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<i>Judgment: approved by the Court for handing down (subject to editorial corrections)</i>	<i>Delivered: 22/10/2026</i>

IN THE CORONERS COURT IN NORTHERN IRELAND

BEFORE THE CORONER OF NORTHERN IRELAND

MARIA DOUGAN

**IN THE MATTER OF AN INQUEST TOUCHING UPON THE DEATH OF
ELIZABETH O'HAGAN**

Ms Leona Askin BL (instructed by Ms Angela Ritchie, Coroners Service for Northern Ireland) on behalf of the Coroner
Mr David Reid BL (instructed by Ms Catherine McReynolds, Directorate of Legal Services); on behalf of the Northern Ireland Ambulance Service (NIAS)
Mr Rory McNamee BL, instructed by Mr Martin Durkan, KRW Law, on behalf of the Next of Kin

Introduction

1. The inquest proceeded in Laganside Courts on 29 and 30 September 2025 and 1 October 2025. During the inquest, I received evidence from a number of witnesses, and I carefully considered further statements, together with voluminous notes, records and reports which were admitted pursuant to Rule 17 of the Coroners (Practice and Procedure) Rules (Northern Ireland) 1963. While it is not feasible to set out all the evidence in these findings, I wish to make clear that I have duly considered all evidence presented before reaching my conclusions.
2. The deceased, Elizabeth O'Hagan, of 5 Collingwood Avenue, Lurgan died on 12 October 2021, in the Royal Victoria Hospital, Belfast.

Summary of events

3. On 9 October 2021, the deceased, aged 54 years, received a telephone call at approximately 04.00 hours informing her that her father had died in England. Later that morning she developed central chest pain together with associated symptoms including shortness of breath, dizziness and nausea, resulting in a 999 call being made to the Northern Ireland Ambulance Service at 10.55 hours. An ambulance crew attended her home, undertook a clinical assessment, recorded elevated blood glucose levels, performed a 12-lead ECG and administered GTN spray and aspirin. The Patient Report Form (PRF) completed by the attending crew recorded that the deceased had normal sinus rhythm. Following assessment, the deceased remained at home. At 14.20 hours a further 999 call was made after she collapsed and was found to be unresponsive. A second ambulance crew arrived and following the return of spontaneous circulation, she was conveyed to Craigavon Area Hospital and subsequently transferred to Royal Victoria Hospital, Belfast, where investigations confirmed an acute myocardial infarction. Despite further treatment and intensive care, she died on 12 October 2021. The cause of death following post-mortem examination was hypoxic brain damage due to cardiac arrest due to acute myocardial infarction.

Scope of the Inquest

4. It is well-established that an inquest is a fact-finding exercise. It does not determine civil or criminal liability. The applicable standard of proof is the civil standard, namely the balance of probabilities.
5. A provisional scope document was provided to the Properly Interested Persons (PIPs) prior to the commencement of the inquest. None of the PIPs suggested any additions, deletions or other adjustments. As is invariably the case, the scope remained provisional and was kept under review throughout the hearing.
6. The scope document read as follows:
 - “1. This inquest will examine the death of Elizabeth O’Hagan on 12 October 2021 at the Royal Victoria Hospital, Belfast.
 2. The inquest will consider the four factual questions set out in Rule 15 of the Coroners (Practice and Procedure) Rules (NI) 1963 as follows:
 - a. Who the deceased was.
 - b. Where she came by her death.
 - c. When she came by her death.
 - d. How (‘by what means’) she came by her death.

3. Insofar as it is relevant to how the deceased died, the inquest will consider:

- a. The actions of the first NIAS crew that attended with the deceased on 9/10/21.
- b. The actions of the second NIAS crew that attended with her on 9/10/21.
- c. Relevant NIAS policies and procedures.
- d. The treatment provided to the deceased at Craigavon Area Hospital and thereafter at the Royal Victoria Hospital.

This is a draft scope and may be subject to change at any time as appropriate.”

7. I am satisfied that this inquest has addressed all relevant issues and that, where possible, I have reached findings in respect of the matters which fall within the scope of this inquest.

Review of the Evidence

Dr Hughes

8. Dr Hughes, a GP in the deceased’s GP surgery, gave evidence to the inquest, which was admitted pursuant to Rule 17. Dr Hughes explained that the deceased joined the surgery in August 2018 after moving to Northern Ireland from Kent, England. She stated that the deceased infrequently attended the practice and was not well known by any of the current GPs.
9. The deceased’s past medical history included Type 1 diabetes mellitus requiring insulin, hypothyroidism and fibromyalgia, all of which pre-dated her registration with the practice. Dr Hughes noted that the deceased had a family history of cardiac disease, her father having suffered myocardial infarction and angina before the age of 60.
10. Dr Hughes explained that, as a Type 1 diabetic, the deceased was under the care of the secondary care diabetes team at Craigavon Area Hospital and was reviewed regularly between February 2019 and May 2021. She noted that correspondence from the diabetic clinic documented “very poor glycaemic control”, poor compliance with blood glucose monitoring and significant anxiety surrounding hypoglycaemic episodes. A clinic letter from December 2020 recorded that the deceased would occasionally forget to take insulin injections, had an “absolute fear of hypos” and would binge eat, particularly at night, in an attempt to keep her glucose levels elevated. Retinopathy had also been noted. A review in May 2021 recorded that the deceased reported being less anxious about hypoglycaemia following the fitting of a Dexcom glucose monitoring device.

11. Dr Hughes outlined the deceased's contacts with the GP practice during 2021. These largely related to diabetic monitoring, Covid-19 vaccinations and treatment of an infected cyst on her back. Her most recent diabetic blood tests were undertaken on 25 August 2021, when her blood pressure was recorded as 117/81. In relation to the deceased's repeat prescriptions, Dr Hughes confirmed that the clinical indication for amitriptyline and morphine was treatment of fibromyalgia and chronic back pain, whilst her remaining prescribed medications, levothyroxine, sukkarto (metformin) and insulin, related to the management of diabetes and hypothyroidism. She further noted that ramipril had been prescribed on 4 October 2021.

John O'Hagan

12. Mr John O'Hagan, husband of the deceased, gave evidence to the inquest. He told the inquest that on the morning of 9 October 2021 his wife was in bed when she received a telephone call at approximately 04.00 hours informing her that her father had died in England. He explained that her father had been unwell and that the family had been expecting news of his death. They subsequently got up, had a cup of tea together and sat talking. Mr O'Hagan returned to bed for a period whilst the deceased remained up. When he got up again at approximately 09.30 hours, the deceased made no complaint of pain or discomfort. After approximately 10.00 hours, however, she began to complain of pains in her chest which she initially believed to be indigestion. Mr O'Hagan attempted to rub her back, but her symptoms persisted. He described her as being short of breath and recalled that she said she could feel her heart "pounding" in her chest. He attempted to reassure her and calm her breathing, but this did not improve matters. It was the deceased who initially telephoned 999 before handing the call to him. An ambulance arrived at approximately 11.19 hours.
13. Mr O'Hagan stated that the ambulance crew remained at the family home for approximately 45 minutes whilst they assessed the deceased. He recalled that they took a history, checked her observations, including her blood pressure and blood sugar levels, and performed an ECG. He understood from the information provided by the crew that her blood pressure and blood sugar levels were elevated. He recalled the deceased informing the crew that she was diabetic and had not been managing her diabetes particularly well. He further recalled that ECG leads were attached to the deceased's chest and stated that he found it unusual that the crew did not remove her top when performing the ECG.
14. Mr O'Hagan stated that Paramedic Shirley Hewitt informed him and the deceased that the ECG showed no signs of a heart attack and that there was nothing wrong with her heart. He recalled being told that there was "nothing showing on the ECG". He agreed that both he and the deceased were visibly relieved by this information. He further recalled discussion regarding the possibility that the deceased's symptoms were attributable to anxiety arising from the death of her father and understood from the ambulance crew, Ms

Hewitt and Mr Samuel Wright, that she was “more likely” suffering a panic attack. He recalled being told by the ambulance crew that the hospital was very busy and that there were patients there with Covid-19. He also recalled being told that the situation was not serious. The deceased was administered GTN spray and aspirin during the attendance. Mr O’Hagan recalled that his wife sought reassurance that she did not have to go to hospital. He accepted that following treatment and discussion with the ambulance crew, she appeared calmer and that her chest pain “did ease a bit”. The ambulance crew departed at approximately 12.03 hours without conveying the deceased to hospital.

15. A significant aspect of Mr O’Hagan’s evidence concerned the discussions regarding hospital attendance. He rejected the suggestion that either he or the deceased had been advised that attendance at hospital was necessary in order to undertake blood tests and exclude a cardiac event. He stated, “they told me there was nothing showing on the ECG and there was no mention of taking bloods at the hospital”. He maintained that neither he nor the deceased were advised that a cardiac event could not be excluded or that further investigations were required. His evidence was that had the deceased been informed that she may have been suffering a heart attack, or that a cardiac cause could not be ruled out, she would have travelled to hospital. He told the inquest, “The only reason Liz didn’t want to travel to hospital was because she was told it was a panic attack, no other reason”. He further stated, “Liz is a professional woman, she’s a teacher. If she knew she was having a heart attack, she’d have been away with them in the ambulance.”
16. During oral evidence, Mr O’Hagan maintained his position when it was suggested to him that the ambulance crew had advised the deceased that hospital attendance was required in order to rule out a cardiac event. He accepted that there had been discussion about the hospital being busy and the presence of Covid-19 patients. He stated that once the deceased had been told there was nothing wrong with her heart, there was “no point” in going to hospital. He insisted that, having been told she was suffering a panic attack, neither he nor the deceased believed hospital attendance was necessary. He remained adamant that neither he nor the deceased were advised that hospital attendance was necessary to exclude a cardiac cause for her symptoms.
17. Mr O’Hagan stated that following the departure of the ambulance crew the deceased continued to complain of feeling lightheaded. He recalled that within a short time she again complained of tingling and discomfort in her arms. Despite this, both he and the deceased continued to believe that her symptoms were attributable to a panic attack arising from the distressing news concerning her father’s death. Approximately one hour later, the deceased decided to visit her daughter, Cara, who lived directly across the road, less than a minute’s walk away.
18. Mr O’Hagan was subsequently informed by his daughter that the deceased was not feeling well, and his granddaughter came to fetch him. When he arrived, his

daughter was telephoning for an ambulance. Given the deceased's history of diabetes, Mr O'Hagan initially believed she was suffering a hypoglycaemic episode and attempted to give her Lucozade. He and his daughter then realised that the deceased was no longer breathing. Under the direction of the emergency call handler, they commenced chest compressions pending the arrival of ambulance personnel. At approximately 14.32 hours an ambulance arrived, followed shortly afterwards by a second ambulance. The deceased was conveyed to Craigavon Area Hospital and was subsequently transferred to Royal Victoria Hospital, Belfast.

19. Mr O'Hagan also gave evidence regarding the deceased's life and the impact of her death upon the family. He explained that she was a teacher and that the family had relocated from England to Northern Ireland before the Covid-19 pandemic. Following her death, the family consented to organ donation. Mr O'Hagan explained that the deceased had carried an organ donor card throughout her life and that her liver and both kidneys were subsequently donated and three people received transplants as a result of her donation. He told the inquest that his daughter had recently given birth to twin boys and that his son was due to be married. He stated that the deceased would have been "over the moon" to witness those family milestones and described the family home as "an empty house" without her.

Shirley Hewitt

20. Ms Shirley Hewitt, Paramedic with the Northern Ireland Ambulance Service, gave evidence to the inquest. At the time she had worked as a paramedic for approximately 27 years. She was the attending paramedic and had overall clinical responsibility for the care of the deceased during the attendance at her home on 9 October 2021. She attended together with Mr Samuel Wright, Associate Ambulance Practitioner.
21. Ms Hewitt explained that at 10.57 hours the crew was dispatched to a call categorised as "query chest pain/query panic attack". Whilst en route, further information was received that the deceased had received distressing news that morning concerning the death of her father and that her chest pain may have arisen as a consequence. They arrived at approximately 11.19 hours.
22. Ms Hewitt described finding the deceased seated in the living room. She stated that she was visibly distressed and upset following the sudden death of her father earlier that morning. According to Ms Hewitt, the deceased repeatedly apologised for having called an ambulance and appeared concerned that she may have unnecessarily utilised ambulance resources. She recalled that the deceased was anxious about the prospect of attending hospital and spending hours there following her father's death. According to Ms Hewitt, the deceased repeatedly sought reassurance that she would not have to go to hospital and was concerned about having to spend time there contacting relatives and dealing with arrangements following her father's death.

23. Ms Hewitt's evidence was that the deceased complained of central chest pain, nausea, tingling sensations affecting the arms and neck and symptoms consistent with hyperventilation. She told the inquest that the symptoms had commenced at approximately 09.15 hours. Whilst she considered that the deceased's emotional distress and recent bereavement formed an important part of the clinical picture, she maintained throughout her evidence that a cardiac cause for the deceased's symptoms remained under consideration.
24. Ms Hewitt stated that she undertook a clinical assessment which included observations, blood glucose testing and ECG monitoring. She recorded a blood glucose level of 21.1 mmol/L and obtained a 12-lead ECG which she interpreted as demonstrating normal sinus rhythm without ST elevation. Ms Hewitt recalled the deceased acknowledging that she had not been managing her diabetes particularly well. Aspirin and glyceryl trinitrate ("GTN") were administered at approximately 11.30 hours.
25. Ms Hewitt accepted that she had not undertaken or recorded a formal pain score notwithstanding that chest pain was the deceased's principal presenting complaint. She further accepted that the PRF did not contain a comprehensive assessment of the deceased's chest pain symptoms and did not fully document matters such as severity, progression and associated symptoms. She accepted that a formal SOCRATES assessment and pain score should have been undertaken and recorded but was unable to explain why this had not occurred.
26. In her oral evidence, Ms Hewitt repeatedly stated that the deceased's chest pain remained her principal concern throughout the attendance. She told the inquest that "the chest pain was my priority". She further stated that she "did feel that there was an underlying cardiac issue".
27. Ms Hewitt accepted that the administration of GTN and aspirin, together with the subsequent improvement in the deceased's symptoms, reinforced rather than reduced her concern regarding a possible cardiac cause. She told the inquest that she was "pleased that the medication that we had given made the difference, which made it more that I suspected that it was cardiac related".
28. According to Ms Hewitt, the deceased's symptoms improved during the attendance. She stated that the deceased became calmer, the chest discomfort eased and the tingling sensations improved. However, she maintained that the chest discomfort had persisted. The contemporaneous Patient Report Form (PRF) similarly records that the deceased was subsequently "feeling more relaxed" and that the pain had eased.
29. In her evidence, Ms Hewitt accepted that the deceased's symptoms were capable of being consistent with Acute Coronary Syndrome. When taken to the finding of the Serious Adverse Incident (SAI) Review conducted by NIAS, that the deceased's symptoms were "highly indicative of Acute Coronary Syndrome", she ultimately agreed. She accepted that a normal ECG did not exclude myocardial infarction and that further hospital investigation, including blood

testing, would be required before a cardiac cause could be definitively ruled out. She maintained, however, that she understood this at the time of the attendance and denied that she had excluded a cardiac cause for the deceased's symptoms.

30. A significant area of dispute concerned the suggestion advanced by Mr O'Hagan that both he and the deceased had been reassured that there was nothing wrong with her heart and that her symptoms were attributable to a panic attack. Ms Hewitt rejected that account. Whilst she accepted that anxiety, panic and the effect of the deceased learning of her father's death were discussed during the attendance, she denied informing either the deceased or Mr O'Hagan that there was nothing wrong with her heart. She maintained that panic and anxiety formed part of her differential diagnosis but did not replace her concern regarding what she described as an "underlying cardiac issue". Ms Hewitt recalled that it was the deceased who suggested that perhaps she was suffering a panic attack and that she would be alright.
31. Ms Hewitt maintained that she explained to the deceased that she could not identify any ECG abnormality suggestive of an acute cardiac event but that the ECG was not conclusive and that blood tests would be required to exclude a cardiac cause for her symptoms. She stated that it was her normal practice to recommend hospital attendance where a patient presented with chest pain for the first time and maintained that she did so on this occasion.
32. A central issue in Ms Hewitt's evidence concerned the decision not to convey the deceased to hospital. Ms Hewitt maintained throughout her evidence that she recommended attendance at hospital for further assessment and investigation. Her evidence was that the deceased declined conveyance despite that recommendation. She stated that the deceased wished to remain at home following the death of her father, was reluctant to spend a prolonged period waiting within an Emergency Department and was concerned about attending hospital at a time when Covid-19 restrictions and pressures remained in place. Ms Hewitt maintained that the deceased had capacity to make that decision, understood the advice she was being given and elected not to attend hospital. She further recalled that Mr O'Hagan indicated that he wanted the deceased to attend hospital but would ultimately respect whatever decision she chose to make.
33. Ms Hewitt maintained that she specifically advised the deceased that hospital attendance was necessary to exclude a cardiac cause for her symptoms and disagreed with Mr O'Hagan's evidence on this point. She stated, "I'm not certain exactly what we said, but we tried to put it across that we were suspicious that there was a cardiac event, but we couldn't rule it out". She remained adamant that she attempted to persuade the deceased to attend hospital and stated that she had been "not firm enough".
34. Ms Hewitt stated that she discussed the deceased's elevated blood glucose level. She told the inquest that she explained that both the chest symptoms and the

elevated blood sugar reading caused her concern. According to Ms Hewitt, the deceased informed her that her blood sugars were frequently elevated, that her diabetic control was often poor and that, if permitted to remain at home, she would manage them herself. Ms Hewitt accepted that the blood glucose level of 21.1 mmol/L was significantly elevated and represented an abnormal clinical finding requiring consideration as part of the overall assessment. She maintained that the elevated blood glucose level was a significant clinical concern but did not supersede her concern regarding the chest pain, which remained her primary clinical concern throughout the attendance. She accepted, however, that the discussion concerning the elevated blood glucose level was not fully recorded within the contemporaneous documentation.

35. Ms Hewitt maintained that a second set of observations was undertaken by Mr Wright at approximately 11.50 hours. She accepted, however, that no complete second set of observations appears within the contemporaneous PRF. Only one complete set was recorded at 11.27 hours, and a partial set of observations existed at 11.50 hours. She further accepted that responsibility for ensuring those observations were recorded rested with her as the attending paramedic. She accepted the findings of the SAI Review that the clinical assessment was sub-optimal and that only one complete set of observations had been documented together with a partial second set. She stated, "I just didn't record it" and "I don't remember" when asked why specific observations had not been recorded a second time. She accepted that a NEWS score was not recorded and, when asked why, replied, "I can't explain why".
36. Ms Hewitt accepted that only one 12-lead ECG assessment was undertaken during the attendance, although three ECG recordings were obtained at approximately 11.30 and 11.32 hours. She maintained that the deceased's symptoms had improved following treatment and that she did not consider a further ECG necessary at the time. She nevertheless accepted that no repeat ECG was undertaken before the decision was made not to convey the deceased to hospital, stating, "I neglected to do a second ECG". When questioned further, she ultimately accepted that a repeat ECG should have been performed, could offer no explanation for why it had not occurred and agreed that this represented "a missed opportunity".
37. Ms Hewitt stated that she provided worsening-care advice prior to leaving the property. She maintained that she advised the deceased and her husband to seek further medical assistance if symptoms returned, deteriorated or if the deceased changed her mind regarding hospital attendance. She stated that Mr O'Hagan was advised that he could contact 999 again if necessary. She further stated that the deceased signed the non-conveyance documentation and that a yellow copy of the PRF was left with her as a record of the attendance and reference document should further assistance be required.
38. The contemporaneous PRF records a blood glucose level of 21.1 mmol/L together with a history of central chest pain, nausea and pins and needles

affecting the arms following the receipt of distressing news concerning the death of a family member. It records that the deceased was tense and anxious, documents the administration of aspirin and GTN and records that she subsequently felt more relaxed and that the pain had eased. The PRF further records that the deceased remained at home. However, the rationale for non-conveyance is not recorded. The document contains only one complete set of observations, no pain score, no NEWS score, no repeat ECG and no contemporaneous record that a cardiac cause remained under consideration, that blood tests would be required to exclude a cardiac event, or that hospital attendance had been recommended. Ms Hewitt accepted that the SAI Review concluded that the contemporaneous documentation did not adequately support or justify the decision not to convey the deceased to hospital.

39. The form bears the deceased's signature and was witnessed by Mr Wright. However, the refusal-of-conveyance section was not fully completed, and the relevant "non-conveyance/refusal/referral" box was not ticked. Ms Hewitt explained that she had instead recorded "doesn't wish to travel" because she had historically tried to phrase such entries "in as polite a way as possible".
40. Ms Hewitt explained that after leaving the deceased's home she realised that the documentation had not been completed correctly. At the end of the shift, whilst completing the vehicle drug record book, she retrieved the PRF and realised that she had omitted to record certain information, had failed to document a complete second set of observations and had not ticked the relevant refusal-of-conveyance box. She stated that she had "let myself lose focus towards the conclusion of our call". Rather than completing a new PRF, she added further information to the retained NIAS copy of the document whilst matters remained fresh in her mind. The additional entries included reference to medication administration together with the entries "BM elevated", "Diabetes is unstable at times" and "advised to manage blood sugars as a priority". Ms Hewitt accepted that the original copy left with the deceased did not contain those additional entries and that the retained copy therefore differed from the copy left at the scene. She further accepted that it had not occurred to her at the time that a new PRF should have been completed. She agreed that the amendments were made retrospectively and accepted that they should not have been made in that manner. Ms Hewitt further stated that she had placed an asterisk beside the blood glucose reading on the retained copy of the PRF because the significantly elevated blood glucose level had remained a concern to her after leaving the deceased's home.
41. When taken to the findings of the Serious Adverse Incident Review, Ms Hewitt accepted that the assessment undertaken had been "sub-optimal" and that shortcomings in both assessment and documentation had contributed to an "erroneous patient management plan". She accepted the possibility that cognitive bias may have played a part in her decision-making process and acknowledged the possibility that the absence of ST elevation on the ECG may have provided a degree of reassurance. However, she maintained throughout

her evidence that she remained concerned about an underlying cardiac issue, that she recommended hospital attendance and that she advised the deceased that further hospital investigation, including blood tests, would be required before a cardiac cause could be excluded.

42. In evidence, Ms Hewitt accepted a number of shortcomings in her assessment and documentation. She acknowledged that she failed to record a pain score, failed to document a complete second set of observations, failed to record a rationale for non-conveyance, failed adequately to document worsening-care advice and failed fully to record the advice which she maintained had been provided regarding hospital attendance and the need for further investigations. She accepted that she had lost focus towards the conclusion of the attendance and could not explain why certain steps, including a repeat ECG, had not been undertaken.

Samuel Wright

43. Mr Samuel Wright, Associate Ambulance Practitioner with the Northern Ireland Ambulance Service, gave evidence to the inquest. Mr Wright explained that at the time he was relatively inexperienced. He was working alongside Ms Shirley Hewitt. Mr Wright was the driver on the crew and the ambulance arrived at approximately 11.19 hours. He recalled that the deceased informed the crew that she had received news earlier that morning that her father had died. Mr Wright described the deceased as extremely distressed and upset by that news.
44. Mr Wright recalled that the deceased complained of chest pain and appeared anxious and extremely upset at the news of the death of her father. He remembered that her respiratory rate was elevated when the crew first arrived and recalled obtaining a blood glucose reading which was raised. He could not recall the deceased complaining of pins and needles but clearly recalled her complaints of chest pain. A 12-lead ECG was undertaken by Ms Hewitt as the patient was female. Mr Wright recalled that the deceased was advised that there was nothing on the ECG which would indicate that she was suffering a cardiac event and remembered that she appeared reassured by that information. He stated that, following assessment and discussion with the crew, the deceased appeared significantly calmer and more reassured.
45. Mr Wright stated that he believed the deceased's presentation was more consistent with anxiety arising from the sudden death of her father than a cardiac event. He stated that following reassurance and treatment her symptoms appeared to improve and that she calmed down significantly during the attendance. He recalled that by the conclusion of the assessment the deceased appeared sufficiently relaxed that she offered the crew a cup of tea.
46. Mr Wright also recalled discussion regarding the deceased's elevated blood glucose level. He understood that her diabetic control had been poor and stated that the deceased informed him that she had not been eating properly and had not been managing her diabetes well. He recalled discussion regarding

management of her blood sugars and understood that the deceased intended to address her diabetic management at home. He expressed the view that there had been an element of self-neglect in relation to her diabetic management during the period immediately prior to the attendance.

47. Mr Wright stated that he did not identify any concerns or “red flags” at the time which, in his opinion, required attendance at hospital. He added, “apart from the unexplained chest pain, but I had attributed that to anxiety/panic attack”. He recalled that the deceased did not wish to travel to hospital and remembered signing the documentation recording that decision but did not note that none of the relevant boxes on the PRF had been ticked. Mr Wright stated that he was comfortable with the decision not to convey the deceased to hospital. He further stated that his understanding at the time was that the deceased's symptoms were related principally to anxiety following the death of her father rather than a cardiac event and that he did not appreciate that she may have been suffering a cardiac event.
48. Mr Wright stated that he was unaware that the non-conveyance section of the Patient Report Form had not been fully completed and regarded this as an omission on his part. He could not recall discussing the deceased further with Ms Hewitt after the attendance and stated that he had no knowledge of the additional entries subsequently added to the retained copy of the PRF by Ms Hewitt.
49. Mr Wright explained that whilst Ms Hewitt completed the PRF, he was primarily responsible for obtaining observations and relaying the findings to her. He accepted that only one ECG had been performed during the attendance and, having considered the findings of the Serious Adverse Incident Review, agreed that a second ECG should have been undertaken.
50. When questioned regarding his recollection that the deceased was presenting more as someone experiencing an anxiety attack than a cardiac event, Mr Wright maintained that this had been his genuine impression at the time. He stated, “presentation wise, I believed it was more of an anxiety or panic attack”. He accepted that, with hindsight, a cardiac cause could not have been excluded without further investigation. Mr Wright accepted that his recollection of the attendance was limited in a number of respects. When questioned regarding discussions about blood tests, hospital attendance and ongoing cardiac concerns, he repeatedly stated that Ms Hewitt was responsible for the clinical decision-making.
51. Mr Wright accepted that he recalled the deceased being reassured that there was nothing on the ECG to indicate that she was suffering a cardiac event. He further accepted that the deceased appeared calmer after being advised that the ECG was normal. When questioned regarding whether that reassurance may have influenced the deceased's decision not to attend hospital, Mr Wright stated that he could not recall the precise terms of the discussions but accepted that the

deceased appeared reassured following the ECG findings and subsequent assessment. He could not recall any discussion in which Ms Hewitt expressed concerns to him that the deceased may have been suffering from an underlying cardiac issue requiring hospital investigation.

52. Mr Wright accepted that the contemporaneous documentation recorded only one complete set of observations and a partial second set. Whilst he believed a number of observations had been obtained; he was unable to say with certainty whether all had been performed or relayed to Ms Hewitt. He accepted that a NEWS score had not been recorded and could not assist as to why this had not occurred. He further accepted that a pain score had not been documented. He explained that responsibility for completion of the documentation rested with the attending paramedic.
53. When taken to the findings of the Serious Adverse Incident Review, Mr Wright accepted the conclusion that the patient assessment had been sub-optimal and had resulted in an erroneous patient management plan. He accepted that, with hindsight, the deceased's presentation required greater consideration of a potential cardiac cause and agreed that a second ECG should have been undertaken. However, he maintained that his own impression at the time of the attendance was that the deceased's presentation was largely driven by anxiety following the death of her father. When referred to the possibility of cognitive or anchoring bias arising from the bereavement history and initial categorisation of the call, he accepted that such factors could potentially have influenced clinical decision-making. He continued to maintain that the presentation he personally observed appeared more consistent with anxiety than a cardiac event.
54. Following assessment and treatment, the deceased remained at home and the crew departed at approximately 12.03 hours.

Graham Thompson

55. Mr Graham Thompson, Paramedic with the Northern Ireland Ambulance Service, gave evidence to the inquest, which was admitted pursuant to Rule 17. He attended the deceased's address at approximately 14.32 hours on 9 October 2021 following reports that a diabetic patient was unconscious and fitting. On arrival, he found the deceased unconscious, not breathing and in cardiac arrest, with CPR already in progress by the family. Advanced Life Support measures were commenced, including airway management, cardiac monitoring, defibrillation and the administration of resuscitation drugs. Return of spontaneous circulation was subsequently achieved and the deceased was conveyed to Craigavon Area Hospital. Mr Thompson noted that the deceased suffered a further cardiac arrest during transfer and required ongoing resuscitation measures en route to hospital.

Peter Dick

56. Mr Peter Dick, Paramedic with the Northern Ireland Ambulance Service, gave evidence to the inquest, which was admitted pursuant to Rule 17. He attended the deceased's address following an update that the patient was in cardiac arrest. An ambulance crew had already arrived, and Mr Dick assisted with the ongoing resuscitation, including obtaining intravenous access and administering resuscitation drugs. He stated that return of spontaneous circulation was achieved prior to transfer to hospital, although the deceased suffered a further cardiac arrest during transfer requiring continued Advanced Life Support measures. She was subsequently handed over to staff at Craigavon Area Hospital for ongoing treatment.

Dr Andrew McNiece

57. Dr Andrew McNiece, Consultant Interventional Cardiologist, gave evidence to the inquest, which was admitted pursuant to Rule 17. Dr McNiece was the consultant cardiologist on call at the Royal Victoria Hospital on 9 October 2021.
58. Dr McNiece outlined that the deceased suffered an out-of-hospital cardiac arrest on 9 October 2021 following an earlier episode of chest pain. Following resuscitation by NIAS, the deceased was transferred to Craigavon Area Hospital, where she remained in cardiac arrest on arrival. Following intubation, ventilation and further resuscitation, return of spontaneous circulation was achieved at 15.37 hours. A 12-lead ECG demonstrated an anterior ST elevation myocardial infarction, and the deceased was accepted for emergency transfer to Royal Victoria Hospital for primary percutaneous coronary intervention (PCI). He noted that the deceased suffered a further cardiac arrest at Craigavon prior to transfer.
59. Dr McNiece performed the emergency PCI procedure following the deceased's arrival at the Royal Victoria Hospital at 18.50 hours. Coronary angiography confirmed an occluded left anterior descending coronary artery. A stent was inserted with a good technical result and the procedure was uncomplicated. Dr McNiece observed moderate to severe left ventricular systolic dysfunction, indicative of significant heart muscle damage. He diagnosed an acute coronary syndrome comprising an anterior ST elevation myocardial infarction complicated by an out-of-hospital cardiac arrest. He identified the deceased's risk factors for coronary artery disease as diabetes mellitus and cigarette smoking. Following the procedure, the deceased was transferred to the Regional Intensive Care Unit for ongoing management.

Dr Murali Shyamsundar

60. Dr Murali Shyamsundar, Consultant in Intensive Care Medicine at the Regional Intensive Care Unit, Royal Victoria Hospital, gave evidence to the inquest, which was admitted pursuant to Rule 17. The deceased was admitted to the Regional Intensive Care Unit following an emergency PCI. Dr Shyamsundar became involved in her care between 11 and 13 October 2021.

61. Dr Shyamsundar explained that when he assumed responsibility for the deceased's care on 11 October 2021, the principal clinical concern was her neurological status following the prolonged cardiac arrest. A CT scan of the brain demonstrated extensive hypoxic-ischaemic brain injury, with crowding of the foramen magnum, compression of the fourth ventricle and hydrocephalus. Critical care support was continued whilst sedation was withdrawn and further investigations undertaken.
62. On 12 October 2021, an electroencephalogram (EEG) supported a diagnosis of severe hypoxic brain injury. Brain stem testing was subsequently performed in accordance with protocol by Dr Shyamsundar and a second intensive care consultant. The deceased was declared dead at 16.33 hours on 12 October 2021. Dr Shyamsundar stated that the family were informed of the findings and consented to organ donation.
63. Dr Shyamsundar stated that ongoing organ support was provided to facilitate organ donation. The deceased was transferred from the Intensive Care Unit to theatre for organ retrieval at 12.25 hours on 13 October 2021, at which point his clinical involvement concluded.

Expert Evidence

64. The Court received expert reports from Dr Jonathan Watt, Consultant Cardiologist and Clinical Lead for Cardiology, instructed on behalf of the Coroner; Dr Paul McGlinchey, Consultant Cardiologist, instructed on behalf of the Northern Ireland Ambulance Service; and Dr Vince Clarke, Associate Professor and Principal Lecturer in Paramedic Science, instructed on behalf of the next of kin. The experts subsequently participated in a joint discussion and prepared a statement identifying the matters upon which they agreed and those upon which differences remained. All three experts gave oral evidence to the inquest. In the course of the joint discussions and oral evidence, certain opinions expressed in the original reports were clarified or qualified. I address those matters below.

Dr Jonathan Watt

65. In his report, Dr Watt noted that the deceased had several significant risk factors for coronary artery disease and myocardial infarction, including what he described as "a potentially lethal combination" of poorly controlled diabetes and persistent smoking. He regarded the deceased's symptoms, including chest pain with radiation to the arms, as strongly suggestive of a cardiac cause and opined that the Northern Ireland Ambulance Service staff who first attended the deceased "did not adequately consider the potential for a serious cardiac cause".
66. In his report, Dr Watt stated that the standard pre-hospital management of acute chest pain due to a possible cardiac cause was conveyance to hospital for further observation, repeat ECG assessment and blood sampling, including

troponin testing. He concluded that there was “unequivocally not enough” done by the initial ambulance crew to exclude a serious cardiac cause such as myocardial infarction.

67. Dr Watt further considered that the death of the deceased's father shortly before the onset of symptoms was likely to have caused anchoring bias, increasing the possibility that the deceased, her husband and the attending ambulance crew would attribute the presentation to anxiety or a panic attack. He nevertheless observed that the deceased considered her symptoms serious enough to seek emergency assistance, which was unusual for her, and that this should have been afforded greater weight.
68. Having reviewed the ECGs obtained during the first ambulance attendance, Dr Watt concluded that they were not normal and demonstrated subtle signs of an early myocardial infarction. Whilst accepting that ambulance clinicians would not necessarily be expected to identify such subtle abnormalities, he considered that “a reasonable standard of care” would have involved transmission of the ECG for expert interpretation. He further stated that even if the ECG had been entirely normal, the deceased should still have been conveyed to hospital for repeat ECGs and troponin testing.
69. Dr Watt opined that improvement in symptoms following administration of aspirin and GTN should have increased concern regarding a cardiac cause and that the symptom relief provided “false reassurance”. He further regarded it as “far from clear” from the contemporaneous records whether the deceased had been adequately informed of the possibility of myocardial infarction and the risks associated with non-conveyance.
70. Dr Watt was critical of the contemporaneous documentation and noted the absence of any documented rationale for non-conveyance. He further noted that additions had subsequently been made to the Patient Report Form and regarded this as poor record-keeping.
71. In considering the likely consequences of earlier hospital conveyance, Dr Watt expressed the opinion that the deceased would almost certainly have undergone further ECG assessment demonstrating an evolving myocardial infarction, leading to urgent investigation and treatment. He considered that earlier intervention would have increased the probability of survival and a favourable functional outcome. His opinion concerning the likely timing of diagnosis and intervention was subsequently qualified in the joint statement and oral evidence, which I address below.

Dr Paul McGlinchey

72. In his report, Dr McGlinchey noted that the deceased had recognised risk factors for coronary artery disease including diabetes mellitus, cigarette smoking, hypertension, hypercholesterolaemia and a family history of cardiac disease.

73. Dr McGlinchey stated that the ECGs obtained during the first ambulance attendance were not diagnostic of myocardial ischaemia or infarction and did not demonstrate ST elevation. He further observed that, following the subsequent cardiac arrest, ECGs obtained at Craigavon Area Hospital were suggestive of an acute anterior ST elevation myocardial infarction and that coronary angiography subsequently confirmed occlusion of the left anterior descending coronary artery, which was treated by PCI.
74. Dr McGlinchey considered that the deceased's poor outcome was primarily attributable to recurrent cardiac arrests caused by profound myocardial ischaemia arising from occlusion of the left anterior descending coronary artery. He stated that stabilisation of cardiac rhythm was only possible once the coronary occlusion had been treated through PCI.
75. In considering the likely consequences of earlier hospital conveyance, Dr McGlinchey expressed the opinion that it was unlikely, on the balance of probabilities, that the deceased would have been diagnosed with an acute ST elevation myocardial infarction sufficiently early to prevent her first cardiac arrest. He emphasised that the ECGs obtained during the first ambulance attendance did not demonstrate ST elevation and considered that total occlusion of the left anterior descending coronary artery most likely occurred shortly before the first cardiac arrest.

Dr Vince Clarke

76. In his report, Dr Clarke's overarching opinion was that the attending ambulance personnel "breached their duty of care" by failing to fully assess the deceased's presentation of chest pain. He stated that such an assessment was mandated to include a pain assessment and pain score. On the balance of probabilities, he considered it more likely than not that "a paramedic acting reasonably" would have conveyed the deceased to hospital for further investigation and that, had this occurred, it was more likely than not that she would have been in hospital at or around the time of her cardiac arrest.
77. Dr Clarke considered that the attending paramedic initially treated the presentation as one of Acute Coronary Syndrome and described the administration of aspirin and GTN as "correct and appropriate initial treatment" for a presentation of sudden onset severe central chest pain indicative of Acute Coronary Syndrome.
78. Dr Clarke stated that "no paramedic acting reasonably" would have failed to complete and document a SOCRATES pain assessment and a pain score. He further opined that the improvement in symptoms could reasonably be attributed to the administration of GTN and that this "would increase the probability of a potentially reversible cardiac cause".
79. Dr Clarke stated that there was no evidence within the PRF that the attending paramedic was treating the deceased for a presentation of panic attack.

However, he noted the evidence that the deceased's husband had been informed that the presentation was "most likely a panic attack" and stated that, if the court were to find that this had been the working diagnosis, it would "constitute a breach of duty of care".

80. Dr Clarke further opined that the attending paramedic "breached their duty of care" by either not recognising, or not acting upon the recognition, that patients with diabetes are at increased risk of Acute Coronary Syndrome. He stated that the index of suspicion for Acute Coronary Syndrome should have been "significantly raised".
81. Dr Clarke emphasised that an apparently normal ECG does not rule out myocardial infarction and that the deceased should still have been treated as a suspected Acute Coronary Syndrome patient. He further opined that the attending ambulance crew should have explained to the deceased that they could not rule out an acute cardiac event and that conveyance to hospital was the most appropriate disposition.
82. Dr Clarke considered the non-conveyance documentation to be incomplete and stated that the deceased should have been advised that she "may be having a heart attack", that a cardiac event could not be definitively ruled out and that the risks of heart attack, collapse, cardiac arrest and death should have been explained and documented. He further expressed the opinion that, had she been fully informed of those risks, it was less likely that she would have refused transportation to hospital and that "were she advised that hospital was required, she would, more likely than not, have accepted this direction".
83. Whilst Dr Clarke accepted that the failure to record a complete second set of observations was unlikely to have materially affected the treatment pathway, he considered that obtaining a second 12-lead ECG was reasonably expected clinical practice. He further opined that, had the deceased been conveyed to hospital on suspicion of Acute Coronary Syndrome, as would reasonably have been expected, she would, on the balance of probabilities, have been in hospital at the time of her cardiac arrest. He considered that, in those circumstances, the cardiac arrest "may have been preventable".

Joint statement and oral evidence of experts

84. Dr Watt, Dr McGlinchey and Dr Clarke subsequently met to identify those issues upon which they agreed and disagreed and produced a joint statement for the assistance of the court. All three experts adopted the contents of the joint statement in evidence and confirmed that it accurately reflected the views expressed during their discussions.
85. The experts agreed that the deceased's myocardial infarction most likely commenced around the onset of her chest pain symptoms on the morning of 9 October 2021, from approximately 10.25 hours. They further agreed that the

presentation was likely caused by instability of pre-existing plaque within the left anterior descending coronary artery, resulting in progressive narrowing of the vessel before eventual total occlusion. The experts also agreed that diabetes mellitus was a significant risk factor for the development of coronary heart disease and Acute Coronary Syndrome.

86. The experts agreed that the news of the deceased's father's death was likely to have caused anchoring bias, increasing the possibility that the deceased, her husband and the attending ambulance crew would attribute the presentation to anxiety or a panic attack. They further agreed that emotional stress and bereavement may have contributed to destabilisation of existing coronary artery plaque through the release of "fight or flight" hormones. In oral evidence, both Dr Watt and Dr McGlinchey agreed that it was more likely than not that the distressing news concerning the deceased's father contributed to the plaque rupture or fissuring which precipitated the myocardial infarction.
87. The experts agreed that the three ECG recordings obtained during the first ambulance attendance, timed at approximately 11.30, 11.32 and 11.32 hours, did not demonstrate ST elevation myocardial infarction. Whilst Dr Watt considered that subtle changes suspicious of early cardiac ischaemia were present, all experts agreed that any changes were non-specific and that it would not have been expected of the attending ambulance crew to recognise them. They further agreed that, under the applicable Northern Ireland PPCI pathways, the ECGs should not have been transmitted to the Royal Victoria Hospital for review and that, even if they had been transmitted, the likely advice would have been transfer to the Emergency Department of the nearest acute hospital, namely Craigavon Area Hospital, rather than direct transfer to the Royal Victoria Hospital. In oral evidence, Dr Watt accepted that the ECGs did not demonstrate ST elevation myocardial infarction and agreed that direct transfer to the Royal Victoria Hospital would not have been indicated on the basis of those ECGs.
88. The experts agreed that the administration of aspirin and GTN was appropriate treatment for a suspected cardiac presentation. They further agreed that these medications may have improved the deceased's symptoms and contributed to the apparent improvement seen on the third ECG. They agreed that the absence of ST elevation at that stage was most likely because the left anterior descending coronary artery had not yet become totally occluded.
89. The experts unanimously agreed that the appropriate clinical disposition following the first ambulance attendance was transfer of the deceased to the Emergency Department of her nearest acute hospital, namely Craigavon Area Hospital, for further assessment and investigation aimed at definitively excluding an acute cardiac event. They further agreed that any decision by the deceased not to attend hospital should have been dependent upon her being

provided with sufficient information regarding the potential consequences for her health and life of remaining at home.

90. In oral evidence, all three experts confirmed that Craigavon Area Hospital was the appropriate destination following the first ambulance attendance and that the deceased should have been conveyed there for further assessment and investigation aimed at excluding an acute cardiac event.
91. The experts agreed that the non-conveyance documentation was incomplete and failed to adequately record the reasons why the deceased was not transferred to hospital. They further agreed that there were discordant features in the deceased's management, namely that aspirin and GTN had been administered, indicating that a cardiac cause was considered possible, if not probable, yet the deceased was not conveyed to hospital for further investigation.
92. The experts agreed that, had the deceased been conveyed to Craigavon Area Hospital following the initial ambulance attendance, she would likely have arrived between approximately 12.15 and 12.30 hours and should have undergone repeat ECG assessment shortly thereafter, ideally within 10 minutes of arrival in accordance with national guidance. In oral evidence, the experts acknowledged that pressures within the Emergency Department, ambulance handover delays and Covid-related processes could have affected the timing of assessment and treatment. Whilst the deceased's presentation with central chest pain would have warranted prompt assessment, the experts could not say with certainty precisely when she would have been assessed, whether she would have been continuously monitored, or where within the Emergency Department she would have been at the time of her first cardiac arrest. Nevertheless, they agreed that her presence within a healthcare setting would have afforded substantially earlier access to resuscitation, defibrillation and advanced life support than occurred in the community.
93. The experts further agreed that repeat ECGs were unlikely to have demonstrated ST elevation until shortly before 14.20 hours, when the deceased experienced a worsening of her chest pain. The experts agreed that total occlusion of the left anterior descending coronary artery most likely occurred at, or shortly before, that point and that the worsening of chest pain probably represented the clinical manifestation of that occlusion. They further agreed that, had ST elevation been identified, transfer via the PPCI pathway to the Royal Victoria Hospital would have been indicated.
94. In oral evidence, Dr Watt and Dr McGlinchey agreed that total occlusion of the left anterior descending coronary artery most likely occurred shortly before the first cardiac arrest and that ST elevation would most likely have appeared only shortly before, or in the minutes immediately following, the onset of cardiac arrest. Both accepted that the available timeframe between the onset of ST elevation and cardiac arrest was likely to have been very short. Dr Watt

further observed that, whilst ST elevation may have been present for a brief period before the cardiac arrest, “the chances of an ECG being performed in that time frame is so small” that it was of little practical significance.

95. The experts agreed that the deceased most likely suffered her first cardiac arrest shortly after the worsening of her symptoms and shortly before the emergency call made at approximately 14.20 hours. They further agreed that, even had she been conveyed to hospital earlier, she would most likely still have suffered a cardiac arrest. In oral evidence, Dr Watt and Dr McGlinchey confirmed that the most likely alternative scenario was not avoidance of the first cardiac arrest but rather that it would have occurred within a healthcare setting. The experts agreed that earlier hospital attendance would likely have facilitated earlier PCI, with the potential for improved myocardial salvage and avoidance of some of the subsequent cardiac arrests.
96. The experts agreed that earlier access to effective cardiopulmonary resuscitation, defibrillation and advanced life support measures would likely have reduced the duration of the cardiac arrests and the risk of hypoxic brain injury. Dr Watt described the location of a cardiac arrest as “one of the most important” determinants of outcome and considered that earlier access to resuscitation and defibrillation was likely to have significantly improved the deceased's prospects. The experts agreed that, had the deceased suffered her first cardiac arrest within a healthcare setting, she would have been less likely to sustain hypoxic brain injury of the severity that ultimately occurred and would have had an improved prospect of survival.
97. In oral evidence, Dr Watt explained that the first cardiac arrest lasted approximately 36 minutes, the second approximately 22 minutes and the third approximately 4 minutes. He considered that the prolonged duration of the first cardiac arrest in the community was likely responsible for the majority of the deceased's hypoxic brain injury. He estimated that, had the cardiac arrests occurred within a healthcare setting, each might have lasted in the region of five minutes. Dr McGlinchey agreed that the majority of the hypoxic brain injury was likely sustained during the first cardiac arrest and that significantly shorter periods of cardiac arrest would have materially improved the deceased's prospects. The experts nevertheless acknowledged that the duration of any arrest in the alternative circumstances could not be predicted with certainty, particularly given the possibility of delays in recognition or treatment.
98. In their joint statement, the experts estimated the probability of survival to hospital discharge following a witnessed ventricular fibrillation cardiac arrest treated by healthcare professionals at approximately 60%, drawing upon published data concerning in-hospital cardiac arrests. Taking account of the recurrent nature of the deceased's cardiac arrests, they considered that this probability would be reduced by approximately 10 to 15 percentage points, to between 45% and 50%. They further estimated that approximately 90% of

those surviving to discharge would do so without significant hypoxic brain injury, producing an overall estimated probability of survival without significant hypoxic brain injury of approximately 40% to 45%.

99. During questioning by counsel for the Coroner, Dr Watt was asked to consider further the significance of the likely shorter duration of the cardiac arrests had the deceased been in a healthcare setting. He and Dr McGlinchey agreed that the risk of hypoxic brain injury associated with an individual cardiac arrest lasting approximately five minutes would be relatively low. Asked to consider the hypothesis that the deceased would have suffered three cardiac arrests, each lasting approximately five minutes, Dr Watt expressed the opinion that, on the balance of probabilities, she would have survived without brain injury. He explained that the 60% figure used in the joint statement represented an estimate derived from a broad population of patients suffering shockable cardiac arrests in hospital, whose circumstances and duration of arrest varied considerably. In his view, that general estimate could be adjusted to reflect the particular circumstances of the deceased's likely treatment, including the prospect of shorter cardiac arrests. He acknowledged, however, that it could not be known with certainty that each arrest would have lasted five minutes or that the arrests would have responded promptly to treatment.
100. Dr Watt's revised assessment was subsequently questioned by counsel for NIAS, who pointed out that the joint statement had expressly described the 60% starting figure as relating to witnessed cardiac arrests treated by healthcare professionals. Dr Watt accepted that the average duration of such arrests might itself be approximately five minutes. It was suggested to Dr Watt that the favourable duration of arrest might therefore already have been reflected in the original estimate and risked being counted twice in revising the probability upwards. Dr Watt did not accept that the general statistical estimate conclusively determined the deceased's individual prospects. He emphasised the limitations of the available evidence, particularly concerning recurrent cardiac arrests, and maintained that the figures could not be calculated with precision. He expressly acknowledged that his opinion had developed since the joint statement and concluded that the deceased would have had a "very slightly greater than 50% chance" of survival. Dr McGlinchey did not adopt that revised assessment. Whilst acknowledging Dr Watt's particular academic interest in the subject and the difficulty of assigning precise percentages, he considered that the recurrent cardiac arrests and their cumulative effects would reduce the deceased's prospects to the range of 45% to 50% identified in the joint statement. Both experts emphasised the uncertainty inherent in assessing what would have occurred in circumstances which did not in fact arise.

Pathology Evidence

101. Dr Marjorie Turner, Assistant State Pathologist for Northern Ireland, gave evidence to the inquest. She performed an autopsy on the deceased on 15

October 2021 and thereafter produced a report. Dr Turner opined that the post-mortem findings were consistent with the clinical diagnosis of the deceased having died from hypoxic brain damage following a cardiac arrest caused by an acute myocardial infarction. She explained that an acute myocardial infarction, commonly known as a heart attack, occurs when blood supply to part of the heart muscle is interrupted due to blockage of a coronary artery, causing the affected heart muscle to die. In this case, the acute myocardial infarction involved the left anterior descending coronary artery and resulted in a cardiac arrest, when the heart stops beating. The cardiac arrest in turn caused hypoxic brain damage due to the brain being deprived of blood and oxygen. Dr Turner explained that it was this irreversible brain injury which ultimately caused the deceased's death. Post-mortem examination demonstrated findings consistent with acute myocardial infarction and hypoxic-ischaemic brain injury.

102. Dr Turner noted that an operative intervention had occurred with a stent in place within the left anterior descending coronary artery, limiting interpretation as to the underlying explanation for the myocardial infarction, with no significant atheroma identified elsewhere in the coronary arteries. Histological examination also demonstrated established bronchopneumonia and pus within the airways. Dr Turner explained that this was a common finding in critically ill patients who had required intensive care treatment and did not represent the cause of death. She found no evidence of any other natural disease process or injury which caused or contributed to death and concluded that the death was due to natural causes. Dr Turner further advised that any opinion as to whether earlier treatment may have altered the outcome would require clinical opinion. Dr Turner gave the cause of death as hypoxic brain damage due to cardiac arrest due to acute myocardial infarction.

Conclusions on the evidence

103. I find that the deceased ought to have been conveyed to Craigavon Area Hospital following the attendance of the first ambulance crew on 9 October 2021 for further assessment and investigation of possible Acute Coronary Syndrome. Had she been conveyed, she would more likely than not have been in hospital when she suffered her first cardiac arrest. I accept the expert evidence that prompt recognition and treatment of that arrest would likely have reduced the severity of the hypoxic brain injury sustained and materially improved her prospects of survival.
104. I am satisfied that there were a number of missed opportunities during the first ambulance attendance. These concerned the assessment and reassessment of the deceased's symptoms, the insufficient consideration given to the possibility of an acute cardiac condition, the advice given to the deceased and her husband, and the decision not to convey her to hospital. I make the following findings on the balance of probabilities.

Assessment and Management

- 105.I find that Ms Hewitt's assessment of the deceased's chest pain was inadequate and was not sufficiently documented. In particular, the contemporaneous Patient Report Form did not adequately address the character, severity, duration and progression of the pain, whether it radiated, associated symptoms or factors which exacerbated it. These were important features of a presentation involving central chest pain and significant cardiac risk factors.
- 106.I find that no formal pain assessment or pain score was undertaken or recorded, notwithstanding that chest pain was the deceased's principal presenting complaint. I accept the evidence of Dr Clarke that a SOCRATES pain assessment and pain score ought to have been undertaken.
- 107.I find that only one complete set of observations was documented, that no NEWS score was recorded and that no repeat 12-lead ECG was undertaken. I find that further observations, calculation of a NEWS score and a repeat ECG ought to have formed part of the reassessment before the decision on conveyance was made.
- 108.I find that the deceased was not adequately reassessed during the attendance despite the continuing possibility of Acute Coronary Syndrome. In particular, the improvement in some symptoms did not remove the need to reassess her chest pain and clinical observations. I accept that even a further ECG showing no ST elevation would not have excluded Acute Coronary Syndrome.
- 109.I find that the deceased's significantly elevated blood glucose reading was insufficiently assessed and documented as part of the overall clinical assessment. This was a further abnormal clinical finding which required consideration alongside her presenting symptoms and known medical history.

Recognition of Acute Coronary Syndrome

- 110.I find that Acute Coronary Syndrome remained a significant and unexcluded diagnosis throughout the attendance of the first ambulance crew.
- 111.I accept the evidence of Dr Watt, Dr McGlinchey and Dr Clarke that the absence of ST elevation on the ECG recordings obtained during the first ambulance attendance did not exclude myocardial infarction and that further hospital investigation, including repeat ECG assessment and troponin testing, was required before a cardiac cause could safely be ruled out.
- 112.I find that insufficient weight was given to the deceased's significant cardiac risk factors, including diabetes mellitus, cigarette smoking and a family history of coronary heart disease.
- 113.I further find that the improvement in the deceased's symptoms following the administration of aspirin and GTN did not provide a sufficient basis upon which to exclude a cardiac cause. The administration of those medications was

itself consistent with the ambulance crew having considered a possible cardiac presentation.

Decision not to Convey to Hospital

114. I find that the deceased ought to have been conveyed to Craigavon Area Hospital following the attendance of the first ambulance crew for further assessment and investigation. In reaching that conclusion, I accept the unanimous opinion of Dr Watt, Dr McGlinchey and Dr Clarke.
115. A central issue in this inquest concerns the discussions which took place regarding hospital attendance and the possibility of a cardiac event. I have carefully considered the differing accounts of Mr O'Hagan and Ms Hewitt, together with the evidence of Mr Wright and the contemporaneous documentation.
116. Where the accounts of Mr O'Hagan and Ms Hewitt conflict concerning the advice provided, I prefer Mr O'Hagan's evidence. I found his account clear and consistent with the surrounding circumstances and material aspects of Mr Wright's evidence. I also attach weight to the absence of a contemporaneous record of a clear warning that a cardiac cause remained possible and required hospital investigation.
117. I accept Mr O'Hagan's evidence that he and the deceased were left with the understanding that her symptoms were likely attributable to anxiety or a panic attack. His account is consistent with Mr Wright's evidence that he considered the presentation more likely to be anxiety-related and that the deceased appeared reassured following the ECG assessment. I find that the reassurance provided contributed to the understanding of the deceased and her husband that hospital attendance was unnecessary, notwithstanding that a cardiac cause had not been excluded.
118. I find that the deceased was not provided with a sufficiently clear explanation that Acute Coronary Syndrome had not been excluded, that a cardiac event remained a realistic possibility and that further investigation in hospital was required.
119. I further find that the deceased was not adequately informed of the potentially serious consequences of remaining at home, including the risk of cardiac arrest and death.
120. Taking into account the evidence of Dr Clarke that if the deceased had been advised that hospital was required she would, more likely than not, have accepted that direction, and the evidence of Mr O'Hagan that the deceased would have attended hospital had she understood that a heart attack remained a possibility, I find that, had the deceased been fully informed of those risks and advised of the need for hospital investigation, it is more likely than not that she would have accepted conveyance to hospital.

121.I find that the deficiencies in the assessment and reassessment of the deceased contributed to an erroneous patient management plan. The decision that she could safely remain at home rather than be conveyed to hospital was not supported by an adequate clinical assessment and was unsafe in circumstances where Acute Coronary Syndrome remained a significant and unexcluded diagnosis.

122.I further find that the safety-netting and worsening-care advice was inadequate in circumstances where a potentially serious cardiac condition had not been excluded. The deceased and her husband were not adequately informed of the continuing possibility of a cardiac event or its potential consequences. The advice said to have been provided concerning the need to seek further medical assistance, and the deceased's markedly elevated blood glucose reading, was inadequately documented.

Documentation

123.I find that the Patient Report Form was incomplete and did not adequately reflect the clinical assessment and decision-making process.

124.I find that the rationale for non-conveyance was inadequately documented.

125.I find that the non-conveyance documentation was not properly completed.

126.I find that the advice said to have been provided regarding hospital attendance, the risks of remaining at home and the need to seek further assistance was inadequately recorded.

127.I further find that the retained Patient Report Form was retrospectively amended after the crew had left the deceased's home. I accept Ms Hewitt's evidence that these amendments were made after she identified omissions in the documentation. However, they were not contemporaneous entries and the retained record consequently differed from the copy left with the deceased.

Cognitive Bias

128.I find that the distressing news of the deceased's father's death, and the possibility that her symptoms were attributable to anxiety or a panic attack, were, on balance, likely to have influenced the clinical assessment and decision-making process. I accept the evidence of the experts that anchoring bias was likely to have been present.

129.I find that undue reassurance was derived from the absence of ST elevation on the ECG and from the apparent improvement in the deceased's symptoms.

130.I find that these factors contributed to the decision not to convey the deceased to hospital, notwithstanding that Acute Coronary Syndrome remained a significant and unexcluded diagnosis.

Subsequent Treatment and Care

131. Having considered the evidence concerning the subsequent resuscitation, conveyance, hospital treatment and intensive care, I am satisfied that the treatment provided by the second ambulance crew and subsequently at Craigavon Area Hospital and the Royal Victoria Hospital was appropriate in the circumstances.

Outcome

132. I turn to whether earlier conveyance to hospital would have altered the outcome for the deceased. I have considered the joint statement of the experts and their oral evidence. There was substantial agreement concerning the likely clinical course had the deceased been conveyed, but a difference remained as to whether she would, on the balance of probabilities, have survived.

133. I find that, had the deceased been conveyed by the first ambulance crew, she would more likely than not have arrived at Craigavon Area Hospital between approximately 12.15 and 12.30 hours. I accept the unanimous expert evidence that she would most likely still have suffered her first cardiac arrest at or around 14.20 hours. The left anterior descending coronary artery became totally occluded shortly before that arrest, and ST elevation was unlikely to have been identified sufficiently early to permit coronary intervention before it occurred.

134. I am satisfied, however, that the circumstances in which the first cardiac arrest occurred would have been materially different. Although the deceased's precise location within the hospital, the availability of cardiac monitoring and the time taken to recognise the arrest cannot be determined with certainty, she would have had earlier access to cardiopulmonary resuscitation, defibrillation and advanced life support.

135. I accept the evidence of Dr Watt and Dr McGlinchey that the majority of the deceased's hypoxic brain injury was likely sustained during the first cardiac arrest in the community, which lasted approximately 36 minutes. I am satisfied that earlier recognition and effective resuscitation would have shortened that arrest and reduced the severity of the hypoxic brain injury sustained. Earlier hospital treatment may also have facilitated earlier coronary intervention. Both cardiology experts considered that the deceased would most likely nevertheless have suffered three cardiac arrests. I cannot determine with certainty how long the subsequent arrests would have lasted had she been conveyed earlier.

136. In their joint statement, the experts estimated the probability of survival to hospital discharge following a witnessed ventricular fibrillation cardiac arrest treated by healthcare professionals at approximately 60%. Having regard to the recurrent nature of the deceased's cardiac arrests, they reduced that estimate to approximately 45% to 50%. They separately estimated the probability of survival without significant hypoxic brain injury at

approximately 40% to 45%. I recognise that these figures were derived from a wider patient population and were not determinative of the deceased's individual prospects.

137. During oral evidence, Dr Watt reconsidered the deceased's individual prospects, having regard in particular to her response to defibrillation and the likelihood of substantially shorter periods of cardiac arrest had she been in a healthcare setting. When asked to consider the hypothesis of three arrests lasting approximately five minutes each, he expressed the opinion that, on the balance of probabilities, she would have survived without brain injury. In his subsequent evidence, he ultimately assessed her chance of survival as very slightly greater than 50%. I have carefully considered his revised opinion and the clinical factors upon which he relied. I do not discount that opinion merely because it developed during his oral evidence.
138. Dr McGlinchey maintained his estimate of approximately 45% to 50% survival, emphasising the seriousness of recurrent cardiac arrests and their cumulative effects. I have carefully considered his opinion, the estimates in the joint statement and Dr Watt's revised oral evidence. I recognise that the published survival figures provide a useful starting point but cannot determine the deceased's individual outcome. Dr Watt explained that the prolonged period before defibrillation, during which CPR was likely to have been less effective, contributed to the prolonged duration of that arrest and the resulting brain injury. Had the arrest occurred in hospital, the deceased would have had earlier access to effective cardiopulmonary resuscitation, defibrillation and advanced life support. I am satisfied that the first arrest would have been substantially shorter and that the resulting hypoxic brain injury would have been less severe.
139. I also attach weight to Dr Watt's evidence concerning the deceased's response to defibrillation and the relatively short duration of her third cardiac arrest, which occurred in hospital. Both cardiology experts considered that three cardiac arrests remained the most likely scenario had the deceased been conveyed earlier. I recognise, however, that their precise duration cannot be determined. Although Dr Watt considered that each arrest might have lasted approximately five minutes in a hospital setting, I cannot make a finding as to those precise durations. I have also considered the possibility, explored with Dr Watt, that the benefit of prompt resuscitation and shorter periods of cardiac arrest was already reflected, at least in part, in the published survival figures. I have not overlooked the risks associated with recurrent cardiac arrests, emphasised by Dr McGlinchey. Nevertheless, I am persuaded by Dr Watt's assessment of the deceased's individual circumstances, including her response to defibrillation, and his reasoning concerning the likely consequences of earlier and more effective resuscitation. In particular, I attach weight to the significance of the substantially shorter first arrest which I have found would have occurred had the deceased been in hospital. Having considered both

opinions and the uncertainties inherent in this assessment, I prefer Dr Watt's revised conclusion concerning the deceased's prospects of survival.

140. I find that earlier conveyance to hospital would have materially improved the deceased's prospects of survival. Having carefully considered the competing expert opinions and the deceased's individual clinical circumstances, and for the reasons set out above, I prefer Dr Watt's revised assessment that her prospects of survival were marginally greater than 50%. I am satisfied, on the balance of probabilities, that had the deceased been conveyed to hospital earlier, she would have survived the immediate consequences of the cardiac arrests and would not have sustained the fatal hypoxic brain injury from which she died.

Cause of death

141. A post-mortem was performed, and it records, and I find that death was due to:

1(a) Hypoxic brain damage

Due to

1(b) Cardiac arrest

Due to

1(c) Acute Myocardial Infarction

Lessons Learned

Dr Nigel Ruddell

142. The findings which I have made concerning the circumstances of the deceased's death must also be considered in the context of the organisational learning arising from the deceased's death.

143. I heard evidence from Dr Nigel Ruddell, Medical Director of the Northern Ireland Ambulance Service, regarding the Serious Adverse Incident investigation undertaken following the deceased's death. Dr Ruddell confirmed that NIAS accepted the findings and recommendations of the SAI Review and described the steps subsequently taken to address the shortcomings identified.

144. The SAI identified four principal areas of learning: a sub-optimal patient assessment resulting in an erroneous patient management plan; inadequate documentation of worsening-care advice on the PRF; an absence of documented safety-netting concerning the possibility of Acute Coronary Syndrome and the deceased's elevated blood glucose level; and the retrospective amendment of the PRF by a paramedic after the crew had left the scene.

145. The investigation found that important aspects of the deceased's presentation had not been fully explored or documented. Opportunities were missed to undertake repeat observations and reassessment of continuing symptoms. The SAI concluded that deficiencies in the assessment and reassessment of the deceased resulted in an erroneous patient management plan, namely the decision that she could safely remain at home rather than be conveyed to hospital for further investigation and treatment. The report also found that the rationale for non-conveyance was inadequately recorded and that insufficient worsening-care advice and safety-netting information had been documented in circumstances where Acute Coronary Syndrome remained a significant and unexcluded diagnosis.
146. The SAI further identified concerns regarding cognitive bias in clinical decision-making. It highlighted the potential for clinicians to derive false reassurance from the absence of ST elevation on an ECG and thereby fail to give sufficient consideration to the possibility of a Non-ST Elevation Myocardial Infarction. The report recognised the risk that an early diagnostic impression may narrow consideration of alternative diagnoses and influence subsequent clinical decision-making.
147. In his evidence, Dr Ruddell expanded upon these findings. He explained that clinicians can sometimes be influenced by early assumptions or initial impressions, thereby narrowing consideration of alternative diagnoses. He identified the possibility that the deceased's own concern that she may have been experiencing a panic attack, together with the absence of ST elevation on the ECG, may have influenced the clinical assessment. He emphasised, however, that "a normal ECG does not rule out a heart attack" and explained that a patient may still be experiencing a Non-ST Elevation Myocardial Infarction notwithstanding apparently reassuring ECG findings. He told the inquest that patients presenting with symptoms suggestive of Acute Coronary Syndrome require hospital assessment because serial ECGs and blood testing are necessary before such a diagnosis can safely be excluded.
148. Dr Ruddell confirmed that NIAS accepted the learning identified by the SAI and had implemented a number of changes in response. He explained that a significant development had been the introduction of the Electronic Patient Care Record ("ePCR") system, which replaced the previous paper-based recording system. Dr Ruddell explained that once an electronic record is completed and signed, it becomes a permanent record which cannot subsequently be altered. ECG recordings, observations and other clinical information are retained electronically and are subject to a clear audit trail. Addressing one of the central concerns identified by the SAI, Dr Ruddell told the court that the retrospective amendment of clinical records which occurred in this case "could not happen now".
149. Dr Ruddell further explained that where information has genuinely been omitted from a completed record, the original record cannot simply be

amended. Any additional information must instead be recorded through a separate process which preserves transparency and maintains an auditable record of what has occurred.

150. I also heard evidence that the ePCR system now requires mandatory completion of documentation relating to non-conveyance decisions and safety-netting advice. Dr Ruddell explained that clinicians must document why a patient remains at home, the advice provided to the patient and the action to be taken should symptoms deteriorate. He further indicated that "the system will not allow the record to be closed" until the required information has been entered. Non-conveyance documentation, patient advice leaflets and safety-netting arrangements now form part of a structured process intended to ensure that patients receive appropriate information when remaining at home.
151. Dr Ruddell described the additional emphasis now placed upon reassessment, serial observations, NEWS scoring and clinical documentation. He explained that repeat observations and NEWS scoring provide an objective means of determining whether a patient's condition is improving, remaining stable or deteriorating, and assist clinicians in identifying clinical deterioration. Greater emphasis is now placed upon reassessment during an attendance and upon the recording of those assessments.
152. The recommendations relating to cognitive bias have been incorporated into NIAS education and training programmes, including post-proficiency training, Learning Matters communications, wider cardiac education initiatives and the NIAS Cardiac Masterclass programme. Dr Ruddell explained that this training seeks to reduce the risk of clinicians becoming anchored to an early diagnostic impression and encourages consideration of alternative diagnoses where a patient's presentation remains unexplained.
153. I was also told that the individual members of staff involved in this incident undertook reflective learning, clinical review and a period of supervised practice. Clinical documentation guidance was re-issued to frontline staff and wider organisational learning was disseminated throughout the service.
154. Dr Ruddell candidly acknowledged the areas in which care had fallen below the standards expected. His evidence demonstrated that NIAS accepted the shortcomings identified by the SAI investigation and sought to address them through both individual reflection and service-wide changes.
155. I welcome the evidence that NIAS accepted the findings and recommendations of the SAI investigation and took steps to implement the changes arising from it. Whilst those measures cannot alter the events which occurred in the deceased's case, they demonstrate that consideration has been given to the shortcomings identified and that steps have been taken to address them. I hope that the learning arising from this case will assist in preventing similar failings in the future.

Postscript

156. Elizabeth O'Hagan was a much-loved wife, mother and grandmother. The evidence of her husband painted a picture of a devoted family woman for whom family remained at the centre of her life. He spoke movingly of their life together and of the devastating impact of her death upon him and their wider family circle. The Court also heard that the deceased was an organ donor and that, even in death, she was able to help others through that final act of generosity. It was clear from the evidence that the deceased was deeply loved and remains deeply missed by those who knew her. I extend my sincere condolences to her husband, children, grandchildren and wider family.
157. This inquest has highlighted the importance of maintaining a high index of suspicion when assessing patients presenting with chest pain in the pre-hospital setting, particularly where significant risk factors for coronary artery disease are present. It has demonstrated that Acute Coronary Syndrome may be present despite an initially non-diagnostic ECG and that the absence of ST elevation does not, of itself, exclude serious underlying cardiac disease.
158. The evidence has further highlighted the importance of thorough clinical assessment and reassessment by ambulance clinicians, including a comprehensive assessment of chest pain, the recording of appropriate observations and pain scores, the calculation of NEWS scores and the undertaking of repeat ECGs where clinically indicated. It has also demonstrated the risks associated with cognitive bias and the danger of allowing an early impression of anxiety, apparent improvement in symptoms or reassuring ECG findings to divert attention from a potentially serious cardiac condition.
159. This inquest has also emphasised the importance of ensuring that patients are provided with sufficient information to make informed decisions regarding their care. Where hospital attendance is indicated, patients should be given a clear explanation of the condition being investigated, the limitations of the assessment and investigations already undertaken, and the potential consequences of declining further assessment and treatment. In particular, the possibility of a serious cardiac event and the risks associated with remaining at home must be adequately explained where such a diagnosis has not been excluded.
160. The evidence has further demonstrated the importance of clear, accurate and contemporaneous clinical documentation, particularly where a decision is made not to convey a patient to hospital. The reasons for that decision, the information provided to the patient, any advice concerning deterioration and the arrangements for seeking further assistance should be properly recorded. The integrity of the clinical record must also be maintained.
161. I acknowledge the steps taken by the Northern Ireland Ambulance Service in response to the shortcomings identified through the Serious Adverse Incident

investigation, including changes to clinical documentation, training and procedures. I hope that the matters examined during this inquest, together with the learning already identified and the measures implemented, will assist in informing future practice and reducing the likelihood of similar circumstances arising in the future.