QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of Maria Aurelia Willersdorf**
TITLE OF COURT:	Coroners Court
JURISDICTION:	SOUTHPORT
FILE NO(s):	2015/1475
DELIVERED ON:	24 January 2020
DELIVERED AT:	Southport
HEARING DATE(s):	10-12 December 2018
FINDINGS OF:	James McDougall, Southern Coroner
CATCHWORDS:	Coroners: inquest, radiological procedure performed, location of the injection/s, loss of consciousness, cause of death, adequacy of response and care provided.

REPRESENTATION:

Counsel Assisting:	Ms Joanna Cull and Ms Martina Parry
Family of Mrs Willersdorf:	Ms Danae Younger, Counsel i/b Caxton Legal Centre
Gold Coast Hospital & Health Service:	Ms Stephanie Gallagher, Counsel

Ms Julie Rabera:	Ms Sally Robb, Counsel i/b Moray Agnew Lawyers
Queensland Ambulance Service:	Ms Melinda Zerner, Counsel
Iris Imaging:	Mr Matthew Hickey, Counsel i/b Minter Ellison Lawyers

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Introduction

1. Ms Willersdorf was born on 2 October 1927 in Innisfail to Perina and Camillo Oliveri. She was 87 years of age at the time of her death. Ms Willersdorf grew up on her parent's sugar cane farm and assisted her parents with general household, farm and harvesting duties.

2. She was married in 1949 and gave birth to three of her four children, Louisa, Peter and John in 1950, 1953 and 1954 respectively, while living in Innisfail. In 1955 Ms Willersdorf, her husband and children moved to Brisbane and purchased a fruit shop in Fortitude Valley. Shortly after arriving in Brisbane she gave birth to fourth child, Anthony.

3. Ms Willersdorf is described as a hard working woman who balanced full time work, caring for her sick and elderly parents and sole parented her four children, after separating from her husband. She suffered long standing chronic back pain as a consequence of undertaking arduous responsibilities on the family farm in Innisfail.

4. At approximately 11:00am on 14 April 2015 Ms Willersdorf attended Integrated Radiology and Imaging Services (IRIS Imaging) at Helensvale for the purpose of undergoing a CT scan of her lumbar spine, as requested by her General Practitioner, Dr James Hunt.

5. A preliminary CT lumber scan of Ms Willersdorf's spine was undertaken at approximately 11:30am. The scan was reviewed by Dr Emechete, Radiologist and owner of IRIS Imaging. Dr Emechete then performed a CT guided procedure on Ms Willersdorf between 12:48pm and 13:05pm. He described the procedure as unremarkable and without complication.

6. Following the procedure Ms Willersdorf was able to stand and change back into her clothes with minor assistance. She then mobilised with her stroller and was assisted by radiographer, Ms Rabera to the bathroom. Shortly afterward, Ms Willersdorf's health deteriorated, she became unsteady on her feet and was assisted by Ms Rabera and the practice manager, Mrs Oby Emechete. Dr Emechete was notified of Ms Willersdorf circumstances and assisted her to an unattended room (the DEXA room) to rest. Ms Willersdorf suffered a loss of consciousness while seated. Dr Emechete checked her blood pressure and pulse. She regained consciousness and was able to sit up and was offered tea. Ms Willersdorf sipped on the tea, then fainted again. Dr Emechete again checked Ms Willersdorf's blood pressure and pulse. He also inserted a cannula for venous access and flushed it with 50ml of saline. Dr Emechete then left Ms Willersdorf in the care of Mrs Emechete and attended to other matters.

7. At 13:37pm the Queensland Ambulance Service (QAS) service received a call requesting assistance for Ms Willersdorf. On arrival, paramedics found Ms Willersdorf unresponsive and not breathing. There was no

lifesaving measures being performed on Ms Willersdorf. The paramedics confirmed Ms Willersdorf was in cardiac arrest and commenced cardiopulmonary resuscitation. Following twenty minutes of resuscitation, spontaneous circulation was restored. Ms Willersdorf was then transferred to the Gold Coast University Hospital.

8. Ms Willersdorf died five days after the radiological procedure performed by Dr Emechete at IRIS Imaging on 19 April 2015, in the Gold Coast University Hospital.

9. Ms Willersdorf is survived by her four children, thirteen grandchildren and fifteen great grandchildren.

Background

10. Ms Willersdorf's medical history reveals she suffered rheumatoid arthritis, osteoporosis with multiple vertebral crush fractures and previous femoral fracture, severe osteoarthritis of the lumbar spine with internal fixation (metal framework from S1 to L3), severe thoracic kyphosis, dyslipidaemia, borderline diabetes and shortness of breath on exertion.[1]

11. Review of the Coomera City Medical Centre records show Ms Willersdorf attended with Dr Hunt on 25 March and 9 April 2015 in respect of her escalating back pain. The clinical notations reflect Dr Hunt's discussion with Ms Willersdorf about recent spinal imaging results and his proposed treatment plan of steroid injections for facet joint osteoarthritis.

12. On 9 April 2015, Dr Hunt completed a Radiology Request Form requesting Ms Willersdorf undergo a "targeted injection to facet joints affected by OA low thoracic / superior lumbar spine" (Referral).

13. Ms Willersdorf subsequently attended IRIS Imaging with the Referral on the morning of 14 April 2015. She arrived at IRIS Imaging alone and by taxi to her appointment.

Coronial Jurisdiction and scope of inquiry

14. In accordance with the *Coroners Act 2003* (the Act) I am granted jurisdiction to inquire into the cause and circumstances of a reportable death. If and where possible, I may make certain findings as to the identity of the deceased, how, when, where and what caused the person to die. [2]

15. An inquest is not about apportioning guilt rather it is a fact finding inquiry into a death. It is not a prosecution or trial between opposing parties. The nature of an inquest is appropriately described as follows:

[1] Ex A2 and F2
[2] section 45(2) *Coroners Act 2003*

> "In an inquest it should never be forgotten that there are no parties, there is no indictment, there is no prosecution, there is no defence, there is no trial, simply an attempt to establish facts. It is an inquisitorial process, a process of investigation quite unlike a trial where the prosecutor accuses and the accused defends, the judge holding the balance or the ring, whichever metaphor one chooses to use".[3]

16. The purpose is to inform the family and the general public how the death occurred and seek to reduce or prevent similar deaths. A Coroner can make preventive recommendations, concerning public health and safety, the administration of justice or ways to prevent deaths occurring in similar circumstances. [4]

17. Proceedings within the Coroners Court are not bound by the rules of evidence. In Commissioner of Police Service v Clements[5], the Court of Appeal considered the practical application of the broad legislative basis[6], stating:

> "While the Coroners Court is not bound by the rules of evidence, the touchstone of the evidence and submissions it may receive must be relevant to the matters the Coroner is empowered to investigate, the questions on which he or she must make findings and the matters on which he or she may comment".

18. As Coroner, I must apply the civil standard of proof, namely the balance of probabilities. Practical application of the civil standard requires the greater or more significant matter to be determined, the more serious an allegation or the more inherently unlikely an occurrence, then the stronger or more persuasive the evidence must be, to sufficiently satisfy the Coroner it was proven to a civil standard. Relevantly, it does not necessarily require the exclusion of all reasonable competing possibilities. [7]

19. I am obliged to comply with the rules of natural justice and to act judicially. Therefore I must not make any findings adverse to the interest of any party without that party first being given an opportunity to be heard in opposition to the finding.

20. I am also precluded from making any comments, findings or recommendations that a person is or may be guilty of an offence or is or may be civilly liable. [8] Finally, should I reasonably suspect a person has committed an offence, from information acquired through inquest or during the investigation, I must give the information to the Director of

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[3] *R v South London Coroner, ex parte Thompson* (1982) 126 SJ 625
[4] Section 46 *Coroners Act 2003*
[5] *Commissioner of Police Service v Clements* [2006] 1 Qd R 210
[6] Section 39(1) *Coroners Act 2003*
[7] *Hurley v Clements & Ors* [2009] QCA 167
[8] Section 45(5) and 46(3) of the Act

Public Prosecutions or relevant department in the case of an indictable offence. Information about a professional's conduct may be given to the relevant disciplinary body should I believe the information give cause to the body to inquire into or take steps in relation to the person's conduct.

Issues for Inquest

21. During the coronial investigation further information was requested from IRIS Imaging employees and the health practitioners and paramedics involved in providing care and assistance to Ms Willersdorf. Expert advice was also sought from Dr Rauf Yousaf (Dr Yousaf)(Specialist Musculoskeletal and Spine Radiologist), Dr David Spain (Dr Spain)(Senior Pain Medicine Physician and Anaesthetist), Dr Marc Walden (Dr Walden)(Senior Pain Medicine Physician and Anaesthetist) and Dr Ian Home (Dr Home)(Forensic Medical Officer) as to the circumstances of Ms Willersdorf's death, the radiological procedure performed, location of the injection/s, cause of death, adequacy of response and care provided to Ms Willersdorf.

22. Following my review of the evidence gathered through the coronial investigation and have regard to the findings at autopsy by Dr Paull Botterill (Forensic Pathologist) and the expert advices, I determined to hold an inquest. The issues for the inquest were identified as follows:

    (a) The findings required by section 45(2) of the Act namely the identity of the deceased, how she died, when she died, where she died and what caused her death.
    (b) Whether IRIS Imaging staff responded adequately to the medical emergency involving Ms Willersdorf on 14 April 2015.
    (c) Whether IRIS Imaging was appropriately equipped and had adequate procedures, policies and training in place to respond to patient medical emergencies involving patients.
    (d) The content of the triple zero call regarding Ms Willersdorf and if, additional or more specific information could have been provided or elicited regarding her clinical situation; and
    (e) Identification of any information which may assist to prevent deaths occurring in a similar circumstances and or potential recommendations which may be made pursuant to section 46 of the Act.

23. Relevantly, in the weeks leading up to the inquest Dr Yousaf offered a differing opinion as to the radiological procedure Dr Emechete claimed he performed on Ms Willersdorf. Dr Yousaf concluded in review of the evidence including the dataset of images from the IRIS Imaging CT scanner, the radiological procedure performed on Ms Willersdorf was a single epidural injection located at the T12 (Thoracic spine vertebra, level 12). Remarkably a variant procedure to the multiple targeted injections to the facet joints, requested by Dr Hunt and prescribed in the Referral. Dr Yousaf's supplementary report conflicted with several of Dr Emechete's statements and the IRIS Imaging Radiology Report.

24. Further reports were sought from Dr Spain and Dr Walden in response to Dr Yousaf's alternative finding. Subsequently the experts identified the radiological procedure performed on Ms Willersdorf and events leading to her death including hypotension and cardiac arrest, aligned with an epidural injection located at the T12. I determined the incongruity of the juxtaposed statements and reports required further exploration through oral evidence during the inquest.

25. The following witnesses were heard at the inquest:

    (a) Dr Paull Botterill, Forensic Pathologist, QHFSS, Pathology Queensland;
    (b) Dr Rauf Yousaf, Musculoskeletal and Spine Radiologist and Specialist;
    (c) Dr David Spain, Senior Pain Medicine Physician and Anaesthetist, Deputy Director of Emergency Medication, Gold Coast Hospital and Health Service;
    (d) Dr James Hunt, General Practitioner;
    (e) Dr Stephen Rashford, Medical Director, Queensland Ambulance Service;
    (f) Dr Benedict Emechete, Specialist Radiologist, Integrated Radiology and Imaging Services;
    (g) Oby Augusta Emechete, Practice Manager, Integrated Radiology and Imaging Services;
    (h) Julie Barongo Rabera, Radiologist, Integrated Radiology and Imaging Services;
    (i) Dr Sarah Jarrold, Emergency Registrar, Gold Coast Hospital and Health Service
    (j) Dr Ian Home, Forensic Medical Officer, Clinical Forensic Medicine Unit;
    (k) Dr Marc Walden, Senior Pain Medicine Physician and Anaesthetist;
    (l) Blake Murray, Advanced Care Paramedic, Queensland Ambulance Service;
    (m) Andrew Busby, Paramedic, Queensland Ambulance Service;
    (n) James Kersnovske, Advanced Care Paramedic, Queensland Ambulance Service.

26. In review of the evidence, I do not consider it necessary to summarise all information collated and attained during the inquest. I do however consider it appropriate to record pertinent information including extracts of expert witnesses' statements and oral evidence provided during the inquest, in which I have based my decision concerning the circumstances of Ms Willersdorf's death.

Post Mortem Findings

27. On 22 April 2015, Dr Botterill, Forensic Pathologist performed an external and partial internal autopsy (excluding arms and legs). A number of toxicology and histology tests were also conducted.

28. The internal post mortem examination revealed Ms Willersdorf had valvular heart disease, mild to moderate atherosclerotic cardiovascular disease, osteoarthrosis, nephrosclerosis (hardening of the kidneys) and resuscitation associated injuries including multiple bilateral rib fractures, soft tissue haemorrhage, chest wall incision consistent with right pleural drainage. It also revealed a possible previous lacunar infarct (most common type of stroke resulting from blockage of the small arteries) of the left basal ganglia of the brain, multifocal bronchopneumonia and acute bronchitis.

29. Microscopic examination showed heart muscle scarring and heart fibre deformity consistent with heart stress, liver congestion and fatty change, lung congestion, foci of pneumonia (consistent with the period unconscious in hospital) and brain cell changes of hypoxic-ischaemic injury.

30. Toxicology testing revealed morphine, phenytoin, propofol and amiodarone, administered as part of the medication treatment provided to Ms Willersdorf. No alcohol was detected in the blood or other tested bodily fluids.

31. Dr Botterill's investigation into the cause of death included review of Ms Willersdorf's CT lumbar spine images and medical records. He identified the presence of significant lumbar spinal region abnormality and appropriate placement of the injection needle. He also considered the potential contribution of the radiological procedure and determined it could not be excluded, particularly if medications were inadvertently injected into Ms Willersdorf's bloodstream.[9]

32. He subsequently concluded, in the absence of any demonstrated medication toxicity or anaphylactic reaction or related features associated with the radiological procedure and treatment, the cause of death was irreversible brain injury following cardiac arrest complicating valvular heart disease.

33. Dr Botterill provided the following brief summary of the post mortem examination findings:

> "changes consistent with brain-dead state, enlargement of heart with stiffening of some of the heart valves, hardening of the arteries of the

[9] Ex – A2

body , an excess of fluid in the lungs and liver, kidney scarring, and arthritis changing involving the spine".[10]

34. Dr Botterill determined the direct cause of death to be hypoxic-ischaemic encephalopathy, with valvular heart disease as an antecedent cause and spinal osteoarthrosis (treated) a significant condition as contributing to death but not related.

Clinical Forensic Medicine Unit Report

35. Dr Home, Forensic Medical Officer was asked to conduct a review of Ms Willersdorf's medical history and the circumstances of her death. Dr Home's comprehensive report of 27 January 2017 included review of her medical history, the autopsy report and treatment provided to Ms Willersdorf including the statements of IRIS Imaging staff members. He also provided advice pertaining to the process, risks and complications of epidurals including potential side effects.[11] The following is a summary of the pertinent matters.

36. Dr Home explained an epidural nerve block is a pain relief procedure that involves an injection of local anaesthetic and or corticosteroid into the epidural space. This space is located between the vertebral wall and the dura, which is the membrane lining of the spinal cord. He outlined the following risks and complications of epidural nerve block procedures:

    (a) Invasive procedures such as epidural nerve blocks have associated risks, particularly in patients with signification anatomical variation caused by degeneration or surgery, as was the case with Ms Willersdorf.
    (b) Performing an epidural nerve block procedure under CT guidelines assists with placement of the needle into the correct position.
    (c) Minor adverse effects and complications include pain at the injection site, unintentional dural puncture and vasovagal syncope (fainting caused by nervous system triggering a drop in pulse and blood pressure).
    (d) Major complications include neural structures, epidural hematoma (bleeding) and epidural abscess (infection).

37. Dr Home advised the most common side effect of epidural anaesthesia is hypotension (low blood pressure), primarily due to blockade of the sympathetic nervous system causing arterial and venous vasodilation (widening of blood vessels). He further clarified the extent of hypotension can be profound and an individuals' ability to cope with the resultant drop in perfusion (passage of blood) of vital organs, depends on their physiological reserves which are reduced in the elderly. In consideration of the potential side effects, Dr Home cautioned an epidural nerve block should only be performed by clinicians trained in airway management

[10] Ex – A2
[11] Ex F2

and resuscitation. He further stated "appropriate monitoring of vital signs is imperative and resuscitation equipment must be readily available during the procedure". [12]

38. Having reviewed the evidence, Dr Home opined Ms Willersdorf became profoundly hypotensive following the epidural procedure. Dr Home advised a blood pressure of 60/40mmHg is a medical emergency. He critiqued Dr Emechete's care of Ms Willersdorf stating the basic life support measures for such a medical emergency requires the rapid administration of 500-1000mL of fluid to increase circulating volume and the patient to be connected to a monitor providing continuous display of their pulse rate and oxygen saturation. Further, a patient must also be provided with adequate medical supervision and their blood pressure should be checked frequently. Finally, in the event of loss of cardiac output or cessation of breathing, resuscitation should be commenced immediately and continued until assistance arrives.

Evidence provided by Dr Hunt

39. During the coronial investigation, Dr Hunt provided a statement dated 1 March 2018 and also gave evidence during the inquest by telephone.

40. It was Dr Hunt's evidence during the inquest that he found multiple degenerative changes and wedge fractures in Ms Willersdorf's spine, observed in the thoracic lumber spine X-ray. He confirmed these findings were discussed during the consultation with Ms Willersdorf on 25 March 2015 and the subsequent treatment plan recorded as follows:

> "facet joint osteoarthritis may offer target for steroid injections; reminder importance of Prolia injections; agree to investigate cost of targeted bilateral facet joint injections if cost prohibitive, may be able to access through hospital".

41. Ms Willersdorf attended with Dr Hunt again on 9 April 2015. The medical records identify the purpose of the consultation was a radiology referral for facet joint injection due to osteoarthritis. Dr Hunt's clinical notations were as follows:

> "IRIS Radiology target injection to facet joint affected by osteoarthritis, low thoracic, superior lumbar spine; chronic pain, limited intervention options; trial of facet injections may assist in management; please contact GP to discuss if required".

42. Dr Hunt stated Ms Willersdorf suffered chronic pain over an extended period of time, she had undergone back surgery and was at times reliant on high doses of pain relief medication which subsequently made her back pain difficult to manage. He confirmed Ms Willersdorf had

[12] Ex F2 p4

"moderate frailty … some fairly significant osteoarthritis and osteoporosis, and as a result of that, her mobility was very impaired". [13]

43. As to the purpose of the Referral, Dr Hunt advised the spinal X-ray imaging reflected Ms Willersdorf had arthritic facet joints. It was this finding that informed his decision about the facet joint injection/s, as a new potential target for pain management.

44. It was Dr Hunt's evidence that the purpose of the facet joint injection/s was to investigate if Ms Willersdorf's pain was originating from arthritis.[14] He also confirmed the referral to IRIS Imaging was for an injection to the facet joints and not an epidural injection. He reiterated the epidural injection was not the intervention that he had requested in the Referral to IRIS Imaging.

45. As to whether Ms Willersdorf's medical history had at any time been requested or forwarded to IRIS Imaging, Dr Hunt advised to his knowledge it had not. He also confirmed he had not been contacted by Dr Emechete to discuss Ms Willersdorf's circumstances and or proceeding with an alternate radiological procedure.

46. Dr Hunt opined it was normal practice to be contacted by a referred specialist should they elect to conduct a procedure that differs from the prescribed procedure (as outlined in the Referral). [15] He did state however that if Dr Emechete or another specialist radiologist, telephoned to advise a different procedure than that referred was warranted, he would defer to the specialist.

Evidence provided by Dr Yousaf

47. During the coronial investigation, Dr Yousaf provided his Expert Report and several supplementary reports. He also gave evidence during the inquest.

48. Dr Yousaf's first Supplementary Report of 15 September 2018 (First Supplementary Report) confirmed his review of Ms Willersdorf's CT scan images and identified that Dr Emechete had performed a single interlaminar epidural injection at T12, in contrast to Dr Emechete's following reports and or statements:

    (a) Radiology Report - confirming he performed an epidural injection at L2/3
    (b) First Statement - identifying he performed an epidural injection into the L3/4 epidural space; and
    (c) Final Statement - identifying he performed three facet joint injections and at L2/3.

[13] TD1 – 1-5
[14] TD2 – 1-6
[15] TD2 – 1-9

49. In Dr Yousaf's second Supplementary Report of 19 September 2018 (Second Supplementary Report) he outlined his assessment of the CT scans and dataset images, explaining the purpose and findings of each dataset. He confirmed the volume dataset was used for planning and the procedure series showed peri-procedural needle/injection position. Dr Yousaf clarified the initial images showed the needle was "a little vertical, then adjusted and advanced to the paramedian extra-thecal posterior epidural space". He explained, following the needle reposition, contrast was then injected and shown to be in the "epidural space" and "no intrathecal contrast was seen". [16]

50. In determining the level of the injection was at T12 of Ms Willersdorf's spine, Dr Yousaf identified his assessment was based on identification of the following three independent criteria in the imaging:

    (a) The lower most ribs are visible at the same level of the injection (presumed T12 ribs);
    (b) The spinal fusion was as at L3 and down; and
    (c) Two vertebra below the level of the injection did not have metalwork and therefore indicate the injection must have be performed at two levels above the metalwork (indicating T12).

51. Dr Yousaf also identified an entry in the Gold Coast University Hospital medical records notating the presence of a band-aid on Ms Willersdorf's spine at T11/T12. Dr Yousaf confirmed his review of the CT images depicted the injection was more likely at the T12/TL1 and that the difference between these two areas, in Ms Willersdorf's circumstances, would only be two or three millimetres. He opined, the clinical team's assessment of the location of the band-aid was approximately correct as it would be very difficult to differentiate between T11/T12 and T12/L1 from a skin surface perspective.

52. In his third Supplementary Report of 18 September 2018, Dr Yousaf again confirmed his findings that Dr Emechete performed a single epidural injection at the T12 vertebral level (as outlined in his First and Second Supplementary Report findings). Specifically, he identified the vertebral levels on the images and utilising a lateral projection, connecting the needle position/location.

53. As to the location and or source of Ms Willersdorf's pain, Dr Yousaf stated it is difficult to determine on the basis of the images alone which of Ms Willersdorf's facets were causing her pain. In the absence of documentation identifying the location of Ms Willersdorf complaint, he stated:

    (a) the level above the spinal fixation is typically the facet that encounters most biomechanical pressures;

[16] Ex F1b

(b) Ms Willersdorf's vertebra at L3 was the uppermost level (where the metal hardware ended); and
(c) by analysis, the L2/3 facets or the L1/2 facets would be the ones causing pain.

54. As to the complexity of Ms Willersdorf's pathological presentation, Dr Yousaf stated both the L2/3 facets and the L1/2 facets were visible and could have successfully been injected. However the procedure would be a "little bit more challenging than somebody without post spinal surgery".[17]

55. Dr Yousaf further opined, Ms Willersdorf's L2/3 and L3/4 facets were amenable to epidural injection and that there was no reason not to perform the epidural injection at the L2/3 or the L3/4 levels. He also affirmed there was no clinical basis for the epidural injection to be performed at the T12-1 level and no current or recent literature or guidelines to support the use of a lower thoracic epidural for the management of back pain such as in the case of Ms Willersdorf. Dr Yousaf further stated an injection at the T12 location would constitute a "significant departure from normal practice". [18]

56. He further opined, if Ms Willersdorf did identify and or report her pain at the T12 level to Dr Emechete, (in the absence of Dr Emechete's record keeping) then the appropriate injection was a facet joint injection and not an epidural injection.

Evidence provided by Dr Emechete

57. During the coronial investigation, Dr Emechete provided several statements outlining four differing versions of the radiological procedure he performed and location of the injection. He also gave evidence during the inquest.

58. As the sole medical practitioner and radiologist at IRIS Imaging, Dr Emechete confirmed it is his responsibility to oversee all images and review to ensure the images are effective and appropriate for referral. He confirmed his usual practice, after approving imaging, was to dictate patient reports on the same day following each procedure. Once typed, the reports are returned to Dr Emechete for approval, signature and distribution to referring practitioners.[19]

59. The Radiology Report to Dr Hunt was prepared by Dr Emechete on 15 April 2015 (Radiology Report)[20], inter alia, Dr Emechete reported Ms Willersdorf underwent an initial CT scan to ascertain the correct site for the injection. He identified Ms Willersdorf's spinal fixation and metallic devices located between her L3 and S1 and advised Ms Willersdorf

[17] TD2 3-26
[18] Ex F1e
[19] Ex B6e
[20] Ex B6f

provided her consent to the procedure and an epidural injection at L2/3 was performed. Further, a mixture of steroid and local anaesthesia was injected into the epidural space.

60. Comparatively, Dr Emechete's First Statement provided the following explanation of the procedure performed and injection location:

> "5mls of 2% lignocaine was infiltrated into the skin and subcutaneous layer using a 25 gauge needle. This was then flowed by the injection of a 25 G spinal needle under CT fluoroscopy guidance into L3/4 epidural space" … following which 2.5mls of bupuvocaine and 1.0ml of celestone chondronose was injected into the epidural space.[21]

61. Dr Emechete's Final Statement provided the following further inconsistency, as to the procedure performed and location of the injection:

(a) Ms Willersdorf attended IRIS Imaging with "a specific referral for targeted injections in the low thoracic and superior lumbar spine facet joints, it is presumed there had been a discussion between her and her general practitioner that this was considered an appropriate option for managing her ongoing and presumably significant back pain"[22];
(b) To the best of my memory the initial CT images confirmed the earlier x-ray findings and I agreed that Ms Willersdorf might gain some pain relief by CT guided injections of steroids into the facet joints. I asked the radiographers to prepare Ms Willersdorf for the procedure;[23] and
(c) I believe I recommended three injections for Ms Willersdorf at levels L2/3.[24]

62. The Radiology Report and Dr Emechete's First Statement, Final Statement and Further Statement are contemporaneous evidence, each is in conflict as to the radiological procedure performed and the location of the injection into Ms Willersdorf's spine. It was Dr Emechete's Further Statement of 15 November 2018 that he corrected the recurrent errors and confirmed the radiological procedure he performed on Ms Willersdorf was a single epidural injection, located at the T12/L1 of Ms Willersdorf's spine and not at L2/3 or L3/4.

63. As to the health care treatment provided to Ms Willersdorf post radiological procedure, Dr Emechete's stated in his First Statement she "was offered what was necessary for her clinical situation".[25] He also commented that Ms Willersdorf "did not show rapid deterioration", "her

[21] Ex B6
[22] Ex B6e
[23] Ex B6e
[24] Ex B6e
[25] Ex B6

downturn was slow"[26] and that "she was appropriately monitored the entire time until the QAS arrived". [27]

64. In his Final Statement, Dr Emechete stated it is not an uncommon occurrence for older patients to "feel lightheaded or faint after getting up following any procedure that requires prolonged lying down". He confirmed, this was his initial assessment of Ms Willersdorf's presentation. Dr Emechete commented that he did exclude the possibility of allergic reaction to the injection, on the basis Ms Willersdorf did not experience itchiness, retching and general weakness.[28]

65. During the inquest Dr Emechete was questioned if he changed his mind about the procedure he performed on Ms Willersdorf after reviewing the expert reports from Doctors Yousaf, Spain and Walden identifying it was an epidural and not a facet joint injection. His evidence in respect of that was, he was not compelled to reappraise the radiological procedure, in consideration of the conflicting expert reports. He advised on review of Ms Willersdorf's CT images, "he knew exactly what had occurred and the location of the injection".[29]

66. It was Dr Emechete's evidence provided during the inquest that his recurrent errors, reflected through his statements and the Radiology Report, were due to typographical error. He stated "I got my typing clerk to type the report, and I did not read it. I just signed it … again, it was a typographical error" …"were all typographical errors and mistake". [30] Dr Emechete stated "I didn't read because I was overwhelmed by the situation".

67. As to Dr Emechete's assessment of Ms Willersdorf's physiological presentation, he determined an epidural injection was the preferential treatment over the facet joint injections, requested by Dr Hunt and prescribed in the Referral. The preferential treatment was identified in Dr Emechete's Further Statement, as "the initial CT scan showed evidence of extensive back surgery with underlying metallic fixation devices. Given the state of the patient's back … an epidural injection was adjudged by myself to be the most feasible and appropriate way forward".[31] The IRIS Imaging records do not record Dr Emechete's clinical assessment including analysis of clinical considerations and risks in determining the epidural injection was a more appropriate procedure.

68. As to the patient consent process, Dr Emechete stated it was the standard practice for IRIS Imaging radiographers to explain to patients "what is involved for a CT guided spinal injection and to obtain their

[26] Ex B6b
[27] Ex B6d
[28] Ex B6
[29] TD2-2-36
[30] Ex TD2 – 2-4
[31] Ex B6a

consent to proceed".[32] It was his expectation for radiographers, Mrs Akman and Ms Rabera, in respect of Ms Willersdorf to provide her with an explanation about potential risks and side effects post procedure. [33] Dr Emechete stated, it was not his job but "the job of the radiographer to obtain the consent".[34]

69. In his evidence, Dr Emechete stated he met with Ms Willersdorf and discussed possible complications and outcomes of the variant, epidural injection including warning her of the possibility of an allergic reaction and that the procedure may not effectively manage her pain.[35] He stated he would have asked Ms Willersdorf about her background history and if she was aware of any relevant history that would impact on the radiological procedure. It was Dr Emechete's evidence that he did not remember if he advised Ms Willersdorf of the risks of low blood pressure or hypotension at the time. He stated it was not however his normal practice as at the time of the incident. [36] Further, Dr Emechete confirmed he was not aware Ms Willersdorf had a history of low blood pressure. [37]

70. It was Dr Emechete's evidence before me that Ms Willersdorf was conscious at the time he applied the cannula and at the same time, he requested Mrs Akman call an ambulance. He stated he put the flush in and "she came around" and was talking. As to the timing, Dr Emechete confirmed Ms Willersdorf came to after the second faint episode.

71. When asked if he was aware Mrs Akman advised the QAS operator Ms Willersdorf was completely unresponsive, it was Dr Emechete's evidence that the call was four minutes long and Ms Willersdorf came around during that time and that while not holding a meaningful conversation, she could talk. He further stated Ms Willersdorf was "responsive, she was alive at that stage" and "there was a good sign of life in her" and that was the reason he left her to attend to other staff and business matters. [38] He expanded on the "other pressing and urgent patient matters" as the reason for leaving Ms Willersdorf, was to make clinical decisions to move patients waiting for imaging x-ray rooms and ultrasound room and to clear room for the ambulance and emergency people.

72. Dr Emechete denied Ms Willersdorf's condition had deteriorated following the second faint. He stated it was his realisation of the serious of the circumstances, her blood pressure being 60/40mmHg "was not good", which gave cause for him requesting the urgent arrival the QAS and stating to Ms Akman (while on the telephone to triple zero) "they need to get here now". Dr Emechete stated Ms Willersdorf "was in a desperate situation" and that "she needed help that I couldn't provide".

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[32] Ex B6e
[33] Ex B6e
[34] TD2 – 2-35
[35] Ex B6e
[36] Ex B6e
[37] TD2 – 2-37
[38] TD2 – 2-21

73. While not present at the time of the QAS arrival, Dr Emechete refuted Mr Murray's and Mr Kersnovske's evidence that Ms Willersdorf was cool in temperature and cyanotic on their arrival at IRIS Imaging, despite poor lighting. Dr Emechete stated Ms Willersdorf was not cool in temperature and her "breathing was shallow" and "she had a pulse".

74. During the inquest, Dr Emechete acknowledged in hindsight, it was a poor decision to leave Ms Willersdorf and that he should have stayed with her and appropriately monitored her. He accepted had he should have aggressively treated Ms Willersdorf's hypotension with intravenous fluids, vasoactive drugs and resuscitation and that such measures may have prevented her cardiac arrest. When questioned if he considered commencing resuscitation at that stage, Dr Emechete said "I totally blanked out". In final, Dr Emechete accepted Ms Willersdorf's condition was a medical emergency and he should have commenced resuscitation of Ms Willersdorf.[39]

Queensland Ambulance Service attendance

75. During the emergency telephone call commenced at 13:27pm, the QAS operator was advised by IRIS Imaging Chief Radiographer, Mrs Akman, that Ms Willersdorf had undergone an "epidural, spinal pain injection and she has just become unresponsive". The operator questioned if a health care professional was in attendance with the patient and Mrs Akman confirmed there was. The operator asked if the patient was breathing, and Mrs Akman advised "I don't know", "we're checking now". Mrs Akman further explained Ms Willersdorf had undergone a scan and spinal (radiological) procedure and had experienced two fainting episodes and that "she's completely unresponsive".

76. Dr Emechete is heard speaking to Mrs Akman while she was on the call to the QAS, stating the ambulance needed to "be here now", [40] 1 minute and 3 seconds into the emergency call.

77. An ambulance was dispatched via a 'Code 1B lights and sirens' response, with the first paramedic crew arriving at the business premises at 13:45pm, 8 minutes after the emergency call being initiated.

78. Advanced Care Paramedics, Mr James Kersnovske and Mr Blake Murray were the first response officers to arrive. It is the QAS officers' combined evidence as to the following sequence of events.

79. On arrival at IRIS Imaging officers Kersnovske and Murray were met by Mrs Akman and shown to the treatment room where Ms Willersdorf was laying on a procedure bed in the lateral position. They had with them a response kit and defibrillator. Mr Murray and Mr Kersnovske both

[39] TD2 2-44
[40] Ex B6g

observed there were no life saving measures being performed on Ms Willersdorf.

80. Mr Murray stated a woman of African appearance was standing near the table and close to Ms Willersdorf's head, rubbing her shoulders, "as if to console her". He asked what happened and was advised Ms Willersdorf underwent a dye-guided ultrasound and had suffered a fainting episode and that she was "gasping for air". Mr Murray questioned the length of time Ms Willersdorf had been gasping and was advised "about 5 minutes ago". Mr Murray stated the woman was vague about timing.[41] He then asked if anyone knew CPR and that no one answered. Mr Murray stated he did not know where the medical personnel of the facility were. He did however notice a man of African appearance standing at the doorway and or in the walkway to the treatment room.

81. Both officers began to assess Ms Willersdorf by performing radial and carotid pulse checks. They were unable to find a pulse. Mr Kersnovske checked Ms Willersdorf's eyes and found them open, with her pupils fixed and dilated. The officers confirmed Ms Willersdorf was in cardiac arrest and both lifted her from the table to the floor. Once Ms Willersdorf was on the firm surface they commenced resuscitation, providing her with more effective chest compressions on the floor.

82. Mr Kersnovske then ran out to the ambulance to provide QAS with an update, advising Ms Willersdorf was in cardiac arrest and resuscitation was in progress. He took with him the advanced airway kit into the treatment room and continued to assist Mr Murray with the resuscitation of Ms Willersdorf. Mr Kersnovske was concerned about the time spent retrieving the advanced airways kit given the difficulties Mr Murray would face by continuing resuscitation on his own as it is "quite difficult". He stated "if we had known we were attending suspected cardiac arrest, then we would've taken the airway kit inside".

83. Mr Andrew Busby, Critical Care Paramedic was the supporting officer to his colleagues, Mr Kersnovske and Mr Murray. On arrival, he observed the officers performing resuscitation on Ms Willersdorf and was advised she was "asystole (no electrical or mechanical action in the heart) in cardiac arrest" and that she had to be moved to the floor to commence resuscitation.

84. Resuscitation was continued by the officers until the return of spontaneous circulation, achieved approximately 20 minutes from commencement. Once established, Ms Willersdorf was taken out to the ambulance and transferred to the Gold coast University Hospital.

85. As patient care officer, Mr Murray prepared a combined electronic Ambulance Report summarising the attendance with Ms Willersdorf (eARF). The form identified as a consolidated copy, was signed and

[41] Ex B3

completed by all of the officers. The form reflects the initial emergency call at 13:37pm and completion of the form at 16:14pm. It also records the officers' attendance, assessment of Ms Willersdorf's vital signs and treatment. At 13:46pm, Ms Willersdorf was described as 'cool' in temperature and 'cyanotic' in colour. Her eyes, described as 'dilated' and 'non-reactive'. A second eARF was completed by Mr Murray, identified as a 'branch copy' also with a completion time of 16:14pm and signed by the officer.

Evidence provided by Oby Emechete

86. Mrs Emechete provided two statements outlining her involvement with Ms Willersdorf on 14 April 2015. She also gave evidence during the inquest.

87. Mrs Emechete stated she had been involved with the business since its commencement and that she had not have any clinical or medical training. She claimed she had completed a resuscitation training course prior to the incident, however was unable to provide the details of the registered training provider other than its general location which was Brisbane. Mrs Emechete was also unable to confirm the exact date of the course completion and stated it may have been within 2 years of the incident.

88. Mrs Emechete confirmed Ms Willersdorf's appointment was for an ultrasound appointment and that it was not the correct appointment in consideration of the Referral, which was for "target infection of the facet joints affected by osteoarthritis". When she advised Ms Willersdorf of this, she stated Ms Willersdorf responded "I'm in pain, is there any way you can help". It is Mrs Emechete's evidence that she then assisted to progress Ms Willersdorf's complaint by discussing her circumstances with Dr Emechete.

89. When questioned if Ms Willersdorf suffered two fainting episodes following the radiological procedure performed by Dr Emechete, Mrs Emechete stated "not really". Mrs Emechete explained, following the procedure Ms Willersdorf changed back into her clothes, used the restroom and while walking back into the reception area, complained she "felt a bit tired". Mrs Emechete further stated in response to questions about Ms Willersdorf perceived steadiness, that she did not appear unsteady on her feet. [42]

90. It was Mrs Emechete's evidence that Ms Willersdorf did not lose consciousness, when questioned by Counsel Assisting about the circumstances of Ms Willersdorf's fainting episodes. She stated, "no, not that I can remember". Mrs Emechete stated, Ms Willersdorf was talking like a radio while lying on the bed on the DEXA room and had to be encouraged not to speak.

[42] TD2 2-84

91. When presented with the premise Ms Willersdorf had fainted and witnesses had prepared and signed statements attesting to the episodes, Mrs Emechete confirmed Ms Willersdorf did faint "for a short period of time" and "she was up again". Mrs Emechete further stated Mrs Willersdorf's eyes were open, she was breathing, she was responding to questions and "she was full of energy". [43] She then stated she had to encourage Ms Willersdorf to relax and rest, saying "Maria. No. Calm down. It's ok. Just stay quiet"

92. When asked if Ms Willersdorf was still speaking at the time of Mrs Akman's call to the QAS, she said "maybe then we had convinced her not to talk anymore".

93. It was Mrs Emechete evidence, in response to being asked if aware Mrs Akman advised the operator that Ms Willersdorf was completely unresponsive, that she was not aware, as Mrs Akman had left the room to make the call. When asked if Ms Willersdorf was still full of life at the energy at the ambulance arrived, she replied "no, I would not say she was talking".

94. Mrs Emechete's further evidence when questioned about what Ms Willersdorf was saying, was that she was "not using words", she was making "mmm" sounds in response. Mrs Emechete maintained Ms Willersdorf was not unconscious and was breathing at the time the QAS arrived.[44]

95. Finally, Mrs Emechete refuted the proposition she was rubbing Ms Willersdorf's shoulders at the time of the QAS paramedics' arrival and stated she did not advise the QAS officers that Ms Willersdorf had been gasping for air. She also refuted Ms Willersdorf was cold to touch or blue in colour.

Evidence provided by Dr Botterill

96. During the inquest Dr Botterill confirmed the cause of Ms Willersdorf's death was hypoxic ischemic encephalopathy, with the antecedent cause being valvular heart disease and significant condition contributing to death was spinal osteoarthritis.

97. He (Dr Botterill) advised his consideration of whether the radiological procedure Dr Emechete performed on Ms Willersdorf contributed to her death, assisted to guide his approach to the autopsy. Further explaining, the purpose of his examinations was first, to identify any underlying condition which itself contributed or explained death. Second, to identify where the radiological procedure was performed and lastly to exclude any obvious complications.[45]

[43] TD2 – 2-87
[44] TD2 – 2-92
[45] TD2 – 2-63

98. As to his examination of latent physiological complications, Dr Botterill identified there was no significant complications in terms of blood loss at the injection site or any localised infection. Specifically he was unable to identify any large blood vessel in the vicinity of the injection needle, which would have allowed for a large bolus of the anaesthetic agent to go straight into the bloodstream rather than the tissue surrounding the nerves. He also excluded anaphylaxis or severe allergic reaction through examination of Ms Willersdorf' blood trace levels, specifically elevated levels of 'tryptose', which may cause a severe cardiac event such as a heart to stop or beat irregularly.

99. Dr Botterill reported he was unable to accurately identify the site of the injection needle as Ms Willersdorf had commenced healing, given the passage of time between the event and her death. He clarified his reference to 'appropriate placement of the injection needle' as outlined in the Autopsy Report, reflected his assessment of Dr Emechete's correct placement of the injection into Ms Willersdorf and did not extend to identify the location site. Subsequently Dr Botterill found the needle was correctly placed, given it did not enter Ms Willersdorf's spinal cord, sac surrounding the spinal cord or blood vessels. Further advising his expressed opinion did not critically assess the level of Ms Willersdorf's spine in which the injection was made.

100. In respect of Dr Botterill's examination of Ms Willersdorf's underlying condition of 'valvular heart disease', he differentiated between heart attack and valvular heart disease by explaining heart attack is "death of the heart muscle related to an interruption of blood flow to the heart muscle from narrowed arteries". Comparatively valvular heart disease is "damage to the heart valve through calcification or marked stiffening of one of the heart values", which results in enlarged the heart and increased risk of irregular heart rhythm. He clarified these complications can result in the heart stopping completely or effectively pumping properly and that neither equates to a heart attack.

101. Dr Botterill advised in respect of Ms Willersdorf's underlying valvular heart disease, "you would not necessarily know that you have it unless some sort of stressor occurs that causes it to become more apparent. And so things like exercise, pain, those sorts of things that increase the physiological need for the heart to pump may show up this abnormality".

102. He (Dr Botterill) opined, the radiological procedure performed on Ms Willersdorf had the potential to unmask her underlying condition. Dr Botterill clarified the temporal association between the radiological procedure, the subsequent blood pressure drop and cardiac arrest, exposed Ms Willersdorf's underlying heart condition (valvular heart disease) and combined to unmask the condition. Further, the change in blood pressure (hypotension) and subsequent taxing on Ms Willersdorf's heart, resulted in the cardiac arrest that lead to hypoxic brain injury (direct

cause of death). [46] He stated this was the reason he included the treatment of her spinal osteoarthritis as a significant contribution condition (as a cause of death).[47]

103. Dr Botterill highlighted it is very uncommon for people to have this particular type of treatment and die, unless they have an underlying condition or another factor that has contributed to death. [48]

104. Finally, Dr Botterill clarified the radiological procedure had a contributory role rather than the primary issue. It was not the "first or the most signification element in the death" rather it had a "contributory role".[49]

Expert opinion

Radiological procedure, complications and associated risk

105. In Dr Yousaf's First Supplementary Report he identified the associated risks of epidural injections and opined, they should invariably be performed below L2 vertebra level, for the following reason:

> "The 12th thoracic level still has spinal cord present and of critical importance still has the sympathetic chain present (usually between T1/L2) where levels below L2 typically do not. The thoracic epidural space is continuous whereas the lower lumbar levels are discontinuous spaces. Thus thoracic epidural injections affect multiple levels of the sympathetic chain and induce hypotension, whereas epidural injections below L2 do not interfere with the sympathetic nervous system and rarely cause hypotension other than in cases of inadvertent intrathecal injection. That is the reason why epidural injections for lumbar pain are invariably performed below L2 level and often below L3 level for safety".

106. Dr Yousaf stated Ms Willersdorf's pain was most likely radiating from her facet joints due to osteoarthritis and lumbar epidurals are commonly undertaken for spinal stenosis or multilevel radicular pain and not typically for facet joint related pain. [50]

107. He determined a thoracic epidural injection and delayed onset post radiological procedure were plausible causes for Ms Willersdorf's prolonged hypotension and subsequent deterioration in symptoms.[51] Dr Yousaf further identified, an injection near the T12 level can cause hypotension from involving sympathetic nerves.[52]

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[46] TD2 – 2-65
[47] TD2 – 2-65
[48] TD2 – 2-67
[49] Ex TD2-66
[50] Ex F1b
[51] Ex F1b
[52] Ex F6

108. As to the known complications of epidurals, Dr Yousaf clarified "a thoracic epidural typically induces hypotension around 20 minutes post procedure and this lasts up to 90 minutes or longer. This is often used by anaesthetists to induce hypotension during surgery in order to reduce bleeding. The blood pressure drop is monitored by anaesthetists and controlled where needed by supportive drug infusions until the thoracic epidural hypotensive effect wears off".[53]

109. Dr Yousaf's reports along with Dr Botterill's and Dr Home's reports were provided to Dr Spain and also to Dr Walden seeking their expert advice as the circumstances of Ms Willersdorf's death including comment on the epidural and location of the injection and matters identified for inquest.

110. In Dr Spain's second report of 14 November 2018, he acknowledged Dr Yousaf's finding that Dr Emechete had performed a spinal epidural nerve block on the spinal nerve root at T12 level, which was higher than previously contemplated (L2/L3), following his review of the imaging. Dr Spain referenced Dr Yousaf's explanation that spinal injections near the T12 level can cause hypotension from involving sympathetic nerves and agreed it as a "very plausible explanation".[54]

111. Dr Spain confirmed he had previously speculated an intrathecal injection causing spinal anaesthesia had most likely caused the hypotension but acknowledged that onset of spinal anaesthesia in circumstances of intrathecal injection would typically be 5 minutes to a maximum of 10 minutes, and in consideration of Dr Yousaf's findings (T12 site and epidural injection), indicated Ms Willersdorf's first collapse was most likely 20 minutes after the procedure or longer. [55]

112. Dr Walden stated, in general terms a facet joint injection is a far safer procedure than an epidural injections because they are associated with lower risks of nerve damage and cardiovascular physiological changes. He clarified epidural injections are typically performed for pain arising from "degenerative or bulging intervertebral discs" and facet joint injection/s would be suitable for pain arising from "degenerative or osteoarthritic facet joints".[56]

113. Dr Walden opined, Ms Willersdorf's drop in blood pressure was caused by an epidural injection of local anaesthetic rather than a subarachnoid injection. Dr Walden also based his view on the delayed onset of the hypotension following the injection and Ms Willersdorf's ability to walk following the procedure. He explained that hypotension due to epidural injection typically takes several minutes to manifest clinically, given the epidural local anaesthetic has to diffuse gradually through the epidural space and into the cerebrospinal fluid to manifest the physiological effects upon the nerve tacts. Compared to a spinal injection of the drug

[53] Ex F1b
[54] Ex F6
[55] Ex F6
[56] Ex F5a

which would have led to an almost immediate fall in blood pressure and rapid onset of limb weakness and difficulty walking. [57]

114. Dr Walden agreed the 2.5ml of 2% bupivacaine with corticosteroid was not injected into the spine (subarachnoid space) because had this occurred onset of symptoms would have been more rapid (almost instantaneous), within a minute or two. He identified Ms Willersdorf was able to walk to the bathroom not long after the radiological procedure. [58] He considered, had the same volume been injected at the L3/4 level hypotension would have been less likely than at the T12 but still a potential side effect of the procedure. Dr Walden explained that the thoracic epidural space is not as capacious as the lumbar epidural space and therefore the volume of local anaesthetic administered can spread in a cephalic distribution causing blockage of the sympathetic nerves to the heart and the lower limbs resulting in both slowing of heart rate and vascular dilation. He stated that the overall effect is likely to be a combination of both slowing of the heart and peripheral arterial and arterio-veno vasodilation. [59]

115. Relevantly, Dr Spain also opined Ms Willersdorf's drop in blood pressure was likely caused by the higher epidural thoracic nerve block at T12 and further, the persistent drop in blood pressure from the higher level injection likely lead to the subsequent cardiac arrest. [60]

116. Dr Walden criticised Dr Emechete's departure from the requested radiological procedure stating "I am critical that the radiologist did not follow the referring GP's request for a facet joint injection as was detailed in the letter of referral. A facet joint injection was, both as an anaesthetist and pain medicine physician, a more logical pain relieving procedure to perform in Ms Willersdorf's situation, as it may have been part of a further management plan that the GP was instituting".

117. In respect of this statement, it was Dr Walden's evidence during the inquest that he interpreted the pathology in Ms Willersdorf's case was "osteoarthritis of her lumbar and lower thoracic spine … which means osteoarthritis in the facet joints". Further, if the pain is arising from joints its "a more logical procedure to inject that joint, to numb that joint, as opposed to doing an epidural injection, which is placing pain relieving medication far – far deeper into the spine and closer to the actual spinal cord itself". [61] He further stated, "we don't know if there's any pathology of the spinal cord, such as prolapsed disc or anything of that nature, so as a pain pathology, my approach would have been that if we are aiming to treat facet joint arthritis pathology, a facet joint injection would be a logical procedure". Dr Walden further qualified, "performing an epidural

[57] Ex F5
[58] Ex F5a p2
[59] Ex F5 p 9
[60] Ex F6
[61] TD3 – 3-3

may not be the most logical procedure, but it may be considered in certain circumstances".

118. In response to Dr Emechete's evidence that he considered the epidural preferable due to the extent of damage to the number of facet joints and impact on Ms Willersdorf's endocrinology as the medication would have diffused across a number of levels of the spine, Dr Walden agreed, in those circumstances an epidural injection may be considered over multiple facet joint injections. He stated however that may not have been what the referring doctor had intended, when referring to a radiologist for investigation. Dr Walden confirmed, if it can be determined by performing a small number of facet joint injection where the pain is originating from, the second procedure would then be a radio frequency neurotomy procedure, which would give longer pain relief.

119. As to the radiological procedure, Dr Walden stated the decision to perform a procedure, either a facet joint injection or a series of them or an epidural injection, is made up of a combination of clinical information, such as the nature and site of the pain and imaging data. The decision is a value judgement made by the clinician. [62]

120. Relevantly Dr Walden commented, a clinician while in the process of making a value judgement, such as Dr Emechete in determining that the requested procedure (facet joint injections) not be performed and a substitute procedure be undertaken (epidural injection), would be expected to contact the general practitioner to discuss his findings and decision. He distinguished, the procedure was investigative and/or diagnostic and not emergency in nature and the general practitioner retained overall care of Ms Willersdorf. Dr Walden stated the circumstance would have been different if Ms Willersdorf was referred "to a pain medicine physician for ongoing treatment, because it would be assumed then that the medicine physician would be assuming ongoing therapeutic role".[63] He further clarified, "that isn't quite the same circumstances when a GP refers to a radiologist, there's no expectation of ongoing therapeutic care".

121. He (Dr Walden) commented at the time the Referral was negated, it was incumbent on Dr Emechete to familiarise himself of Ms Willersdorf's medical history.[64]

122. During the inquest Dr Walden was asked to comment on Dr Emechete's assessment that an epidural was more appropriate and whether the damage as reported in the Radiological Report was so extensive so as to support that finding. His evidence in response to Dr Emechete's findings, was that a decision is not made on the imaging alone. Dr Walden explained consideration must be given to the combination of the imaging, the nature of the pain and the anatomical site of the patient's

[62] TD3 – 3-5
[63] Ex F5
[64] TD3 – 3-16

pain, which is subjective. Dr Walden also opined, an epidural injection at the T12 location was not a departure from normal practice.

123. As to the extent of Dr Emechete's assertions about the damage to Ms Willersdorf's facet joints, Dr Walden stated there was no indication of how many levels of the spine were affected, so the actual extent cannot be confirmed however the word 'extensive', tends to imply more than two levels. On that basis, Dr Walden confirmed it was arguable an epidural injection was appropriate in the circumstances.

124. As to the appropriate location of the injection, Dr Walden stated when performing a procedure for pain management, either for diagnostic or therapeutic purposes, the anatomical site of the pain is a significant clinical factor in determining the precise level of the injection. He opined, it may be appropriate to perform a procedure, whether it be a facet joint injection or epidural injection at the T12 if that was where the pain was clinically arising from. He further stated, the lower on the spine is always preferred as the higher the injection into the spinal column, the greater the risk of complications. [65] Dr Walden explained this was due to the presence of the spinal cord in the spinal column at T12, therefore the higher risk of any injection into the spinal canal and nerve damage and potential impact on the sinus rhythm, given the nerves that control the heart rate arise from T3,4,5, subsequently slow the sinus rate of the heart.[66]

125. It was Dr Yousaf's evidence that if Ms Willersdorf reported her pain at T12 level, then "the appropriate injections would be facet joint injections, not epidural injection … typically they are used for radiating pain (nerve pain, sciata), rather than mechanical back pain for facets". He further stated, if Ms Willersdorf identified her pain at the T12 pain that "solidifies my view that she had facet related pain and she should have had a facet injection".

126. Dr Yousaf was also asked to comment on Dr Emechete's reasoning for his preference of an epidural injection being the extensive damage to Ms Willersdorf's facet joints and potential impact on Ms Willersdorf's endocrinology. His evidence was that people with spinal fixation typically encounter biomechanical pressures from the facets above or below and those are the ones causing the pain. Given Ms Willersdorf's L3 was the uppermost level where the orthopaedic hardware ended, Dr Yousaf opined that the L2/3 facets or the L1/2 would have to be the facets causing pain and each could have been injected, albeit the procedure would have been slightly more challenging given the presence of the metalwork.

127. He explained the typical course of action in circumstances where it is unknown which facet is causing pain, would be to do a nuclear medicine

[65] TD3 – 3 - 6
[66] TD3 -3-8

bone scan to identify the radioisotope facet causing pain. In the absence of nuclear medicine bone scan, the appropriate next step, if facet joint injections to the T12 were too difficult to perform, would be to discuss with the patient and the referring doctor, the option of an epidural injection. Dr Yousaf stated, with the patient's consent, he would then have proceeded to perform the "epidural injection at the L2/3 or the L3/4 and not any higher". [67]

128. In his evidence, Dr Yousaf stated Dr Emechete did not take on the role of a pain management consultation, his role was mechanical, functionary and "he should not have varied from the referring doctor's request to do the thoracic injection". [68]

Expert opinions on the adequacy of the response of IRIS Imaging staff

129. The expert's opinions were obtained with respect to the adequacy of the response of IRIS Imaging staff. Each of the experts were unanimous in their criticism of Dr Emechete, as to the follows:

(a) Failure to identify the seriousness of Ms Willersdorf's first faint episode;
(b) Failure to respond adequately to Ms Willersdorf's blood pressure drop to 60 over 40mmHg (medical emergency) and deteriorating state;
(c) Administration a 50ml saline flush only;
(d) Failure to provide adequate medical supervision of Ms Willersdorf;
(e) Failure to adequately monitor Ms Willersdorf post procedure; and
(f) Failure to take accurate and fulsome records of the procedure, clinical assessment and monitoring of Ms Willersdorf's observations.

130. Dr Home opined Ms Willersdorf became profoundly hypotensive following the radiological procedure and identified the circumstances of Ms Willersdorf's (blood pressure recorded at 60over 40mmHg) as a 'medical emergency'. He was critical of Dr Emechete's response to Mr Willersdorf's medical emergency, which included placing her on a bed with her head down (to improve blood flow to the brain) and inserting a cannula for venous access and flush it with 50mL of saline. He advised the basic emergency life support measures to be provided in response to Ms Willersdorf's circumstances (blood pressure of 60 over 40mmHG) was rapid administration of 500-1000mL of fluid to increase circulating volume.[69]

131. Dr Home also expressed concern about Dr Emechete's decision to leave Ms Willersdorf and 'attend to other pressing and urgent patient matters'.[70] He stated, "I am unable to draw any other conclusion than that those in attendance failed to appreciate the seriousness of Ms

[67] TD2 3-26
[68] TD3 – 3-26
[69] Ex F2 p4
[70] Ex F2 p4

Willersdorf's condition and did not provide the necessary basic emergency medical treatment required" .[71]

132. He reproached Dr Emechete's actions stating a patient must never be left without adequate medical supervision. Further, a patient should be connected to a monitor, which provides continuous display of their pulse rate and oxygen saturation and their blood pressure should be checked frequently. Lastly, in the event the patient loses cardiac output or ceases to breath, resuscitation must be commenced immediately and continue until assistance arrives. [72]

133. Dr Yousaf provided the following comments in consideration of Dr Emechete's care of Ms Willersdorf "the decision to leave the patient once the blood pressure was known to be in the severely hypotensive range is perplexing… Although it is perhaps understandable for Dr Emechete to have been unconcerned regarding a perceived simple faint initially, once the low blood pressure of 60/40mmHg was observed, it was incumbent upon him to remain there and monitor the patient himself until stable. The practice guidelines within the IRIS Safety and Quality Manual specify Dr Emechete as the sole individual qualified to use resuscitation equipment…Dr Emechete's decision to leave the room before patient stability was established and without leaving another individual present who was qualified to make that judgement is contrary to normal practice and to their own guidelines."[73]

134. He also critiqued Dr Emechete's actions in respect to Ms Willersdorf, post radiological procedure as follows:

(a) she should not have been sitting upright;
(b) she should have ideally been in a bed in a recovery room;
(c) she should have been monitored with a pulse oximetry and in timed intervals e.g. after the procedure, then 15 or 20 minutes or half hourly;
(d) results from monitoring should have been notated in charts and those to be readily available;
(e) observations should have been undertaken by a nurse or alternatively, radiographers can be trained to perform these tasks;
(f) she should have been properly monitored immediately after the first faint episode including taking her pulse rate;
(g) failure to identify her deteriorating state; and
(h) she should have been provided with a large volume of intravenous fluids and inotropic support such as an adrenaline infusion or subcutaneous injection.

135. Similarly, Dr Walden criticised Dr Emechete for leaving Ms Willersdorf with non-trained medical staff, not remaining with her and for failing to consistently monitor her vital signs. [74] He commented the administration

[71] Ex F2 p 4
[72] Ex F2 p4
[73] Ex F1
[74] Ex F5a

of 50mL of normal saline achieved IV access only and was itself, not a therapeutic resuscitation for a person with low blood pressure. [75] Further, given the unpredictability of any medication injected in the spine (generally) and potential for known complications to occur, such as instantaneous paralysis and hypotension, a minimum of 500ml of fluid is recommended to be immediately available to administer. [76]

136. Dr Walden identified the most common (and universally experienced) side effect following an epidural injection of local anaesthetic is a lowering of the blood pressure. He noted "It is universal practice amongst anaesthetists (who in their clinical practice routinely perform epidural injections) that before an epidural is performed intravenous access is established and intravenous fluid connected to enable to rapid correction of hypotension from either or both physiological effects of epidural blockage (vascular dilation and bradycardia).[77]

137. He further formulated Ms Willersdorf's loss of consciousness in close association with the epidural injection should never be considered a 'simple faint' and consideration of such, implies a "lack of comprehension of the seriousness of the potential side effects of the procedure and the emergency situation by Dr Emechete". [78]

138. Dr Walden opined, Dr Emechete's failure to appreciate the serious nature of Ms Willersdorf's loss of consciousness and low blood pressure, was demonstrated by his willingness to leave the care of Ms Willersdorf to non-trained medical staff. So too the decision not to remain with Ms Willersdorf and not to constantly monitor all of her vital signs (blood pressure, heart rate, pulse oximetry) or to treat her low blood pressure with drugs that ought to have been available to him (adrenaline a suitable medication to administer in this situation because it would both increase heart rate and reduce vasodilation).[79]

139. Dr Walden highlighted the Australian and New Zealand College of Anaesthetics outlines when a major neuraxial block is performed (e.g. an epidural which blocks part of the central nervous system) intravenous fluids and a range of vasoconstrictive medications to counter the physiological effects of the procedure.[80] He expressed his expectation that when performing a major neuraxial block, a patient would be five minutely observed for the first fifteen minutes so as to monitor spread of the block including the heart rate, blood pressure and conscious level. [81] Advising the intensively of patient monitoring declines as time from the procedure elapses. Noting two hours was an appropriate amount of time and qualifying a patient should not to be discharged alone but into the

[75] Ex F5
[76] TD3 – 3-9
[77] Ex F5
[78] Ex F5
[79] Ex F5
[80] TD3- 3-10
[81] TD3 3-16

care of a responsible adult.[82] Dr Spain's analysis of the unfolding medical emergency was that there had been a failure to detect or appreciate the physiological changes over time, resulting in an ultimate failure to provide resuscitation. [83] He also identified Dr Emechete's inadequate monitoring of Ms Willersdorf and absence from the DEXA room was most likely the explanation, for failure to identify her arrest and for resuscitation not to have been commenced. He was not however critical of Mrs Emechete for failing to observe Ms Willersdorf's deterioration and cardiac arrest, as she was not medically trained.

140. Dr Spain was also critical of Dr Emechete's decision to leave Ms Willersdorf to attend to other matters, particularly with her blood pressure reading of 60/40mmHg. Dr Spain remarked, Dr Emechete was the most qualified person at the practice and it was appropriate for him to stay and provide ongoing care to Ms Willersdorf.[84] He was also critical of Dr Emechete administering a 50mL saline flush, noting that it was contrary to Australian and International resuscitation guidelines. Dr Spain recommended the volume of fluid administered should have been between 500mL and 1L, with 500mLs as a cautious approach given Ms Willersdorf's age and comorbidity.

141. Dr Spain commented that monitoring of patients in a hospital environment for radiology, is provided by nursing staff. Evidently because, "they would have the ability to call on, not only supervising radiologists but also emergency teams who are trained well to provide advanced life support in that environment. If that recognition occurred before cardiac arrest then supportive treatment including aggressive intravenous fluids, vasoactive drugs and possible other life support may prevent the cardiac arrest. This response (is – sic) more difficult in a community radiology practice without those higher level resources".

142. He recommended the following measures be implemented at IRIS Imaging with respect to monitoring and ensuring patient safety:

    (a) a nurse to be in the recovery room post procedure;
    (b) patient to remain supine and under medical or nursing supervision; and
    (c) regular physiological monitoring of a patient's pulse, blood pressure, respiratory rate, pulse oximetry and electrocardiography (ECG) monitoring for approximately 30 minutes post procedure.

143. As to Ms Willersdorf's cardiac arrest and pathophysiology Dr Spain confirmed agonal breathing is a partial response, a brain stem reflex as a consequence of no longer receiving oxygen. He confirmed agonal breathing can be characterised by laboured breathing, gasping or vocalisation such as moaning. When questioned if a patient in that scenario would be described as peri-arrest, he clarified "we call it agonal,

[82] TD3 – 3-16
[83] Ex F3
[84] Ex F3

it's almost dead". He confirmed at such a time, resuscitation should be commenced.

144. Dr Spain's evidence during the inquest was that had Ms Willersdorf's hypotensive episode been aggressively treated with intravenous fluids and vasoactive drugs, the cardiac arrest may have been prevented. He confirmed such treatment would give "a 90 per cent chance of being effective if it was recognised and prompt action occurred". When questioned if Ms Willersdorf's underlying valvular heart disease would have impacted the efficacy of the proposed aggressive treatment, he stated "cardiac and respiratory conditions would make her slightly more prone to having a cardiac arrest, but not dramatically changed risk". He reiterated, the aggressive treatment for the hypotension would have more likely than not, prevented the cardiac arrest. [85]

145. Dr Rashford, Medical Director, Queensland Ambulance Service identified best practice in cardiac arrest situations with success or change of outcome, is effective and prompt resuscitation and defibrillation.[86] He identified that pulse checks, even by trained professionals, are extremely difficult unless performed frequently. Dr Rashford provided the following recommendation in respect to resuscitation efforts, "if someone's unconscious and has inadequate breathing, and by inadequate, I mean having agonal breaths, or very slow breathing which is inadequate, the standard care is to initiate resuscitation".[87]

146. Dr Rashford clarified when a person is in cardiac arrest, their breathing is inadequate and the common misconception of 'agonal breaths' is that the person is breathing. Further, if a person is unconscious and has inadequate breathing, it's assumed they are in cardiac arrest. In those circumstances, resuscitation should be commenced immediately and continued until the arrival of paramedics.[88]

147. Lastly, Dr Spain reviewed the advanced first aid course Dr Emechete completed with First Aid Accident and Emergency Group and stated while completed in good faith, the course included basic airway support and use of automatic defibrillators only. It did not extend to resuscitation measures such as fluid and drug administration.

<u>Royal Australia New Zealand College of Radiology Standards of Practice (RANZCR Standards)</u>

148. The Royal Australia New Zealand College of Radiology Standards of Practice for Clinical Radiology (RANZCR Standards) document, sets a minimum standard with respect to the provision of imaging and radiology services in community-based and public hospital settings.

[85] TD3 – 3-35
[86] TD1 – 1-11
[87] TD1 – 1-17
[88] TDd1 – 1-14

149. The RANZCR Standards also recommend radiology practices be appropriately prepared for responding to emergencies, by ensuring advanced life support equipment (defibrillator, patient and monitoring equipment) and associated drugs for all practices where intervention procedures are performed whether tier A or B interventional procedures. Advanced life support is defined by the Australian Resuscitation Council as techniques that may include but are not limited to advanced airway management, vascular access and drug therapy and defibrillation.

150. RANZCR Standard 3.5 Equipment – Resuscitation – requires a practice carry the minimum resuscitation equipment required to perform advanced life support including an automated external defibrillator.

151. RANZCR Standard 6.6.3 Sedation and Anaesthesia; Use of medications requires designated personnel holding CPR certification to be trained in appropriate management of adverse reactions to medication and use of resuscitation equipment to support the management of these including a 'clearly identified staff member designated as the resuscitation officer' to ensure equipment and drugs are present and in a state of readiness in the event of an adverse reaction to medication. [89]

152. The RANZCR Curriculum however outlines the competencies for radiologists, in particular those performing sedation and contrast, only require a 'CPR certification to provide basic life support'. [90]

Expert opinion on adequacy of IRIS Imaging Equipment

153. During the inquest, the experts provided their assessment of the adequacy of IRIS Imaging equipment and of its procedures, policies and training of staff in medical emergencies.

154. It was Dr Yousaf's evidence that IRIS Imaging was not compliant in respect of key equipment as required by the RANZCR Standards. He stated IRIS Imaging did not carry defibrillators or large volumes of intravenous fluids at the time of Ms Willersdorf's death. Further, with respect to patient monitoring equipment, a pulse oximeter was available on site however it was not used or applied to Ms Willersdorf.

155. Following Dr Yousaf's review, he opined all invasive procedures performed by Dr Emechete at the time of Ms Willersdorf's death were Tier A procedures. During the inquest, Dr Yousaf confirmed the procedures performed at IRIS Imaging would constitute Tier A procedures only and that an EGC monitor therefore would not strictly be required by the indicators.

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[89] RANZCR Standards of Practice for Diagnostic and Interventional Radiology (www.ranzcr.com/documents/510-ranzcr-standards-of-practice-for-diagnostic-and-interventional-radiology/file)

[90] RANZCR Radiodiagnosis Curriculum Version 2.2 (www.ranzcr.com/documents/159-radiodiagnosis-training-program-structure/file)

156. In consideration of the equipment available at IRIS Imaging and its adequacy for resuscitation situation, Dr Walden stated the practice was "reasonably equipped to resuscitate a patient if the need for resuscitation was due to anaphylactic reaction, for example due to radiological contrast, but that the radiology practice was not well equipped to resuscitate a patient from hypotension due to other causes such as epidural block or subarachnoid block (had it occurred)". As to the adequacy of the medication, he opined "the practice was ill equipped to administer large volumes of intravenous fluids and vasoconstrictive medications and medications that would have increased heart rate (chronotropic medications) and which are required for the resuscitation of hypotension following either an epidural or subarachnoid block."

Expert opinion on IRIS Imaging policies and procedures

157. Dr Spain noted in his second report that the RANZCR Standards and accreditation standards are largely interwoven. He acknowledged that IRIS Imaging's accreditation was current in 2015 and that "they had been inspected by Quality Innovation Performance (QIP) and by the assessment met standards."

158. Dr Walden's review of the IRIS Imaging consent form was that it was a generic consent form for nerve blocks which did not identify the specific and associated risks. He stated a nerve block is not a generic procedure and is a term used to cover a wide range of pain reliving interventional procedures. He further identified different risks and complications are associated with specific procedures for example peripheral nerve blocks are different to epidural nerve blocks and are very different from those expected from subarachnoid injection. Dr Walden stated, it was arguable whether or not Ms Willersdorf's consent obtained prior to the procedure was "either truly informed and therefore truly valid".

159. Dr Walden was asked whether consent before a procedure was valid consent during the inquest. It was his evidence that consent implies a degree of reflection before agreeing to undergo a procedure. Therefore a degree of distance between a procedure being recommended and the procedure performed is recommended to allow a patient time to reflect. He confirmed it was important that Ms Willersdorf have a longer reflection period given the referred procedure from the GP for facet joint injections and a different procedure, being the epidural injection was decided and undertaken by Dr Emechete.

160. As to the consent process, Drs Yousaf and Dr Walden both opined, an epidural injection requires a more thorough consent process than 'verbal consent' as requested by IRIS Imaging due to the "inherent high risks of such a procedure, namely nerve damage cardiovascular collapse paralysis". [91]

[91] Ex F6

161. Dr Walden highlighted the inadequacy of the consent process stating Ms Willersdorf provided her 'verbal consent' for an epidural to radiographers who were not sufficiently skilled to answer questions about the procedure and associated risks. It was Dr Walden's evidence that consent must be provided to the practitioner performing the procedure as they are the only person qualified to answer questions that may flow from that consent". [92]

162. Dr Walden also expressed concern at the lack of documentation that occurred. He identified there was no documentation detailing what specific risks of the procedure were discussed with the deceased. Dr Walden further criticised the lack of constant monitoring of all of Ms Willersdorf's vital signs (blood pressure, heart rate, and pulse oximetry) "there does not appear to be any record of post-operative monitoring of a patient. It is not appropriate for a patient who has undergone any form of nerve blocking procedure, in which hypotension may be a complication, to be recovered in a public waiting area in an upright chair".

163. Dr Walden agreed however that the lack of written consent did not itself reflect the absence of consent or the absence of recording of vital signs observations indicative of them not having taken place. [93]

Adequacy of information provided in the triple zero call

164. During the inquest, the adequacy of the information and whether more specific information could have been provided to the emergency medical dispatcher/operator or elicited from Mrs Akman regarding Ms Willersdorf's clinical situation was examined.

165. In response to the triple zero call from Mrs Akman on 15 April 2015, the case was assigned a dispatch priority code 1B (lights and sirens) response, MATA2, category 2 emergency, potential life threatening condition. Subsequently an Advanced Care Paramedic crew were dispatched at 13:38pm. At 14:04pm a Critical Care Paramedic was at the scene and resuscitation efforts were continued including the insertion of an endotracheal tub, intravenous cannulation and the administration of adrenaline.

166. As to the response time, Dr Rashford explained Ms Willersdorf's circumstances (her being unresponsive) was identified 97 seconds into the call. The request for an ambulance then went into the queue and the ambulance was dispatched in under 60 seconds once queued. He stated "the ambulance was on the scene eight minutes from the time it went into the queue … so within seven minutes and thirty three seconds".

167. Dr Rashford's evidence was the disparity in coding, was not significant in so far as the delivery of service to Ms Willersdorf and that the matter

[92] TD3 – 3 -14
[93] TD3 – 3 -22

could have been coded either MATA2 or MATA1 (category 1, CPR in progress, unconscious or grossly unstable patient).

168. Examination of the triple zero call reveals Mrs Akman did not provide a definitive answer to the operators question about whether Ms Willersdorf was breathing. She advised the operator "I don't know, we're checking now" in response to the question posed. Further, the operator did not persist with seeking an answer to her question.

169. Whether further or more specific information could have been of greater assistance, Dr Rashford stated the information was sufficient and nothing further was required. He acknowledged the call was "reasonably difficult" and that "it wasn't a perfect call from the centre" however the operator had elicited enough information to get the ambulance dispatched and on route. Dr Rashford advised the triple zero call received in respect of Ms Willersdorf was audited by the QAS Quality Assurance Unit and received an overall compliance score of 95 out of 100.

170. Dr Rashford identified the QAS triaging tool, the Medical Priority Dispatch System (MPDS) (an authorised computer script based protocol) was bypassed in Ms Willersdorf's case, as the emergency call was received from a delegate of a health care professional. He explained the alternative approach was developed in response to feedback from health care professionals requesting a more streamlined approach to emergency calls. Essentially the system avoids superfluous questions from operators to callers, as health care professionals typically have superior skills, qualification and experience comparatively. The health care professionals can also provide provisional diagnosis and identify the required priority of response. Dr Rashford advised health care professional and delegates are qualified medical professions and the information they provide about "patient's conditions and diagnosis, is typically very reliable and accurately reflects the actual clinical situation".

171. Subsequently, the standard operating procedures (SOP's) of the Medical Priority Dispatch System (MPDS) were reviewed and updated in 2015 to incorporate questions about resuscitation, to aid in better evaluating requests for assistance. Dr Rashford confirmed there are now a sequence of questions about whether assistance or instruction about resuscitation is required. The amendments were approved by the Deputy Commissioner State Local Ambulance Service Networks (LASN) Operations ad an educational package was developed and training delivered to all operations centre staff.

Conclusions on the coronal issues

172. In consideration of the closely connected coronial issues, I have determined to examine these collectively.

173. Having evaluated all of the evidence, I now outline my findings as to the circumstances and medical cause of Ms Willersdorf's death.

174. Firstly, as to the radiological procedure performed by Dr Emechete, I accept Dr Yousaf's opinion that Dr Emechete performed a single epidural injection on Ms Willersdorf following his review of the CT scans and dataset. I acknowledge his finding that the needle was "advanced to the paramedian extra-thecal posterior epidural space".

175. I also accept Dr Yousaf's finding of the location of the injection, being the T12 (Thoracic spine vertebra, level 12) of Ms Willersdorf's spine. I note Dr Yousaf determined the T12 location based on the following three independent criteria assessment evidenced in the imaging:

    (a) The lower most ribs are visible at the same level of the injection (presumed T12 ribs);
    (b) The spinal fusion was as at L3 and down;
    (c) Two vertebra below the level of the injection did not have metalwork and therefore indicate the injection must have be performed at two levels above the metalwork (indicating T12).

176. In further support, is Dr Walden opinion that Ms Willersdorf's hypotension was caused by an epidural injection of local anaesthetic rather than a subarachnoid injection. Relevantly, he considered the radiological procedure was an epidural injection, based on the delayed onset of the hypotension following the injection and Ms Willersdorf's ability to walk following the procedure. Dr Walden explained "hypotension due to epidural injection typically takes several minutes to manifest clinically, given the epidural local anaesthetic has to diffuse gradually through the epidural space and into the cerebrospinal fluid to manifest the physiological effects upon the nerve tacts". He distinguished, had Dr Emechete performed a spinal injection on Ms Willersdorf she would have experienced "an almost immediate fall in blood pressure and rapid onset of limb weakness and difficulty walking.[94] I accept Dr Walden's opinion. I am also persuaded by its veracity, given the evidence from Mrs Akman and Ms Rabera that Ms Willersdorf was able to walk without limb weakness or difficulty to the bathroom following the radiological procedure (assisted with her stroller).

177. I have also placed weight on Dr Yousaf's review of the Gold Coast University Hospital records which reflects Ms Willersdorf presented with a band-aid on her spine (approximately located at T11/T12 measured by skin surface perspective only). Further, Dr Emechete's acceptance that the placing of a band-aid is an IRIS Imaging post epidural practice and a reflection of the location of the epidural injection (T12) Ms Willersdorf received.

178. Finally, I am reassured by Dr Emechete's evidence provided in his Further Statement and at inquest that he performed a single epidural injection located at the T12 of Ms Willersdorf's spine.

[94] Ex F5

179. As to the matter of the medical cause of Ms Willersdorf's death, I accept Dr Botterill's opinion. The medical cause of Ms Willersdorf's death is as follows:

1(a) Hypoxic-Ischaemic Encephalopathy
1(b) Valvular Heart Disease.
2. Spinal osteoarthrosis (treated)

180. I also accept Dr Botterill's opinion that Ms Willersdorf had valvular heart disease which likely was exposed by the resultant drop in blood pressure (hypotension) and cardiac arrest, following the radiological procedure performed by Dr Emechete. I am persuaded by Dr Botterill's opinion that Ms Willersdorf was unaware of her valvular heart disease and that she likely had not previously experienced any significant stressors, which exposed the abnormality. Further, the change in blood pressure (hypotension) and subsequent taxing on Ms Willersdorf's heart, resulted in the cardiac arrest that lead to hypoxic brain injury (direct cause of death). Relevantly, Ms Willersdorf's medical records do not reflect any record or finding of valvular heart disease and is therefore consistent with Dr Botterill's opinion.

181. I find the epidural injection performed by Dr Emechete, was a contributory factor, in the context of her valvular heart disease and not a primary cause of Ms Willersdorf's death.

182. Counsel Assisting has submitted the appropriateness of the epidural injection performed by Dr Emechete is beyond the scope of the inquest, as it is a subjective matter. The submissions for Dr Emechete agree and support no occasion for making findings as to the appropriateness of the radiological procedure.

183. Conversely Counsel for Ms Willersdorf's family have submitted the appropriateness of the epidural injection is within scope as it is directly relevant to the cause and circumstances of her death. It is submitted the numerous inconsistencies in Dr Emechete's evidence as to the procedure he performed, casts doubt on the overall reliability of his evidence including his judgement about the appropriateness of the radiological procedure performed.

184. Dr Emechete provided the following evidence at the inquest in response to questions asked of him about the inconsistences and or differing versions of the procedure performed:

> Dr Emechete: "I'll say that was a typographical error. I did not read – I got my typing clerk to type the report, and I did not read it. I just signed it. So I was overwhelmed by the situation. So I signed. Again, was a typographical error".
>
> …
>
> Coroner: "And you didn't read it before you signed it"

Dr Emechete: “No, I didn’t read it. I just assumed that all was exactly correct”.

Coroner: “Did you have a conference with your solicitors?” … “after the report … in the course of these proceedings?”

Dr Emechete: “Yes, I did’

Coroner: “did they then produce further statements?”

Dr Emechete: “Yes, they did”

Coroner: “And they perpetuated this so-called typographical error?

Dr Emechete: “I take the responsibility here that I did not read and I didn’t go back to review my images. So I take reasonability but you know, that was done in error”.

185. I consider proofreading to be a reasonable standard of care and diligence and practicability expected to be exercised in exceptional circumstances where the patient is deceased and written or reviewed by a medical practitioner, subject to legal, ethical and professional principals. I am therefore not persuaded by Dr Emechete’s evidence that the recurrent errors, as reflected in the Radiology Report and statements resulted from typographical error.

186. Furthermore, I requested additional information from Dr Emechete by way of a Form 25 in which Dr Emechete provided his Third and Fourth Statements in response. I find perplexing, as a consequence of preparing the statements that Dr Emechete did not revisit his evidence and the circumstances of Ms Willersdorf’s death at that earlier time.

187. I accept Dr Emechete’s evidence that he was overwhelmed by Ms Willersdorf’s death and the challenging circumstances however I am of the view his heightened emotional state likely occasioned one oversight, not recurrent. It is acknowledged however Dr Emechete did accept the recurrent errors as his own.

188. To the extent of this finding and in consideration of the Willersdorf family submission, I am of the view it is reasonable to consider the appropriateness of the radiological procedure performed on Ms Willersdorf. Other supporting considerations include Dr Botterill’s findings at autopsy that the epidural injection contributed to Ms Willersdorf’s death and the opinions of Dr Yousaf and Dr Walden as to the appropriateness of facet joint injections or injections as preferential treatment for pain arising from degenerative or osteoarthritic facet joints.

189. As to the appropriateness of the epidural injection, I find noteworthy the spinal imaging of Ms Willersdorf’s thoracic lumber spine demonstrated to Dr Hunt the possibility of arthritic facet joints and similarly, his

confirmation the purpose of the facet joint injection/s was to investigate pain originating from arthritis.[95] Dr Hunt's evidence reflects the radiological procedure he requested, namely the facet joint injection was investigative in nature.

190. I am also cognisant of Dr Walden's criticism of Dr Emechete's departure from Dr Hunt's request for a facet joint injection (as outlined in the Referral) and accept his opinion that a facet joint injection was a more logical and safer procedure than an epidural injection, as it is associated with lower risks of nerve damage and cardiovascular physiological changes. Dr Walden opined, "a facet joint injection was in fact, as both an anaesthetist and a pain medicine physician, a more logical pain relieving procedure to perform in Ms Willersdorf's situation, as it may have been a part of a further management plan that the GP was instituting".

191. Similarly, Dr Yousaf considered had Ms Willersdorf reported pain at the T12 level, the appropriate injection was a facet joint injection and not an epidural injection. I note it was Dr Emechete's evidence, in the absence of written records that Ms Willersdorf reported her pain at the T12 level.

192. It was Dr Walden's evidence during the inquest that the requested radiological procedure (facet joint injection) was intended to be investigative and/or diagnostic, it was not emergency in nature and Dr Hunt retained overall care of Ms Willersdorf.[96] He confirmed, in circumstances where a general practitioner refers to a radiologist, there is no expectation of ongoing therapeutic care. Dr Walden stated the circumstance would have been different if Ms Willersdorf was referred "to a pain medicine physician for ongoing treatment, because it is assumed the medicine physician would be assuming an ongoing therapeutic role".[97] Dr Walden opined, in the context of Dr Emechete's limited function, he was required to contact the general practitioner and discuss his decision to divert from the facet joint injection and precede with the epidural injection.

193. Dr Yousaf also found Dr Emechete held a limited functionary role in Ms Willersdorf's care. He stated, Dr Emechete did not take on the role of a pain management consultation, his role was mechanical, functionary and "he should not have varied from the referring doctor's request to do the thoracic injection".[98] I accept and agree with both Dr Walden's and Dr Yousaf's evidence.

194. I acknowledge it is Dr Hunt's evidence that he would have deferred to the specialist radiologist, Dr Emechete in the circumstances, if he had been contacted and an alternative procedure was warranted. Notwithstanding Dr Hunt's position, I accept the expert opinion and agree, Dr Emechete

[95] TD2 – 1-6
[96] Ex F5
[97] Ex F5
[98] TD3 – 3-26

should have contacted Dr Hunt about the divergent radiological procedure.

195. I accept Drs Walden and Yousaf's opinions that a facet joint injection or injections were the safer and more appropriate procedure, in the context of Ms Willersdorf's osteoporosis. I am mindful however that each expert provided advice during the inquest that under certain circumstances an epidural injection would also be suitable.

196. I note it was Dr Emechete's evidence that his preference of the epidural injection was based on a combination of two factors, including the extensive damage to Ms Willersdorf's facet joints and his concern about the potential impact on her endocrinology.

197. Dr Walden's evidence in respect of the suitability of an epidural in the circumstances Dr Emechete identified was that, "when performing a procedure for pain management, either for diagnostic or therapeutic purposes, the anatomical site of the pain is a significant clinical factor in determining the precise level of the injection". He further opined, given Ms Willersdorf's "extensive facet joint disease, an epidural may have been appropriate".[99] I accept Dr Walden's evidence that both an epidural injection and T12 location of Ms Willersdorf's spine was also appropriate, in the context of Dr Emechete's concerns following his assessment of Ms Willersdorf.

198. Dr Yousaf's evidence in response to Dr Emechete's assessment was, in the absence of a nuclear medicine bone scan and inability to inject into the L2/3 and L1/2 due to the challenge of the underlying metalwork, that an epidural injection would be suitable. He explained, persons with spinal fixation encounter biomechanical pressures from either the facets above or below the orthopaedic hardware and in consideration of Ms Emechete's circumstances, he opined the facets causing Ms Willersdorf pain was likely the L2/3 or L1/2 facets. Dr Yousaf stated, having first discussed his findings with the general practitioner, he would have proceeded to perform the "epidural injection at the L2/3 or the L3/4 and not any higher".[100] I also accept Dr Yousaf's evidence.

199. I consider Dr Yousaf's recommendation that the injection be limited to the L2/3 or the L3/4 location significant, given the absence of higher level resources including supervising radiologists, emergency teams trained in advanced life support, access to intravenous fluids, vasoactive drugs and other life support resources, in community radiology clinics such as IRIS Imaging and alike, in contrast to hospital environments.
200. Having considered the evidence, I accept the facet joint injection or injections was the safer procedure and more appropriate, pain relieving procedure given the absence of any ongoing therapeutic care or pain management plan of Ms Willersdorf. I also accept Dr Walden's and Dr

[99] TD3 – 3-5
[100] TD2 3-26

Yousaf's opinions, that an epidural injection may have been appropriate in the context of Ms Willersdorf's extensive disease and concern for her endocrinology. Notwithstanding, the disparity between the experts as to the appropriate location of the injection.

201. I find therefore the epidural injection was not the most appropriate procedure in terms of safety and pain relief, however it was not inappropriate in the context of Dr Emechete's clinical assessment of Ms Willersdorf pathophysiology.

202. The Willersdorf family submit the matter of Dr Emechete's clinical judgement was explored during the inquest and Dr Emechete's evidence did not adequately reflect he conducted a thorough assessment of risks before performing the epidural on Ms Willersdorf.

203. In the context of Ms Willersdorf's death I am cognisant of both hindsight bias and outcome bias. Hindsight bias refers to the tendency of those with knowledge of an outcome to overestimate the predictability of what actually occurred, relative to alternative outcomes which may have seemed likely at the time of the event. Outcome bias refers to the influence of knowledge of the eventual outcome on the retrospective evaluation of clinical care.

204. Relevantly, the submissions for Dr Emechete caution retrospective evaluation of Dr Emechete's clinical judgment and outlines the importance of recognising Dr Botterill's evidence as follows:

    (a) The procedure was not the "primary issue" in Ms Willersdorf's death;
    (b) It is very uncommon for people to have this type of treatment and die; and
    (c) Ms Willersdorf had a condition which "you would not necessarily know that you have … unless some sort of stressor occurs that causes it to become more apparent".

205. I accept these submissions and reiterate my acceptance of Dr Botterill's findings at autopsy as to the cause of death and the epidural injection performed by Dr Emechete, as a contributory not primary factor in Ms Willersdorf's death.

206. I also consider relevant both Dr Botterill's and Dr Yousaf's opinions, that the epidural injection was correctly inserted into the epidural space. I accept the evidence confirms the epidural injection performed by Dr Emechete was carried out successfully.

207. In the circumstances, I consider more pertinent, the adequacy of the response provided by Dr Emechete to the medical emergency involving Ms Willersdorf and the equipment, processes and monitoring of her.

Adequacy of response provided by IRIS Imaging staff to the medical emergency

208. In respect to the adequacy of response by IRIS Imaging staff, I have received submissions from Counsel for Ms Rabera and Counsel representing both Mrs Akman and Mrs Emechete. The submissions largely seek exclusion from criticism for the involvement and care provided to Ms Willersdorf.

209. In review of the evidence, I am of the opinion Ms Rabera's involvement in Ms Willersdorf's care was limited to specific matters instructed by Dr Emechete such as assisting during the procedure and retrieving a cannula set. It is noted Ms Rabera recognised Ms Willersdorf's initial deterioration and assisted her following the procedure. I accept Ms Rabera is not a medical practitioner or a nurse and not trained in adverse events management skills. Drs Home, Yousaf, Spain and Walden did not make any specific criticism of the care she provided and or her involvement with Ms Willersdorf. I agree with the experts' opinions. I am also not critical of Ms Rabera's care and involvement with Ms Willersdorf. I find the responsibilities Ms Rabera performed, she did diligently in light of the challenging circumstances.

210. Counsel for Mrs Akman submit no adverse inference should be drawn from Mrs Akman's refraining from specifying the actual procedure performed or her involvement in obtaining Ms Willersdorf's consent to the radiological procedure including her ability to respond to questions if posed by Ms Willersdorf during the consenting process. I agree with those submissions.

211. Having regard to Dr Walden's evidence, I do not accept that it is appropriate for Mrs Akman to respond to any patient enquires about a radiological procedure performed by a qualified medical practitioner. Mrs Akman is a radiographer. She is not qualified to seek patient consent or answer patient queries about invasive radiological procedures such as epidural injections. As Dr Emechete performed the procedure, I find he was the appropriate person to seek Ms Willersdorf's consent and answer any questions she may have had.

212. As at the time of the incident, I understand the IRIS Imaging's patient consent process involved radiographers seeking consent directly from patients including answering any questions they may have posed. I am critical of the IRIS Imaging consent process and have outlined my comments below.

213. As to Mrs Akman's care and involvement with Ms Willersdorf, the experts made no specific comment or criticism of her. I accept this evidence and I am also not critical of Mrs Akman or any other IRIS Imaging staff members, for following this practice at that time and seeking Ms Willersdorf's consent to the radiological procedure. During the emergency call, Mrs Akman provided background information, requested

assistance and advised she was unaware if Ms Willersdorf was breathing. I accept she provided the information to the best of her knowledge in difficult circumstances. I am not critical of Mrs Akman's care and involvement with Ms Willersdorf.

214. As to Mrs Emechete's involvement in the care of Ms Willersdorf I observe Dr Spain was not critical of her failing to identify Ms Willersdorf's deterioration and cardiac arrest, on the basis she was not medically trained.

215. During the inquest Mrs Emechete was asked about Ms Willersdorf loss of consciousness. Her evidence, in respect of Ms Willersdorf's collapses was Ms Willersdorf did not faint, stating "not really". When asked to explain what did occur, Mrs Emechete stated following the procedure Ms Willersdorf changed back into her clothes, used the restroom and while walking back into the reception area, complained she "felt a bit tired". Mrs Emechete further stated in response to questions about Ms Willersdorf perceived steadiness, that she did not appear unsteady on her feet. [101]

216. When presented with the premise Ms Willersdorf had fainted and witnesses had prepared and signed statements attesting to her loss of consciousness, Mrs Emechete recounted stating Ms Willersdorf did faint "for a short period of time" and "she was up again". Mrs Emechete further described Mrs Willersdorf's eyes were open, she was breathing, responding to questions and "was full of energy".[102] She stated Ms Willersdorf was talking like a radio and had to be encouraged not to speak. Mrs Emechete stated she said to Ms Willersdorf "Maria. No. Calm down. It's ok. Just stay quiet". When asked if Ms Willersdorf was still speaking at the time Mrs Akman left to make the triple 000 call, she said "maybe then we had convinced her not to talk anymore". Mrs Emechete maintained Ms Willersdorf was talking at the time of the call to the triple 000 call, despite being advised Mrs Akman described Ms Willersdorf as being 'completely unresponsive'.

217. Mrs Emechete refuted the proposition she was rubbing Ms Willersdorf's shoulders at the time of the QAS paramedics' arrival and stated she did not advise the QAS officers that Ms Willersdorf had been gasping for air. She maintained Ms Willersdorf was not unconscious at the time the QAS arrived however admitted Ms Willersdorf was not talking, not using words and had moaned, making "mmm" sounds in response.[103]

218. There are a number of aspects of Mrs Emechete's evidence that are in conflict with evidence I have accepted, which casts doubt on its veracity. Firstly, it is both Ms Akman and Ms Rabera evidence that Ms Willersdorf complained of feeling dizzy and lightheaded following the procedure, not tired as claimed by Mrs Emechete. Secondly, Mr Murray's evidence that

[101] TD2 2-84
[102] TD2 – 2-87
[103] TD2 – 2-92

on arrival at IRIS Imaging, he observed Ms Willersdorf "lateral on the radiology bed, unresponsive and not breathing". Further, he stated he was advised Ms Willersdorf had suffered a fainting episode and that she had been gasping for air. The same woman who told him this information was the woman "sitting on the table near the patient's head rubbing her should as if to console her".

219. Further, Mr Kernovske's evidence was that he assessed Ms Willersdorf on arrival and found she did not have a carotid pulse and her eyes were wide open with pupils fixed and dilated. It is Mr Busy's evidence that on his arrival, Mr Murray and Mr Kersnovske advised him Ms Willersdorf was asystole in cardiac arrest and she had to be moved to the floor to commenced resuscitation. It is Ms Rabera's evidence that when providing Dr Emechete with the saline flush was that Ms Willersdorf was "unresponsive and she was uncertain if she was breathing". [104]

220. Finally, the electronic Ambulance Report Form completed by Mr Murray on the same day as the incident at 16:14pm recorded Ms Willersdorf vital signs and treatment. At 13:46pm, Ms Willersdorf skin was described as 'cool' in temperature and 'cyanotic' in colour. She is described as apnoeic (not breathing) and her eyes described as 'dilated' and 'non-reactive'. Mr Murray's record of the attendance reflected the attendance as follows, "post scan PT had what the nurse described as a syncopal episode and had not recovered fully. Nurse stated that Pt did responded by gasping so they placed Pt in the recovery position and called QAS". [105]

221. Counsel for the QAS submits the eARF is contemporaneous evidence completed within hours of the incident. It is also submitted where there is a conflict in evidence due to a significant passage of time, I should accept the most reliable evidence, as the evidence contained within the contemporaneous QAS clinical records. Further, I am advised the QAS officers have no vested interest in the outcome and should be considered factual witnesses to the inquest. I consider the earliest written records are likely to be the most accurate, as reliance on memory to assist in the reconstructing of past events is often problematical due to mistake, impaired memory and or withholding of the truth. I accept the submissions on behalf of the QAS.

222. Mrs Emechete's evidence is in direct conflict with Mr Murray's in respect of whether Ms Willersdorf was gasping for air prior to QAS arrival. Having accepted the eARF as contemporaneous evidence and likely the most accurate, I accept Mr Murray's evidence including his account that on arrival at IRIS Imaging he was advised that Ms Willersdorf had not fully recovered from the radiological procedure and had responded by gasping. It is submitted the person who provided the information to Mr Murray was Mrs Emechete. I also accept this submission.

[104] Ex – B8a
[105] Ex – D2 and D2a

223. I find Mrs Emechete's evidence largely misleading with the exception of her description of Ms Willersdorf's breathing. I find Mrs Emechete's admission that Ms Willersdorf was not talking, not using words and had moaned, making "mmm" sounds in response, is itself evidence of her experiencing agonal breathing prior to the arrival of the QAS. As to her statement that Ms Willersdorf "was full of life", I find it to be a gross exaggeration.

224. Mrs Emechete claims to have undertaken a first aid certificate within a two year period prior to the incident however given her inability to recall details, I also have reservations about the veracity of her statement. I am not however critical of Mrs Emechete's failure to recognise Ms Willersdorf's deterioration and cardiac arrest, as she is not medically trained.

225. The evidence identified multiple issues in respect of the care and treatment Dr Emechete provided to Ms Willersdorf. The inadequacies of care and treatment are succinctly identified as follows:

    (a) Failure to identify the seriousness of Ms Willersdorf's first faint episode;
    (b) Failure to respond adequately to Ms Willersdorf's blood pressure drop to 60 over 40mmHg (medical emergency) and deteriorating state;
    (c) Administration a 50ml saline flush only;
    (d) Failure to provide adequate medical supervision of Ms Willersdorf;
    (e) Failure to adequately monitor Ms Willersdorf post procedure; and
    (f) Failure to take accurate and fulsome records of the procedure, clinical assessment and monitoring of Ms Willersdorf's observations.

226. It was Dr Spain's evidence that had Ms Willersdorf's hypotensive episode been aggressively treated with intravenous fluids and vasoactive drugs, the cardiac arrest may have been prevented. He confirmed the quantitative figure if the treatment was provided, would be "a 90 per cent chance of being effective if it was recognised and prompt action occurred". When questioned if Ms Willersdorf's underlying valvular heart disease would have impacted the efficacy of the proposed aggressive treatment, he stated "cardiac and respiratory conditions would make her slightly more prone to having a cardiac arrest, but not dramatically changed risk". Dr Spain's further evidence was that the aggressive treatment for the hypotension would have more likely than not, prevented the cardiac arrest.[106] I accept the evidence and consider Ms Willersdorf death was preventable.

227. I accept the experts' review of the care and treatment Dr Emechete provided to Ms Willersdorf. I also agree with Dr Spain's evidence that Ms Willersdorf required aggressive intravenous fluids in response to her

[106] TD3 – 3-35

hypotension, adequate monitoring and urgent resuscitation. This was not provided to her.

228. In respect of Ms Willersdorf's first loss of consciousness, Dr Walden's evidence identifies Dr Emechete should not have construe it as a simple faint. His evidence was:

> "I think the term that struck me was assuming this to be a simple faint. That I would never assume that, following a procedure of this nature, whether it was of the L4-5 or the T12 level, that a loss of consciousness was a simple faint. A simple faint is a loss of consciousness, which means that there is insufficient blood supply to the brain for whatever reason, through hypotension or slowing of the heart rate. But in the setting of an epidural being performed, because the sympathetic fibres to the heart may be blocked as a consequence of that procedure, the heart is unable to speed up in response to low blood pressure. So therefore, the blood pressure may fall for whatever reason and the heart not be able to respond in the normal way that mine would or yours would if we were to have a simple faint here and now. So it was concerning that this was put down to just to a simple faint".

…

> "If there was better monitoring of Mrs Willersdorf, then there would be some record of what was happening to the blood pressure, what was happening to the heart rate, and that would've given Dr Emechete some indication as to what would be the appropriate action to take place until the ambulance crew arrived".

229. As to the failure to respond adequately to Ms Willersdorf's blood pressure drop to 60 over 40mmHg (medical emergency) and her deteriorating state, the evidence clearly identifies Ms Willersdorf required rapid administration of 500-1000mL of fluid to increase circulating volume following the first collapse. [107] She should also have been connected to a monitor, providing continuous display of her pulse rate, oxygen saturation and blood pressure. [108] Ideally recovering in a bed in a recovery room, monitored in timed intervals of 5 minutes increasing to 15 then 20 minutes over a 1.5 to 2 hours period, by a suitably qualified medical professional, with training in advance life support.

230. It is submitted by Counsel for Dr Emechete that he demonstrated concern for Ms Willersdorf's well-being before and after the procedure by responding to initial notice Ms Willersdorf was 'dizzy' following the procedure, by laying her in the lateral decubitus position, checking her pulse and blood pressure. Further, he inserted a cannula and administered saline, identified her deterioration and instructed staff to call an ambulance. It is further submitted Dr Emechete did not leave Ms

[107] Ex F2 p4
[108] Ex F2 p4

Willersdorf until he assessed her as responsive and left to clear a path for the QAS. I accept these submissions reflecting the treatment Dr Emechete did provide.

231. Counsel Assisting has submitted the timing of Ms Willersdorf's cardiac arrest likely occurred after the emergency call and prior to the arrival of the QAS, following the second collapse. Counsel for the Willersdorf family have submitted it is open for me to find the timing of Ms Willersdorf's cardiac arrest is uncertain and may have occurred at any time including while in the presence of IRIS Imaging staff.

232. I accept the body of evidence from the experts, doctors and paramedics provided during the inquest that the exact timing of Ms Willersdorf's cardiac arrest cannot be determined. It was Dr Walden's evidence however that once a person's heart stopped it would be a matter of minutes for clinical signs of such as dilated and non-reactive pupils, cyanotic in colour and cool temperature to become apparent.

233. In review of the evidence, the triple 000 call commenced at 13:37pm and concluded at 13:41pm. QAS paramedics arrived at IRIS Imaging at 13:45pm, 8 minutes after the initiation of the call. At 1 minute and 3 seconds into the emergency call, Dr Emechete stated to Ms Akman, "they have to get here now".

234. It was Dr Emechete's evidence that Ms Willersdorf's condition had not deteriorated following the second faint and it was his realisation of the serious of Ms Willersdorf's circumstances, her blood pressure being 60/40mmHg which gave cause for him requesting the urgent arrival of the QAS. He further stated Ms Willersdorf was "responsive, she was alive at that stage" and "there was a good sign of life in her" and that was the reason he left her to attend to other matters and clear a path for QAS. Dr Emechete described Ms Willersdorf as having a pulse, not being cool in temperature and her breathing as shallow.

235. Following Dr Emechete's consideration of the circumstances of Ms Willersdorf's death, he stated "it was in a desperate situation; she needed help that I couldn't provide". When asked if he considered commencing resuscitation at that stage, he responded "I totally blanked out". He then agreed he should have commenced resuscitation. Dr Emechete maintained Ms Willersdorf's breathing was shallow, she was responsive, "she hadn't recovered fully and needed somebody with better equipment and better skill to take over the management".

236. I consider Dr Emechete's statement that the QAS needed to "get here now" (to Ms Akman) as evidence of her further deterioration and likely the commencement of her experiencing agonal breathing demonstrated by her "gasping for air".

237. Dr Rashford's evidence in respect of agonal breathing, is "the common misconception about agonal breaths is that a person is breathing. Dr

Spain explained agonal breathing is a partial response, a brain stem reflex as a consequence of no longer receiving oxygen. He identified agonal breathing can be characterised by laboured breathing, gasping or vocalisation such as moaning.

238. It was Dr Walden's evidence in respect of the pathophysiology that likely occurred following an epidural injection at the T12 location, was that it would have had a sympathetic reaction on Ms Willersdorf's heart, it would have slowed her heart, then limb vasodilation, blood pressure of 60/40mmHG consistent with hypotension and bradycardia (slowing of the heart). He confirmed, as a result it is very difficult for blood to get to the brain and leads to the heart stopping. Further, the blood is not being oxygenated because the heart cannot pump to the lungs and the "resultant acidosis is a really strong stimulus to the brain stem to take some deep breaths, this results in agonal breathing that is seen at those terminal phases of life". Dr Walden also confirmed agonal breathing can be characterised in different ways, "laboured breathing, gasping, unusual vocalisation such as moaning". [109] I accept Dr Walden's evidence as the likely pathophysiology effect following the epidural injection and subsequent agonal breathing.

239. Subsequently, I consider the following descriptions of Ms Willersdorf's breathing, as evidence she experienced agonal breathing following cardiac arrest, prior to the arrival of the QAS and likely during the triple 000 call:

    (a) Dr Emechete's description of Ms Willersdorf's breathing as "shallow";
    (b) Mrs Emechete's admission that Ms Willersdorf was not talking, not using words and had moaned, making "mmm" sounds in response;
    (c) eARF records and Mr Murray's statement he was advised the patient had been "gasping for air", "about 5 minutes ago";
    (d) Ms Rabera's evidence that on entry to the DEXA room and providing Dr Emechete with the cannula set, Ms Willersdorf was "not responsive, not talking and she was unsure if she was breathing";
    (e) Mrs Akman's statement to the QAS operator that Ms Willersdorf was "unresponsive" and then "completely unconscious", she was also unsure if Ms Willersdorf was breathing.

240. In respect of resuscitation, it was Dr Spain's evidence that in accordance with the Australian Resuscitation Council Guidelines (ARC) that the emphasis is now on a patient's unresponsiveness. He clarified there is no longer an emphasis on attempting to identify a pulse as "it's quite difficult sometimes, to be able to definitely detect whether a pulse is or isn't present". Dr Spain stated in the context of Ms Willersdorf's circumstances, she has low blood pressure and "there may have still be some pulse and cardiac output but you may not clinically be able to detect by simple observations of the pulse". In accordance with the ARC guidelines Dr Spain confirmed the initiation of resuscitation should not be

[109] TD3 3-18

delayed.[110] Review of the ARC guidelines state in respect of resuscitation, "every minute counts".[111]

241. As to appropriate monitoring, Dr Spain stated pulse proximeters are fairly reliable for patients with normal circulation, however in patients that are shocked, "which Ms Willersdorf was shocked, they have variable ability to actually work effectively". He stated the known limitations with the device is a finding of a poor trace or absence of pulse when it is present, but relates to the poor circulatory state or simply due to the inaccurate application of the device. Dr Spain opined, ECG monitoring is preferred for monitoring cardiac electrical activity. He explained, cardiac electrical activity may be present but no actual output, so you can be in cardiac arrest but still have electrical activity. Further, in the case of any doubt, within a hospital setting, an ultrasound is used if there is any uncertainly about cardiac output.[112] I accept Dr Spain's evidence and recommendation of ECG usage for monitoring cardiac electrical activity, particularly in shocked patients and or with poor circulation.

242. I also accept Dr Rashford's evidence in respect to best practice in cardiac arrest situations with success or change of outcome, is effective and prompt resuscitation and defibrillation. Dr Rashford's recommendation is as follows:

> "if someone's unconscious and has inadequate breathing, and by inadequate I mean having agonal breaths, or very slow breathing which is inadequate, the standard care is to initiate resuscitation".[113]

243. I acknowledge Dr Emechete's statement (on his reflection after the incident) it was a poor decision to leave Ms Willersdorf and that he should have stayed with her and appropriately monitored her. He accepted had he aggressively treated Ms Willersdorf with intravenous fluids, vasoactive drugs and resuscitation, such measures may have prevented her cardiac arrest. Further, he should have commenced resuscitation of Ms Willersdorf immediately following her shallow and inadequate breathing, when she became unresponsive, in the context of having a blood pressure of 60/40mmHg. [114]

244. I have also given consideration to and accept the evidence of each of the QAS officers that neither Dr Emechete nor his staff were obstructive, on their arrival or during the unfolding emergency and likely did not hear their requests for assistance.

245. Having regard to all of the evidence, I subsequently find Dr Emechete failed to identify and adequately assess the seriousness of Ms Willersdorf's deteriorating state including hypotension and cardiac arrest.

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[110] TD3 – 3-36
[111] ARC guidelines https://resus.org.au/guidelines/anzcor-guidelines/
[112] TD3-3-36
[113] TD1 – 1-14-17
[114] TD2 2-44

He further failed to adequately monitor and respond by providing sufficient intravenous fluids and vasoactive drugs and act by resuscitation including the use of a defibrillator. I further find the substandard care combined to jeopardise Ms Willersdorf's survivability and ultimately contributed to her death, having previously considered her valvular heart disease as an antecedent cause.

Adequacy of equipment

246. As to the adequacy of equipment, I accept the body of evidence from Drs Spain, Walden and Yousaf that IRIS Imaging was inadequately equip at the time of the incident.

247. Counsel Assisting has submitted Dr Emechete was in breach of Royal Australian New Zealand College of Radiologists' standards as at the time of Ms Willersdorf's death, for the following:

    (a) failing to obtain the minimum resuscitation equipment at IRIS Imaging required to perform Advanced Life Support including a defibrillator and resuscitation drugs; and
    (b) attending personal be trained in resuscitation.

(Standard 3.5 Equipment – Resuscitation and 11.2.7 Emergency and Resuscitation Equipment). I accept these submissions.

248. Counsel Assisting also submitted Dr Emechete is in breach of the Medical Radiation Practice Board of Australia, Code of Conduct, for medical radiation practitioners (Code of Conduct). I also accept this submission for the following breaches.

    (a) Failure to record and maintain accurate clinical notes and prepare accurate reports in accordance with the Code of Conduct.
    (b) Failure to communicate and/or coordinate care with the referring general practitioner, Dr Hunt in accordance with the Code of Conduct.
    (c) Failure to identify Ms Willersdorf's additional needs, communicate effectively and seek informed consent from her about to the procedure and ensure her release to a supervising adult in accordance with the Code of Conduct.
    (d) Failure to provide 'good patient care' and monitor and/or ensure Ms Willersdorf was under direct medical supervision post procedure and minimise risk in accordance with the Code of Conduct.

Adequacy of procedures, policies and training

249. Dr Walden's opinion following his review of the IRIS Imaging consent form was that it was a generic consent form for nerve blocks which did not identify specific risks. He stated a nerve block is not a generic procedure and is a term used to cover a wide range of pain reliving

interventional procedures. He further identified different risks and complications are associated with specific procedures for example peripheral nerve blocks are different to epidural nerve blocks and are very different from those expected from subarachnoid injection.

250. I agree with Dr Walden's assessment that the IRIS Imaging 'nerve block' consent form did not adequately identify the procedure Dr Emechete performed on Ms Willersdorf nor did it identify the specific risks associated with the epidural injection.

251. I also accept Dr Walden's expert opinion that consent implies a degree of reflection, necessitating a degree of distance between the provision of consent and timing of the procedure. Dr Walden subsequently recommended Ms Willersdorf be provided a longer reflection period of time given Dr Hunt's referred was for facet joint injections and Dr Emechete had identified a different procedure was suitable, being the epidural injection. I agree Ms Willersdorf should have been provided time to consider Dr Emechete's recommendation, despite the claim she was in pain and requested assistance. While no submissions were received about this matter, I consider the preferred pathway, as identified by Dr Walden should have been for Dr Emechete to contact Dr Hunt to discuss Ms Willersdorf's circumstances. Alternatively, Dr Emechete should have referred Ms Willersdorf to the nearest emergency hospital department in the event of her unmanageable pain.

252. I also accept Dr Walden's evidence that at the time Dr Emechete elected to perform the epidural on Ms Willersdorf, he should have familiarised himself with her medical history. I am of opinion, Dr Emechete was obliged to seek Ms Willersdorf's medical records from Dr Hunt and or the medical practice, to conscientiously advise her of the possible risks and complications as the treating practitioner and to provide her with a consent form specific to the procedure being performed and appropriately outlining the possible risks and complications in writing. Given her age and fragility, Dr Emechete should have also requested the involvement and presence of a family member. I am confident, had this process been followed Ms Willersdorf's blood pressure history would have become apparent to Dr Emechete and appropriately managed.

253. I acknowledge Dr Walden's concern as reasonable, as to whether Ms Willersdorf's consent was informed or valid in the circumstances, despite the matter of consent not forming part of the scope of the inquest or receipt of any submissions outlining such concerns. In the absence of any raised concerns, I consider more likely than not Ms Willersdorf had capacity to consent to the procedure and the option, as confirmed by Dr Emechete to withdraw her consent to the procedure. In consideration of Dr Emechete's evidence, I am not however assured Ms Willersdorf was fully informed about the associated risks of an epidural injection and or the location of the injection.

254. Counsel Assisting recommended the implementation of the following improvements to IRIS Imaging policy and procedures:

(a) Consent process –

I. amend practice to require patients to provide their consent directly to Dr Emechete and or the treating practitioner performing the procedure;

II. amend practice to ensure the treating practitioner provides the patient with fulsome details about the intended procedure and known associated risks including blood pressure and to afford patients the opportunity to discuss and or ask questions from the treating practitioner about the intended procedure and inform patient about rights to withdraw consent;

III. develop consent forms specific to Type A interventional procedures, such as spinal tap, epidural and spinal nerve root block procedures and provide in-depth information about associated risks and complications;

IV. amend process to require patients to provide their written consent to procedures, unless in the event of an emergency;

V. implement policy requiring patients to be released into the supervision and or care of an adult following Type A interventional procedures, such as spinal tap, epidural and spinal nerve root block procedures.

(b) Medical records

I. amend practice to require the recording and compiling of fulsome patient medical history records and to record details for each patient attendance.

(c) Policies and procedures

I. amend management of adverse events policy to adopt Australian Resuscitation Guidelines in the event of an adverse events including but not limited to the provision of intravenous fluids, vasoactive drugs and resuscitation including the use of a defibrillator.

II. amend practice to require a medically qualified person with Advanced Life Support skills, other than Dr Emechete given his time constraints and commercial responsibilities, to assist to monitor patients in the recovery room, in appropriate time intervals, as appropriate and as

previously identified in five minutely for the first fifteen minutes, then spread to ten minutes and fifteen minutes as the time after the procedures elapses and or as necessary depending on radiological procedure and in a dedicated recovery area. Patient monitoring to include but not limited to the heart rate, blood pressure and conscious level, with the use of requisite emergency equipment as outlined in the RANCZ Standards including the use of an ECG for monitoring purposes. In the event of an adverse reaction, patient monitoring to be written and recorded.

(d) It is also submitted Dr Emechete undertake and successfully complete a RANZCR Access to Resuscitation, Advanced Life Support and CPR Workshop and Practical Skills Workshops, at the if not already undertaken as at the date of these Inquest Findings. I agree with Counsel Assisting's submissions and acknowledge some recommendations have been implemented by Dr Emechete.

<u>Changes to IRIS Imaging policy and procedures</u>

255. During the course of the inquest, Dr Emechete gave evidence as to the following improvements undertaken following Ms Willersdorf's death:

(a) Purchase of a defibrillator;
(b) Purchase of fluid bags;
(c) Creation of a designated recovery area and with better lighting;
(d) Implementation of continuous monitoring of epidural patients;
(e) CPR training carried out and record keeping;
(f) Dr Emechete has not performed any T12 epidurals.

256. It is submitted, as a demonstration of Dr Emechete's desire to respond meaningfully to the lessons learned from Ms Willersdorf's death that he commissioned Dr Siavash Es'haghi, Radiologist, member of RANZCR and president of the Australian Diagnostic Imaging Association (DIAS) to undertake an independent review and assessment of the current IRIS Imaging clinical practices. The purpose of the review was to make recommendations to ensure IRIS Imaging's compliance with the RANZCR standards and DIAS standards. The review was completed on 24 June 2019 (IRIS Imaging Review). I requested a copy of the review and have satisfied myself of its content and the recommendations made.

257. IRIS Imaging Review identified IRIS Imaging is a typical suburban radiology practice providing a limited range of radiology services to the community. It also identified the practice requires senior medical and radiographer staff to identify risk and develop quality improvement. Dr Es'haghi recommended staff require extra time to be effective in this task, given its high volume load and bulk billing business model. The review also identified a number of improvements were made over the past 12 months including in the areas of procedure trolley and staff training. It

also identified further improvements to be undertaken, including the improved organisation of the trolley with defibrillator and limited resuscitation drugs, regular checks and audits as well as improved associability to utilise in emergency scenarios. Dr Es'haghi also identified the following deficiencies, including but not limited to:

(a) absence of a Practice Management System outlining operational policies, procedures and practice management along with business plan and understanding of business operation objectives and capabilities;
(b) absence of a Continuous Quality Improvement plan to improve on business operation and risks including interventional procedures (pain management) and undertake regular monitoring of implemented practices and regular auditing;
(c) absence of risk assessment plan to adequately identify and manage risks;
(d) absence of essential risk management matters including the absence of staff training, emergency policies and procedures, published information about policies and procedures, audit of equipment and staff familiarisation;
(e) current business model – high volume patient turn over and bulk billing structure; practice requires understanding of its business objectives and to develop a business plan in line with capacities and local market challenges;
(f) absence of a culture of quality and safety;
(g) absence of staff training and empowerment of senior management and engagement in decision making about operations and patient care; and
(h) absence of staff training in advanced life support and regular update of these skills.

258. Dr Es'haghi opined IRIS Imaging should not be performing procedures that typically require recovery. He identified the lack of nursing support should restrict procedures to minor procedures with no need for planned recovery. He further identified "patient selection is the key and the practice must understand its limitations and capabilities in managing difficult cases". Dr Es'hagi also recommended Dr Emechete would benefit from his participation in the RANZR College continued professional development program including interventional procedures and inviting visiting radiologists and senior radiologist to assist with new and alternative methods of practice.

259. It is submitted by Counsel for the Willersdorf family that the IRIS Imaging Review indicated IRIS Imaging does not have the nursing support or sufficient facilities to deal with procedures (Type B procedures or administration of sedation or general anaesthesia), requiring a planned recovery. It is further submitted, that IRIS Imaging be precluded from performing any Type A procedures (spinal tap, epidural and spinal nerve block) requiring monitoring during planned recovery, until the facilities are

upgraded and a further independent review indications the business is adequately equipped to perform those procedures.

260. Counsel for Dr Emechete submits he has not undertaken any epidural injections at the T12 location since the incident and that he has undertaken the following further improvements since the IRIS Imaging Review:

(a) a nurse or other person with advanced life skill is now present at all times;
(b) Dr Emechete to train as many of his staff in advanced life support skills;
(c) Dr Emechete will buy an ECG machine;
(d) The consent process is now more comprehensive, with information forms and consent forms are signed before each procedure and retained with patient files;
(e) All patients who undergo intervention procedures are asked to remain for 30 to 40 minutes, while wearing a pulse oximeter;
(f) Dr Emechete now clarifies referral information with general practitioners; and
(g) Dr Emechete now turns away patients and refer them to the emergency department, if he considers comorbidities place patients at risk by performing procedures within the clinic.

261. I accept Dr Emechete undertaking and acknowledge he has implemented the above improvements and undertakes to purchase an ECG machine to assist with appropriate monitoring of patients. I am satisfied Dr Emechete has implemented a patient selection process identifying patients' comorbidities with associated risk and now refers such patients to the emergency department and also confirms information with referring general practitioners.

262. I acknowledge Dr Es'haghi's recommendation that IRIS Imaging should not perform any procedures that typically require recovery. However I am also cognisant of the changes Dr Emechete has implemented to date. I also acknowledge not all of the recommendations outlined in the IRIS Imaging Review have been implemented by Dr Emechete and recommend they be implemented.

263. I find Dr Es'hagh findings concerning, particularly in relation to his recommendation that Dr Emechete prepare a business plan so as to better understand the operational objectives and capabilities. These finding identify operational deficiencies and limitations, including Dr Emechete's competing priorities as the owner, Radiologist and only medically trained staff member along with the business model which is a high patient volume and bulk billing structure.

264. Dr Es'hagh also identifies the pressure on senior medical and radiographer staff to identify risk and develop quality improvement. I

consider the deficiencies unreasonable and easily managed with the implementation of adequate policies and procedures.

265. I am therefore of the opinion IRIS Imaging and Dr Emechete should only perform Type A procedures such as spinal tap, epidural and spinal nerve block, under the following conditions:

(a) a nurse be present at all times including during procedures and patient recovery;
(b) Dr Emechete buy ECG machine/s and they be utilised including in the recovery room;
(c) All patients who undergo intervention procedures remain for 60 minutes, while wearing a pulse oximeter and attached to an ECG as required;
(d) The nurse to conduct regular checks and undertake stock audits of the resuscitation drugs;
(e) The trolley with defibrillator to be located in the designated recovery room.

Adequacy of the information obtained in the triple 0 call

266. As to the adequacy of the information provided during the emergency call, I am confident in Dr Rashford's opinion that there was no further information that would have been of further assistance. I accept Dr Rashford's candid assessment that while the call itself was reasonably difficult and "not a perfect call" however sufficient information was obtained by the operator to dispatch an ambulance. I find the dispatch of the ambulance and its arrival in under 8 minutes from the call was expedient, despite the identified complications.

267. It is Dr Rashford's evidence that the standard operating procedures of the Medical Priority Dispatch System in 2015 were subsequently reviewed and updated to incorporate questions about resuscitation, to aid in better evaluating requests for assistance. Specifically, a sequence of questions about whether assistance or instruction is required.[115]

268. Dr Rashford also confirmed, the amendments were approved by the Deputy Commissioner State Local Ambulance Service Networks Operations. Further, an educational package was developed and training delivered to all operations centre staff.

269. I find the amendments to the QAS standard operating procedures of the Medical Priority Dispatch System and subsequent information and training provided to staff, are adequate improvements and do not require further review, in the context of Ms Willersdorf's death.

270. Further, I am cognisant of Dr Spain's evidence that had Ms Willersdorf been treated aggressively with sufficient intravenous fluids and

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vasoactive drugs, the cardiac arrest may have been prevented. I am therefore of the opinion, the failure to resuscitate while Ms Willersdorf had a blood pressure being 60/40mmHg and her breathing was inadequate jeopardised her survivability, not any perceived time delay as identified by Mr Kersnovske and or the arrival of the ambulance and paramedics.

271. As to the involvement of QAS, QAS paramedics and emergency medical practitioners in Ms Willersdorf's care, I had no cause for criticism and commend their efforts in respect of their treatment and care of Ms Willersdorf.

272. I offer my sincere condolences to Ms Willersdorf's family and friends for their loss.

Findings required by s.45

273. I am required to, as far as possible, make findings as to the medical cause of death, who the deceased person was and when, where and how the deceased came to die. After considering all of the evidence, including the opinions of the experts, findings at autopsy and the coronial brief and material contained in the exhibits, I make the following findings:

Identity of the deceased - Maria Aurelia Willersdorf

How she died – Ms Willersdorf died after undergoing a radiological procedure at Integrated Radiology and Imaging Services (IRIS Imaging) Helensvale, performed by Dr Benedict Emechete. The radiological procedure was a single epidural injection located at the T12 (Thoracic spine vertebra, level 12). Ms Willersdorf had an underlying heart condition, valvular heart disease, which was likely exposed as a consequence, the change in blood pressure (hypotension) and cardiac arrest, which lead to the hypoxic brain injury, following the injection as treatment for spinal osteoarthritis. Dr Emechete failed to identify and adequately assess the seriousness of Ms Willersdorf's deteriorating state including hypotension and cardiac arrest. He further failed to adequately monitor and respond to the hypotension by providing sufficient intravenous fluids and vasoactive drugs and act by resuscitation including the use of a defibrillator. Ms Willersdorf was transported to Gold Coast University Hospital and admitted to the Intensive Care Unit where she died 5 days later. The epidural injection was a contributory

factor, not the direct cause of Ms Willersdorf's death.

Place of death – Gold Coast University Hospital

Date of Death – 19 April 2015

Cause of death – 1(a) Hypoxic-Ischaemic Encephalopathy
1(b) Valvular Heart Disease.
2. Spinal osteoarthrosis (treated)

Comments and Recommendations

274. Section 46 of the Act provides, a Coroner may comment on matters connected with a death which relates to:

(a) Public health and safety
(b) The administration of justice; or
(c) Ways to prevent deaths from happening in similar circumstances in the future.

275. In consideration of the matters raised and evidence provided during the inquest, I consider it appropriate to make the following recommendations:

In respect to the Royal Australian and New Zealand College of Radiologists, Standards of Practice:

1. Within 12 months from the date of these Inquest Findings, for the Royal Australian and New Zealand College of Radiologists to amend the Standards of Practice: to require electrocardiography monitoring (Indicator) for physiological monitoring of patients while undergoing spinal tap, epidural and spinal nerve root block, where there risk of harm to a patient, due to risk factors included but not limited age, frailty and poor health and co-morbidities, is greater and or likely to be more serious or result in injury (Tier A Interventional Procedures) and to report to the Coroner's Court of Queensland on the completion of the amendment.

2. Within 12 months from the date of these Inquest Findings, for the Royal Australian and New Zealand College of Radiologists, to amend the Radiodiagnosis Curriculum, to require radiologists performing contrast and sedation, to hold CPR certification to provide advanced life support and to report to the Coroner's Court of Queensland on the completion of the amendment.

In respect to Iris Imaging:

1. Iris Imaging implement all of the recommendations outlined in the IRIS Imaging Review within 6 months of the date of these

findings and to engage Dr Es'haghi to undertake a further review within 12 months from the date all recommendations from the IRIS Imaging Review are implemented.

2. IRIS Imaging to continue to undertake thorough assessments of patients including the identification of comorbidities and associated risk and refer patients to the emergency department if the patient has manageable pain and or where there is an increased risk of harm to the patient due to their co-morbidities.

3. IRIS Imaging not perform Type A interventional procedures, such as spinal tap, epidural and spinal nerve root block procedures, unless under the following conditions:

    a. Dr Emechete undertakes to successfully complete:

        i. RANZCR Advanced Life Support and CPR Workshop as soon as next available and within 12 months from the date of these findings;
        ii. complete refresher Advanced Life Support courses and workshops annually as recommended by RANZCR;
        iii. participate in the RANZCR CPD program annually and complete interventional procedures within 12 months from the date of these findings.

    b. Implementation of the following operational procedures:

        i. a nurse be present at all times including during procedures and patient recovery;
        ii. Dr Emechete buy ECG machine/s and they be utilised including in the recovery room;
        iii. All patients who undergo intervention procedures remain for 60 minutes, while wearing a pulse oximeter and attached to an ECG as required;
        iv. The nurse to conduct regular checks and undertake stock audits of the resuscitation drugs;
        v. The trolley with defibrillator to be located in the designated recovery room.

I close the inquest.

James McDougall
Southern Coroner
SOUTHPORT
24 January 2020