CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of Elaine Lillian Redmond**
TITLE OF COURT:	Coroners Court
JURISDICTION:	BRISBANE
DATE:	26/07/2023
FILE NO(s):	2021/31
FINDINGS OF:	Christine Roney,Coroner
CATCHWORDS:	CORONERS: Fall, Domestic accident (non-work related), Subdural haemorrhage, Alzheimer's disease, anticoagulant therapy, Hospital, Medication error, Intracranial bleed, Healthcare related.

These findings are published with the family's permission to identify Elaine by name.

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Background

1. Elaine Lillian Redmond (DOB 22.07.1939) of 4 Burrows Street, Sippy Downs, Queensland was an 81-year-old woman who died unexpectedly in Caloundra Hospital, Queensland on 2 January 2021.

2. Elaine had several health conditions including Atrial Fibrillation and Alzheimer's.

3. She was reasonably functional and able to be cared for at home by her daughter Denise, but a move to a nursing home was planned for the near future. Elaine's dementia was progressing.

4. Elaine suffered a fall at home on 21 December 2020 as a result of collapsing and hitting her head. She was transported by ambulance to Nambour Hospital where she was diagnosed as having suffered a subdural haematoma.

5. It was decided to treat her conservatively with rest and observation, with a review to occur the following week.

6. Importantly a decision was taken to cease her anti-coagulant medication Rivaroxaban because of its propensity to increase bleeding.

7. Placement for respite at Immanuel Gardens, a Nursing home was arranged. Elaine was transferred there on 23 December 2020 after discharge from Nambour Hospital.

8. Nursing Home records however revealed that Elaine continued to be administered Rivaroxaban on 25, 26, 27 and 28 December 2020.

9. This administration was contrary to the Hospital Discharge summary provided to the Nursing Home.

10. It was however consistent with the earlier records of her general practitioner, which had been superseded by the Hospital record, obviously taking account of her recent fall and diagnosis of an intracranial bleed.

11. On 29 December 2020 Elaine was found by Nursing Home staff unresponsive in her bed. She was conveyed to Nambour Hospital.

12. There it was identified that her deterioration was likely caused by the advancement of her subdural haematoma.

13. Elaine was then transferred to Caloundra Hospital for palliative care on 30 December 2021. She died there on 2 January 2021.

Autopsy examination

14. An Autopsy Certificate described her cause of death as,

    '1(a) Subdural haemorrhage;

    1(b) Fall

    2 Alzheimer's disease, atrial fibrillation (anticoagulant therapy)'

The Autopsy Report stated,

15. 'This 81-year-old woman had a background medical history of atrial fibrillation for which she was on rivaroxaban which is an anticoagulant. She also had a history of Alzheimer's disease, osteoarthritis, hypothyroidism, diverticulosis, gastro-oesophageal reflux disease and depression. She was anticoagulated to reduce the risk of embolic stroke (clots from the heart forming due to the irregular circulation subsequently travelling to the brain and causing a stroke). She was also on metoprolol (antihypertensive) and digoxin (rate control of atrial fibrillation), Vitamin D, Vitamin B12 and escitalopram (antidepressant).

16. The fall occurred as she rose from sitting, she felt lightheaded before collapsing and striking her head on a chair. The head injury resulted in an intracranial bleed (subdural haemorrhage) that was managed conservatively in the Nambour Hospital. She presented to Nambour Hospital on 21/12/2020. Conservative management was implemented in consultation with her family and the treating team planned to review the report following repeat imaging in the week (which never happened).

17. She had been booked for respite at Immanuel Gardens (Nursing Home) for 23/12/2020 with a view to permanent placement in the future. She was discharged there from the hospital on 23/12/2020. Her discharge medications did not include rivaroxaban.

18. The bleed identified on the CT scan at Nambour Hospital showed an 11mm of blood collecting on the left side of the head, pushing the brain across from the midline by 8mm. There was a small amount of bleeding in the subarachnoid space (the space between the arachnoid mater and pia mater: two layers of connective tissue encompassing the brain). The clot in the subdural space (subdural haematoma) appeared mixed, suggestive of acute on chronic subdural haematoma. Treatment administered included prothrombinex in an effort to stop further bleeding, and cessation of the usual oral anticoagulant (rivaroxaban).

19. Daily progress notes for the first week are unremarkable, although show she had been wandering. She also had leukocytes in the urine on analysis. The medication chart provided as "Community Medication Chart" records that the anticoagulant rivaroxaban was given on 26, 27 and 28 December 2020. All the medications had been prescribed on 18/12/2020 by a GP called Dr Werchon. An "Interim Medication Administration Record" that had been signed by pharmacist Amy Bowtell has been included in the record, and lists of medication used, and notes rivaroxaban was ceased.

20. On 29/12/2020 the deceased was found unresponsive in her bed and transferred to Nambour Hospital again via ambulance where her condition was attributed to likely progression of subdural haemorrhage. Following a discussion with her family, no imaging was performed, and she was commenced on palliative care. Her daughter raised concerns that the care facility had administrated rivaroxaban, which was the main issue.

21. The family were happy for transfer back to the Aged Care facility for palliation, but due to lack of medical cover, she was transferred to Caloundra Hospital on 30/12/2020 for palliation. She did not regain consciousness and died on 02/01/2021.

Review summary prepared by coronial nurse Kate Angus:

22. On the 21/12/2020 she presented to Nambour Hospital after suffering a fall at home

and was diagnosed with a subdural haematoma. Her rivaroxaban was ceased, and she was given prothombinex in an attempt to reverse its effects. Conservative management was implemented in consultation with her family, and the treating team planned to review that approach following repeat imaging in a week.

23. As she had been booked for respite at Immanuel Gardens for the 23/12/2020 with a view to permanent placement in the future, she was discharged there on the 23/12/2020. Her discharge medications did not include Rivaroxaban. However, medication records from Immanuel Gardens show the Rivaroxaban was documented as a daily medication and first administered on the 24/12/2020.

24. Daily progress notes for the first week were unremarkable although showed she had been wandering, and also showed leukocytes present in urinalysis.

25. On the 29/12/2020 she was found unresponsive in her bed and transferred to Nambour Hospital by ambulance where her condition was attributed to likely progression of subdural haemorrhage. Following a discussion with her family, no imaging was performed, and she was commenced on palliative care. Her daughter raised concerns that the care facility had administered rivaroxaban.

26. The family were happy for transfer back to the aged care facility for palliation, but due to lack of medical cover, she was transferred to Caloundra Hospital on the 30/12/2020 for palliation. She did not regain consciousness and died on the 02/01/2021.

Summary of findings:

27. External examination with chart review, CT scans and toxicology was performed in accordance with the coroner's instructions.

28. External examination showed signs of medical therapy, as well as an organising bruise on the outer aspect of the right thigh, which may be consistent with her initial fall. There were no other significant external examination findings.

29. Review of antemortem CT scan confirmed a mixed density left cerebral convexity subdural haematoma - the picture seen in both acute on chronic subdural haemorrhage and acute/subacute haemorrhage in the setting of anticoagulation. Subsequent postmortem CT scans showed a persistent, larger mixed density left subdural haematoma (slightly reduced in density compared with the antemortem scans). The interval increase in size of the subdural collection may reflect ongoing slow, or new bleeding into the pre-exiting subdural haemorrhage. Dural injury with extension of CSF into the subdural haemorrhage could also contribute to the increase in size.

30. The toxicology analysis of post-mortem femoral blood did not detect Rivaroxaban in routine screening. Morphine, Midazolam, citalopram and Desmethylcitalopram (metabolite of Citalopram) were detected in therapeutic concentrations. Alcohol was not detected on analysis.

Comments:

31. The main pathology identified was left sided subdural haematoma with midline shift to right with signs of brain herniation. The scans showed that she had the subdural haematoma in her first presentation to Nambour Hospital (approximately 11mm thick). Her post-mortem scans showed an enhancement in the haematoma

(approximately 21mm thick). There appeared to be no other scans taken during this period to assess if this enhancement was due to spontaneous progression or related tanticoagulation. Initial subdural bleed also appeared to be acute on chronic. She also had cerebral atrophic changes (shrunken brain), and thus she was at very high risk for subdural haemorrhage following blunt head impacts.

Conclusion:

32. In my opinion, death was due to subdural haemorrhage resulting from fall. The continued use of Rivaroxaban is likely to have exacerbated the intracranial bleed. However, due to the absence of progress scanning it is unknown whether the enhancement of subdural haematoma is due to spontaneous progression or due to the effects of anticoagulant.

33. In this case, the next of kin had raised concerns regarding the care facility administering Rivaroxaban. It is my advice that review of circumstances with a specialised clinical team with a neurologist would be of value in such circumstances.

34. The cause of death and opinion were based on the police and medical history and the external examination including associated testing.'

Expert Report of Dr John Baker

35. As a result of the observations by the Forensic Pathologist at Autopsy, Dr Samarasinghe, the Coroner's Office retained an expert report from Neurosurgeon, Dr John Baker.

    In his report Dr Baker concluded,

    'Conclusion

36. From the information provided from the Nambour hospital records, in relation to the initial admission on the 21st of December 2020, it appears palliative treatment at that stage was not a consideration and the option of surgical treatment was left open. Even though Ms. Redmond had a degree of dementia, she had been successfully managed in a domestic environment and was independently mobile with a walking aid. The plan was to repeat the CT scan electively one week later. It is not known if the one-week period commenced at the time of admission on the 21st of December, or at the time of discharge on the 23rd of December. From the neurosurgical perspective, this was a reasonable plan in that it also included repeating the CT scan at any stage should deterioration be identified. Coincidentally, deterioration occurred about 7 days after the date of MS Redmond's initial injury and admission to Nambour Hospital. In my opinion, it is more likely than not that the administration of Rivaroxaban, daily from the 24th of December, was a significant component in relation to her deterioration. Subdural haematomas by their nature, if not requiring urgent surgery, have a high risk of a delayed deterioration in conscious state, due to a progressive increase in size. The increase in size is a result of bleeding in the form of micro-haemorrhaging from a membrane that forms around the haematoma, or from further bleeding from the original source of the haematoma. In the elderly, this is usually injury to a bridging cortical vein or a cerebral contusion. The maintenance of haemostasis from either of these two pathologies would be impaired by continuing an anti-coagulant such as Rivaroxaban.

37. Another question arises from the appearance of the haematoma on the CT scan

which had a mixed density. Although it cannot be confirmed in this case, such an appearance is consistent with the presence of a pre-existing chronic subdural haematoma into which haemorrhage has occurred from an injury. Pre-existing chronic subdural haematomas are well-described and, particularly in the elderly, can occur as a complication of a very minor and often un-identified head injury, for example, a minor bump on the head. A small amount of bleeding occurs but does not progress, and a membrane forms and micro-haemorrhaging occurs, resulting in a progressive increase in the size of the haematoma. Such haematomas are asymptomatic until they reach a size big enough to cause significant shift or increased intra-cranial pressure, and headache. An open post-mortem was not performed, so it is not known whether Ms. Redmond had an acute haemorrhage into a pre-existing chronic subdural haematoma. Other possible causes of mixed density subdural haematomas are one that occurs as a complication of anti-coagulant overdose, or one that occurs in the presence of severe anaemia; both being absent in this case. One feature of mixed-density subdural haematomas is that they are somewhat more amenable to surgical treatment with a small craniotomy or burr holes. This may have been what was considered at the time of the initial presentation to hospital. I am not able to comment further on this, as the medical records do not detail the family's view regarding surgical treatment. The plan for palliative care at the time of the second admission to the Nambour Hospital was a reasonable approach. Once deterioration had occurred to the extent that it had by 29th December, Ms. Redmond's prognosis was poor.

38. The only other point I would raise was Ms. Redmond's discharge from Nambour Hospital on the 23rd of December, to a respite unit in an aged care facility. From a neurosurgical perspective, if deterioration was expected and repeat CT scanning was planned, it may have been more prudent for Ms. Redmond to have been observed in the acute hospital setting, where there are nurses experienced in maintaining regular neurological observations around the clock to identify a deterioration early. Deterioration from an intracranial haematoma has a better prognosis when diagnosed and treated early. This diagnosis is usually in the form of identifying subtle changes in behaviour and conscious state using the Glasgow Coma Scale.

Issues

39. With respect to the specific matters, I advise the following:

    a. It is more likely than not that the continued administration of Rivaroxaban from the 24th of December influenced Ms. Redmond's outcome adversely.

40. With respect to the continuation of Rivaroxaban, this is an oversight with a greater than 50% risk of adversely affecting the outcome of the subdural haematoma. It is noted, the discharge summary from the Nambour Hospital does not highlight the cessation of Rivaroxaban.

    b. Your opinion as to the appropriateness of the treatment provided to Ms. Redmond by Immanuel Gardens.

41. I have some concern about the degree and quality of the observations performed on Ms. Redmond at Immanuel Gardens. This opinion is formed solely on the records provided in the materials I have reviewed. The absence of the use of the Glasgow Coma Scale at Immanuel Gardens suggests a lack of experience in undertaking detailed neurological observations and identifying the early signs of deterioration due to an intracranial haematoma.

c. Any other issues you may wish to comment on regarding the care of the deceased.

42. The only other issue I have raised in the body of the report relates to Ms. Redmond being discharged from Nambour Hospital on the 23rd of December, rather than remaining in hospital to be monitored pending a repeat CT scan.'

Facts not in dispute

43. Several background matters are not in dispute. The occurrence of these was critical to the circumstances leading to Elaine's death

    a. Elaine was scheduled to enter Emmanuel Gardens on 23 December for some planned respite. This was with a view to permanent placement.

    b. In preparation for respite care, Elaine's general practitioner had provided a document, described as a Compact medication chart to the home detailing her current prescriptions. This included Rivaroxaban

    c. After discharge from the Nambour Hospital on 23 December, the Hospital provided a medication Order to Emmanuel Gardens for six days of medication (to 29 December) for Elaine

    d. This order did not contain Rivaroxaban

    e. Rivoraroxaban was administered to Elaine on the evenings of 25,26,27 and 28 December'

Next of Kin Concerns

44. Understandably, Elaine's family were concerned about the mismanagement of her medication at the Nursing Home.

45. There were other aspects of her care which also concerned them. These were less directly related to her death and included,

    a. failure to have an adequate falls prevention policy.
    b. failures to encourage hydration; and
    c. practice of locking residents in their rooms.

46. All matters were referred off to the various agencies tasked with oversight for Nursing homes including,

    a. Office Of the Health Ombudsman (OHO).
    b. Australian Health Practitioner Regulation Agency (APRHA); and
    c. Aged Care Quality and Safety Commission (ACQSC).

47. Each of these agencies have responded to the family's complaints, advised, and implemented further training around these issues.

48. The reports by all agencies accept the fact of the medication error being made.

49. How such a thing could have occurred is less clear.

Coroner's Conclusion

50. The extent of the unsafe medication practices in use prior to Elaine's death at Emmanuel Gardens was significant in my opinion.

51. Poor management of paperwork generally, but specifically here, of post discharge Hospital records, led to a use, it seems likely, of both medication orders by different staff at different times.

52. On this point the Aged Care Quality and Safety Commission (ACQSC) investigation found that the interim Hospital medical chart was replaced by the compact medical chart between 9:00pm on 23 December and 4:00pm on 24 December 2020. The Commission made no finding about why the replacement occurred.

53. Elaine was not administered Rivaroxaban on 23 or 24 December that can be ascertained. One explanation may be that staff used the Hospital medication order on those nights. Thereafter, it is possible that the Hospital records have been misplaced/lost, causing the earlier medication order to be used as the operational medical order.

54. This is a theory advanced by Elaine's family based upon what they say they were told by nursing staff. It seems a plausible explanation for the way Rivaroxaban was erroneously administered to Elaine.

55. I am unable to make any finding based upon the available evidence as to what happened to the Hospital medication chart.

56. Critically, it seems on the undisputed facts, Elaine was dispensed anti-coagulants on the evening of 28 December 2020 after her daughter Denise advised staff that they were not to be given to her mother.

57. The role of the continued use of anticoagulants in Elaine's death is clearly stated in Dr Baker's Report.

Findings required by s.45

Identity of the deceased –	Elaine Lillian Redmond
How she died –	Deceased suffered a Subdural haemorrhage from a fall and was administered anticoagulants which increased intercranial bleeding.
Place of death –	Caloundra Hospital CALOUNDRA QLD 4551 AUSTRALIA
Date of death–	2 January 2021
Cause of death –	1(a) Subdural haemorrhage 1(b) Fall 2 Alzheimer's disease, atrial fibrillation (anticoagulant therapy)

I close the investigations.

Christine Roney
Coroner
CORONERS COURT OF QUEENSLAND - BRISBANE
26 July 2023