin, a haemoglobin <130g /L and a blood flow rate > 280 mL/min.

PAGE 1
08/19

CR3983

Names have been removed (except CMDHB/Te Whatu Ora Counties Manukau, Middlemore Hospital 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.



ADULT SINGLE USE DIALYSIS PRESCRIPTION

CR3983

AUCKLAND DISTRICT HEALTH BOARD
Te Toka Tumai

Adult Single Use Dialysis Prescription

MUST ATTACH PATIENT LABEL HERE

Please ensure you attach the correct visit patient label

Date / Time

Respiratory Rate (breaths/min) — write RR value in box: ≥ 36; 25-35; 21-24; 12-20; 9-11; 5-8; ≤ 4

SpO2 %

Supplement O2 Litres/min

Heart Rate (bpm) — mark HR with X, write value if off scale: Write if ≥ 160; 150s; 140s; 130s; 120s; 110s; 100s; 90s; 80s; 70s; 60s; 50s; 40s; 30s

Blood Pressure (Record both systolic & diastolic BP and for post BP specify lying/sitting/standing) — Action systolic BP only: Write if ≥ 220; 210s; 200s; 190s; 180s; 170s; 160s; 150s; 140s; 130s; 120s; 110s; 100s; 90s; 80s; 70s; 60s; 50s

Level Of Consciousness mark LOC with ✓ — Escalation N/A if intubated / sedated: Alert; Voice; Pain; Unresponsive

BSL - for inpatients diabetic chart

Temperature

BFR

A.P

V.P

TMP

UFR

Total UFV

Heparin Free: Flush volume; Dialyser; Venous chamber

Staff Initial

Time on _____

Time off _____

Dialysis hours achieved _____

UF GOAL	
Last Post HD weight (Kg)	
Pre HD weight (Kg)	
Target weight (Kg)	
NET fluid to remove (L)	
Wash back/others	
Total UF Goal	Litre
Achieved UF	Litre
Post HD Weight	Kg
ISO UF required	Y / N
ISO UF net volume (L)	
ISO UF duration (min)	

ACCESS	
Type	CVC / AVF / __
Needle size	
Local anaesthetic	
CVC line reversed	Y / N
CVC cleaning solution	
CVC Dressing	
CVC Lumen volume	A ___ V ___
Comments (e.g. Bruit, thrill exit site etc)	

MODIFICATION TO NORMAL RANGE

Respiratory Rate
_____ (new lower limit) to _____ (new upper limit)

Heart Rate
_____ (new lower limit) to _____ (new upper limit)

Blood Pressure
_____ (new lower limit) to _____ (new upper limit)

_____ (Initials)

_____ (Date)

Mandatory escalation pathway

Action

- Continue hourly observations
- Manage pain, fever and distress

- Notify Coordinator of changes
- Increase observations to half hourly
- Document event in clinical notes

For hypotensive events use unit policy. If no improvement & for other events, implement actions below
- Notify Registrar & PaR Nurse
- Document event in clinical notes

- For hypotension use unit policy
- Dial 777
- State Code Red. Give patient location
- Stop dialysis, keep access patent and preserve extracorporeal circuit as per unit policy
- Notify Renal Medical Team
- Support airway, breathing and circulation

PAGE 2

Names have been removed (except CMDHB/Te Whatu Ora Counties Manukau, Middlemore Hospital 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.

Appendix H: Nursing Council of New Zealand (NCNZ) Code of Conduct for Nurses

"**Principle 4. Maintain health consumer trust by providing safe and competent care**

Standards

4.8 Keep clear and accurate records (see Guidance: documentation).

4.9 Administer medicines and health care interventions in accordance with legislation, your scope of practice and established standards or guidelines[7].

…

Guidance Documentation

- Keep clear and accurate records of the discussions you have, the assessments you make, the care and medicines you give, and how effective these have been.
- Complete records as soon as possible after an event has occurred."

[7] For example, Ministry of Health (2011), Medicines Care Guides for Residential Aged Care, New Zealand Nurses Organisation (2007), Guidelines for Nurses on the Administration of Medicines.