SHERIFFDOM OF TAYSIDE, CENTRAL AND FIFE AT DUNDEE

[2024] FAI 41

DUN-B380-23

DETERMINATION

BY

SHERIFF JILLIAN MARTIN-BROWN

UNDER THE INQUIRIES INTO FATAL ACCIDENTS AND SUDDEN DEATHS ETC (SCOTLAND) ACT 2016

into the death of

JACQUI HUNTER

DUNDEE, 17 September 2024

The sheriff, having considered the information presented at an inquiry on 28 – 29 May and 3 – 4 June 2024; written submissions; and the oral submissions made on 12 August 2024; under section 26 of the Inquiries into Fatal Accidents and Sudden Deaths etc. (Scotland) Act 2016, finds and determines that:

Findings

Section 26(2)(a)

Jacqui Hunter died at 16:29 on 13 May 2020 at Ninewells Hospital, Dundee.

Section 26(2)(b)

Her death was not the result of an accident.

Section 26(2)(c)

The causes of Jacqui Hunter's death were:

I. (a) amniotic fluid embolism ("AFE"); and

II. pregnancy, intrauterine death.

Section 26(2)(d)

Her death was not the result of an accident.

Section 26(2)(e)

There were no precautions which could reasonably have been taken whereby her death might realistically have been avoided.

Section 26(2)(f)

There were no defects in any system of working which contributed to her death.

Section 26(2)(g)

There are no other facts which are relevant to the circumstances of Ms Hunter's death.

<u>Recommendations</u>

Section 26(4)(a)

There are no recommendations as to the taking of reasonable precautions which might realistically prevent other deaths in similar circumstances.

Section 26(4)(b)

There are no recommendations as to the making of improvements to any system of working which might realistically prevent other deaths in similar circumstances.

Section 26(4)(c)

There are no recommendations as to the introduction of a system of working which might realistically prevent other deaths in similar circumstances.

Section 26(4)(d)

There are no recommendations as to the taking of any other steps which might realistically prevent other deaths in similar circumstances.

Scope of the Inquiry

In light of the considerable volume of evidence that was not in dispute, the scope of the inquiry was restricted to the following three issues:

i. Did Ms Hunter report reduced fetal movements to Midwife Calder on Monday 11 May 2020 and might further investigations thereon have avoided her death?

ii. Was Ms Hunter hyperstimulated as a result of the incorrect dose of misoprostol on Wednesday 13 May 2020 and might the correct dose have avoided her death?

iii. Should Dr Northridge have discussed the overdose of misoprostol with Ms Hunter on Wednesday 13 May 2020 and had she tried to remove it might her death have been avoided?

NOTE

The structure of this determination is as follows:

Introduction

[1] This was a discretionary inquiry held under section 4(1) of the Inquiries into Fatal Accidents and Sudden Deaths etc. (Scotland) Act 2016. Preliminary hearings were held on 23 August 2023; 16 November 2023; 27 March 2024; 3 May 2024 and 23 May 2024. The inquiry was held on 28 – 29 May 2024 and 3 – 4 June 2024. Written submissions were lodged and oral submissions were made on 12 August 2024. All hearings proceeded by way of WebEx.

[2] Ms Louise Beattie, Solicitor Advocate, and Ms Valentina Mori, Advocate, represented the Crown. Mr Lori-Mark Quate, widower of Ms Hunter, represented himself, supported by Leza Quate, sister-in-law of Ms Hunter. Ms Helen Watts KC, represented NHS Tayside.

[3] The following witnesses gave oral evidence to the inquiry:

1. Mr Lori-Mark Quate (Widower of Ms Hunter);
2. Ms Abbie Calder (Midwife);
3. Ms Sally McMartin (Midwife);
4. Dr Rebecca Northridge (Consultant Obstetrician);
5. Dr Antony Nicoll (Consultant Obstetrician);
6. Dr Paul Brown (Paediatric Forensic Pathologist);
7. Dr Philip Owen (Consultant Obstetrician and Gynaecologist); and
8. Professor Marian Knight (Perinatal Epidemiologist and Public Health Physician).

[4] The following witnesses gave written evidence to the inquiry:

1. Dr Pauline Lynch (Consultant Obstetrician and Gynaecologist);
2. Dr Sarah Hawco (currently ST5 Speciality Registrar in Obstetrics and Gynaecology, ST4 at the time of Ms Hunter's death);
3. Dr Michael Foster (Consultant Anaesthetist);
4. Ms Jamie Middleton (Midwife);
5. Ms Hannah Berry (Midwife); and
6. Dr Adam Gordon (Consultant Obstetrician).

[5] A joint minute of agreement was entered into by the parties. Written statements were used for evidence-in-chief.

Background Facts and Circumstances

[6] The evidence outlined within paras [7] - [144] of the determination was not in dispute.

Ms Hunter

[7] Ms Jacqui Hunter was 39 years old at the time of her death, having been born on 5 February 1981. She resided in Fowlis, Angus with her husband Lori-Mark Quate.

[8] Mr Quate spoke movingly about the kind of person that Ms Hunter was. He described her as the love of his life, an absolute ray of sunshine with a cracking sense of humour. She was strong minded and compassionate. When she died there was an outpouring of sadness from people she knew, including those living abroad. Mr Quate

felt lucky to have been loved by Ms Hunter and she made him want to be a better person. They were soulmates.

Antenatal History Prior to 11 May 2020

[9] Ms Hunter kept good health and had no significant medical history. She received antenatal care initially from midwives in NHS Fife. At her pregnancy booking appointment with NHS Fife on 17 October 2019 she was noted to have a body mass index of 34. She was a non-smoker and was allergic to aspirin and diclofenac medications. She had a non-significant history of ear, nose and throat conditions and interventions and occasional episodes of hypertension that were stress related. There was no maternal, paternal or family medical history of significance to the pregnancy.

[10] Following family relocation, her care was transferred to NHS Tayside Community Midwifery Team in December 2019. At her 28 week obstetric ultrasound scan at Ninewells Hospital on 31 December 2019, a high uterine artery pulsatility index was detected, which indicated a higher risk of hypertensive disorders in pregnancy and small for gestation age fetus. Ms Hunter was booked for additional ultrasound scans for fetal growth and antenatal appointments to check her blood pressure and urinalysis.

[11] Ms Hunter attended further ultrasound scans at Ninewells Hospital at gestations of 26 weeks, 29 weeks, 32 weeks and 36 weeks, all of which showed no abnormalities and no concerns in relation to fetal growth.

[12] Ms Hunter attended midwifery reviews at gestations of 23 weeks, 34 weeks, 37 weeks and 38 weeks when her blood pressure and urine where checked and all findings were all within normal limits.

[13] Dr Nicoll was Ms Hunter's named consultant. They met in the antenatal clinic during the third trimester of her pregnancy. When Dr Nicoll reviewed Ms Hunter she had normal pressure and a normal ultrasound scan and so the consultation was brief. Dr Nicoll arranged to repeat the ultrasound scan in 3 - 4 weeks.

Monday 11 May 2020

[14] At 09.30 on 11 May 2020 Ms Hunter attended at Lochee Medical Practice, Dundee for a pre-arranged midwife appointment at 39 weeks' gestation with Midwife Abbie Calder.

[15] There was a dispute between the parties as to whether Ms Hunter reported to Abbie Calder that her fetal movements appeared to be reduced, which is dealt with at paras [147] - [189].

[16] If Ms Hunter reported reduced fetal movements to her midwife at the appointment on 11 May 2020 that morning, she ought to have been referred to Ninewells Hospital for further intervention and assessment, which would have likely have included a cardiotocograph.

[17] There was a dispute between the parties as to whether further investigations into reduced fetal movements might realistically have avoided Ms Hunter's death, which is dealt with at paras [147] - [189].

Tuesday, 12 May 2020

Triage

[18] At around 08.30 on 12 May 2020 Ms Hunter phoned Ninewells Hospital maternity triage and spoke to Midwife Jamie Middleton.

[19] Ms Hunter explained over the telephone that she was having reduced fetal movements and that she was concerned. Ms Hunter said that she had met with her community midwife the previous day and explained this.

[20] From looking at the notes, Midwife Middleton ascertained that the baby's heartbeat had not been checked the previous day. Ms Hunter said that she felt the movements had reduced since the previous day so Midwife Middleton told Ms Hunter to come straight to Ninewells Hospital and they would check her and her baby.

Ultrasound Scan for Fetal Heartbeat

[21] At around 08.50 on 12 May 2020 Ms Hunter arrived at Ninewells Hospital. Midwife Middleton carried out checks on Ms Hunter's temperature, blood pressure and urine, which were all found to be normal. Midwife Middleton was unable to detect a fetal heartbeat and requested the attendance of her colleague Dr Pauline Lynch, Consultant Obstetrician.

[22] Midwife Middleton phoned Mr Quate who was waiting outside the hospital and asked him to come inside. Once he and Dr Lynch had arrived, Ms Hunter was given an ultrasound scan by Dr Lynch. Unfortunately Dr Lynch confirmed that their baby had died.

[23] Dr Lynch clearly remembered Ms Hunter as a self-referral who had been at home and had come in for a review due to reduced fetal movements which she said she had noticed since the previous morning. Dr Lynch described May 2020 as a very strange time as the public were staying at home as much as possible due to COVID. Patients were reluctant to come into hospital or to come back for further tests. She noticed that in particular, pregnant women were not wanting to come into the hospital and were staying away from all public places because they were frightened of getting COVID.

Consent for Induction of Labour

[24] Dr Lynch had a discussion with Ms Hunter and Mr Quate about how their baby would be delivered. There was no discussion of a caesarean section. It was not Dr Lynch's practice to offer caesarean sections to patients in this position. Her normal practice was to offer an induction of labour and explain that they would give one tablet and give them time to go home and take time to come to terms with events and tell their family about their sad loss.

[25] Dr Lynch explained induction of labour to Ms Hunter, including what it would involve, the medication used, the time frame of three hourly dosing to get contractions started, the environment she would be in (the Tulip Suite) and that her husband could be with her throughout. They discussed the pain relief that would be given by the midwife. They also had a practical conversation about investigations and the offer of a post-mortem to see if a cause of death could be identified.

[26] Dr Lynch sat for 10 - 15 minutes to give Ms Hunter and Mr Quate time to digest the information. She offered the option of going home and coming back the next day before the first drug was given but often what patients chose to do depended on the family circumstances at home. Dr Lynch remembered that Ms Hunter and Mr Quate were quite clear that having been given the news, they just wanted to get on with starting induction. She phoned the labour suite to check availability of the Tulip Suite and was told it was available. She took them to the Tulip Suite and handed them over to Midwife Hannah Berry.

[27] If Ms Hunter had asked for a caesarean section, then Dr Lynch would have counselled against a caesarean section and explored the reasons with her. When women asked about caesarean sections it was usually due to fears of pain and anxiety and having a discussion about the options available usually reassured them. Dr Lynch would have explained the impact on any future pregnancies and significantly increased recovery pain at would what already be a very difficult time. She would also have had to tell Ms Hunter about possible complications including bleeding, which very occasionally they would have to do a hysterectomy to control.

[28] Dr Lynch had looked after a number of women who had sadly lost their babies. On the few occasions that women had said to her that they wanted a caesarean section, she could not think of any who actually wanted to proceed with it after a discussion.

Prescription for Misoprostol

[29] Shortly after she brought Ms Hunter and Mr Quate to the Tulip Suite, Dr Lynch sat at the desk outside and prepared the prescriptions for the induction. There were usually prepacked boxes of documents on the desk with the protocols for intrauterine death, induction of labour and bereavement care, including a two-sided sheet with the misoprostol doses. Dr Lynch completed the documentation and wrote the prescription for mifepristone and for six doses of misoprostol to be given.

[30] Dr Lynch knew there were different doses of misoprostol for different indications. She knew Ms Hunter was high risk and this was her first baby. Dr Lynch was aware there had been a change to the protocol for misoprostol and planned to check the dose before she signed the prescription. The master folder of guidelines was not in its usual place and there was no copy that she could find. Dr Lynch tried to check through her emails to see if she could find the new guideline which had been sent to her but there was not great connectivity and she had no Wi-Fi on her phone in the labour ward. She tried to find a free computer to get into her emails and went into the office on the labour ward. She remembered she had written misoprostol on the prescription chart but she did not think that she had signed it.

Administration of Mifepristone

[31] Midwife Berry vividly remembered looking after Ms Hunter and was deeply affected by her death. It was one of the reasons why she left practice to work as a lecturer for a while.

[32] Midwife Berry was waiting for Ms Hunter and her husband at the Tulip Suite. The Tulip Suite was regularly used. Mr Quate was really visibly upset and clearly devastated. Ms Hunter appeared to be in shock. She saw that quite often. She offered her condolences and said that she was very sorry about the passing of their baby.

[33] She let them have time to ask immediate questions and explained the process to deliver their baby. There were no questions at that stage. She explained the induction of labour for intrauterine death and explained briefly further investigations that would be offered to try and establish why their baby had died but at that point the news was quite fresh and they needed time to process it. She discussed telling family and friends.

[34] Midwife Berry explained that she would administer the initial tablet of mifepristone, which primed the body and stopped the flow of pregnancy hormones to the placenta. She advised they were welcome to stay in the hospital but equally they could go home to process the news and return to continue the induction process the next day if they wanted. Almost all people chose to go home

[35] Midwife Berry checked that Ms Hunter was clinically well before discharging her with instructions to return the next morning at 08.00. She conducted a full set of observations including routine blood pressure, temperature, pulse and oxygen saturations, respiratory rate and asked about any abdominal pain or vaginal bleeding to establish whether labour had started. The observations she took were all normal and Ms Hunter seemed to be clinically well. She remained calm throughout. Mr Quate calmed down but was still really emotional. Knowing they were going home offered them something for them to do and gave them a plan.

[36] Midwife Berry advised that they would need to come back tomorrow at 08.00 and that more medication would be given to continue the process. She advised to come back if anything changed or if they were at all worried but, at that stage, they advised they wanted to go home. She advised them to call the labour ward if there were any concerns regarding pain, spontaneous rupture of membrane or contractions and ensured they had contact numbers. She told them she would be on nightshift the next night and would look after them. She expected Ms Hunter to start established labour during the day and deliver their baby at some point over the next night.

[37] Midwife Berry noted at 10.00 and then at 10.50 that Jacqui was given 200 mcg mifepristone and then that Ms Hunter and Mr Quate were going home.

[38] No blood tests or vaginal swabs were undertaken in relation to Ms Hunter at Ninewells Hospital on 12 May 2020. A urinalysis was undertaken and detected no abnormalities. The absence of such investigations did not cause or materially contribute to the development of AFE and / or Ms Hunter's death.

Wednesday 13 May 2020

Administration of Misoprostol

[39] At around 08.00 on 13 May 2020, Ms Hunter and her husband Mr Quate arrived at the Tulip Suite at Ninewells Hospital and were met by Midwife Sally McMartin. Midwife McMartin remembered meeting Ms Hunter and her husband. It was a horrific day. At around 09.00 Midwife McMartin administered 400 mcg of misoprostol vaginally, which had been prescribed and signed for by Dr Lynch the day before. She

checked the dose and the date and then put the pill in a medicine cup. That particular dose was not a dose that was unfamiliar to Midwife McMartin and so it did not raise any concerns.

[40] The Tulip Suite was designed to be self-contained so that women who were experiencing the loss of their baby did not have to interact unnecessarily with women who were delivering a healthy baby. Midwife McMartin was experienced in looking after women in the Tulip Suite. Sadly, stillbirth was much more common than people realised. Some midwives did not want to work there but she was comfortable doing it and felt it was an important part of her job.

[41] Midwife McMartin's standard practice with women in the Tulip Suite was to introduce herself and acknowledge their very sad circumstances and offer her condolences. She would then explain what the ongoing procedure would involve and she would be there as much or as little as they wanted. She remembered that Mr Quate was very angry about the death of their baby. Midwife McMartin remembered thinking how well Ms Hunter appeared to be coping and thinking that she seemed to be a lovely, bubbly woman. Ms Hunter acknowledged how awful the situation was but was already talking about how she and Mr Quate would have to get on with their lives, that in time they would get past this and that they hoped to have another baby.

[42] Midwife McMartin explained that the medication would be given vaginally, that Ms Hunter's contractions and blood pressure would be monitored and that she could be in the room with them or not, whatever they wanted. She explained what Ms Hunter

might experience in terms of discomfort and discussed pain relief options. Ms Hunter was keen for an epidural when she felt necessary.

[43] They talked about arrangements for their baby and they advised they had a family plot. She touched on the subject of post-mortem and that the medical staff would discuss this in detail. Ms Hunter and Mr Quate asked if it would be possible to determine the sex of their baby.

[44] Midwife McMartin asked Ms Hunter to change out of her clothes and into a gown and she got on to a bed in the Tulip Suite. While Ms Hunter got changed, Midwife McMartin got the tablets. The tablets came in 200 mcg so she was given two tablets. They were kept in a cupboard at the top of the labour ward.

[45] Midwife McMartin carried out baseline observations before administering the medication. She was 99% sure that she did bloods and completed the test requests. She had documented having done so and it was always her practice to do so. She could not now see the results of the initial bloods she took in Ms Hunter's records and could not account for that.

[46] Midwife McMartin administered the misoprostol. She advised Ms Hunter that she would be given a further dose if there was no progress with her labour. The notes indicated that Midwife McMartin was mostly not in the room but was checking regularly.

[47] Midwife McMartin administered what was prescribed in the kardex. Her practice was to administer the dose that the obstetrician had prescribed. They were qualified prescribers and she was not. She would always be aware of the dose she was

giving and if she thought a dose of any medication appeared to be wrong then she would always check with the doctor before she administered it. She looked at the dose that was being prescribed to Ms Hunter but did not think it was unusual. Different consultants took different views about this drug and used to say that too small a dose could prolong the process. It did not occur to Midwife McMartin to query the dose. It was not so obviously wrong for her to check or challenge it.

[48] From the notes, Midwife McMartin could see that she gave the misoprostol at 09.00. The reference to 08.00 was when they started the discussion. There was a side room where she went to write up the notes. She did not stay in there the whole time. She spent some time recording the discussions in the IUD / stillbirth record book. She could not recall but it was likely that she did the tea relief that morning which involved going in and overseeing other labouring women whilst their own allotted midwife had a short tea break. She would have spent some time filling in the paperwork which accompanied an intrauterine death.

Changes on Labour Ward due to COVID

[49] Dr Rebecca Northridge was a Consultant Obstetrician based at Ninewells Hospital. By May 2020 Ninewells Hospital had implemented significant changes to their usual systems for the delivery of maternity care because of the COVID pandemic. The first national lockdown was underway at the time. They had arranged for there to be 24 hour resident consultant cover in the hospital. They felt it was important to have a senior presence at all times to allow timely discharges and unnecessary admissions and

to treat those who were sick or needed delivery in the most appropriate area. Some of the junior medical staff were redeployed to cover other services so the duties of a consultant changed quite significantly.

[50] It was a difficult time. There was not a lot of information from the Royal College on what they should do in the early stages of the pandemic so they had to formulate and implement their own plans as a department in addition to delivering all of their usual care. They had no idea how unwell women were going to become, though they knew that pregnant women and their babies were potentially more vulnerable and might be at a higher risk of the complications of COVID. They also knew that their staff might become unwell and they did not know how serious that might be or how that might impact their ability to provide safe and effective care to pregnant women and their families. There was also some confusion about what PPE should be used.

[51] During the early stages of the pandemic anything that was considered "elective", was stepped down to allow prioritisation of care to those with COVID. Within maternity services they could not step down routine maternity care because pregnancy and birth could not be delayed or cancelled. They had to continue to provide their usual obstetric care, as well as redesign their service to prepare for a potential surge in cases of pregnant women with COVID. Furthermore, they had to create a maternity service that kept women with COVID isolated from other non-infected women. The behaviour of patients also changed and women were reluctant to come to hospital because they were worried that they would come into contact with COVID-19 and would delay their attendances. Nevertheless, they were still encouraged to attend for anything that

required a face to face review, irrespective of their COVID status. For example, if a woman contacted them to inform them of their concerns of reduced fetal movements, they would advise them to come in for assessment. If women had symptoms and signs of a serious medical complication such as pre-eclampsia, then they would also advise them to attend.

[52] They were still trying to get used to wearing facemasks. At that point patients were not required to wear a mask but the staff were. It was harder to build rapport with patients and their families when they could not see most of your face. Dr Northridge remembered she was wearing a mask when she first met Ms Hunter. Her ability to convey her feelings of empathy were affected by wearing the mask and it still felt very unnatural at that early stage in the pandemic.

[53] During the pandemic and in May 2020 the consultant covering the labour suite also covered elective caesarean sections. Pre-pandemic those women having elective caesarean sections used to be operated on a separate list and by a separate consultant / doctor. During the pandemic, the senior trainees did the routine and low risk elective sections and the consultants oversaw those trainees doing the theatre lists. That created the added pressure of being available should they need help but also managing theatre times to ensure that deliveries of the babies of the women in for elective deliveries did not clash / occur at the same time as the emergency deliveries of babies on the labour suite insofar as they could.

[54] They also required to use theatre if they had other emergencies in labour suites such as bleeding post-delivery or a complex perineal tear. They had a lot more

responsibility and a lot more to juggle during the pandemic and they still covered emergency admissions of women who they thought did not have COVID. After 16.00 she was also responsible for covering the care of women on the antenatal and postnatal wards.

Labour Ward Activity

[55] Dr Northridge very clearly remembered the day that Ms Hunter died. Hers was the only maternal death she had experienced as a senior doctor.

[56] Dr Northridge remembered that 13 May 2020 was a very busy day with several women in labour. They also had the theatre list full of women having scheduled elective caesarean deliveries. As the consultant on duty that day she was required to oversee all of the labour ward and theatre activity as well as triage.

[57] Unusually they also had two women with very sad outcomes under their care at the same time that day on the labour suite. One was Ms Hunter, whose baby was known to have already died at term. The other woman's baby was still alive but was at an earlier gestation and it had been discovered at her antenatal scan that the baby had significant abnormalities. That woman had taken a difficult decision to opt for termination of her pregnancy as a result. Usually she would have been cared for in the Tulip Suite but Ms Hunter was there so the other woman was managed in another birthing room. They were very experienced in dealing with women having terminations and the delivery of stillborn babies but it was definitely unusual to be dealing with two

simultaneously, whilst also managing additional demands caused by the early stages of the COVID pandemic.

[58] The woman who was having the termination for a fetal abnormality took a lot of management. Understandably she had many questions and concerns and needed a lot of reassurance. Dr Northridge was dealing with her intermittently throughout the day and altogether she spent hours with her. That morning she had to explain to that woman that there may be signs of life when her baby was born. That conversation was time consuming giving the distressing nature of it. She needed to be clear with the parents that these signs of life could be extremely distressing for them as they had to literally watch as their baby died and there would be no resuscitation effort / intervention from staff. It was a very emotionally charged discussion.

[59] One of the options possible in that situation was a procedure called feticide. It was an extraordinarily difficult thing for all concerned. Feticide involved using ultrasound scanning as a guide to inject potassium chloride using a needle directly into the baby's heart before it was delivered, which caused the heartbeat to stop. The mother was monitored by ultrasound until the baby's heartbeat stopped and it meant that the baby died swiftly and with minimal pain before delivery. That avoided the additional distress to the parents of seeing their baby born and struggling for life when the baby would inevitably not survive. It was a very difficult and emotional thing to be involved in and a personal choice for parents as to whether they underwent that procedure or not. It was also a procedure some doctors conscientiously objected to so there were fewer staff that offered that to women.

[60] The other woman had been counselled by Dr Northridge's colleague Dr Nicoll before she attended for her termination and had not wanted to have a feticide. Dr Nicoll suggested that Dr Northridge check that remained her wish when she arrived and over the course of the morning the woman changed her mind. Since she had already received medication to commence her termination, so they had to proceed with the feticide that day. Dr Northridge therefore had to spend a lot of time with her to explain the procedure and allow her to reach an informed decision. She could not delegate that task to a midwife. Feticide involved two consultants, one to perform the procedure itself and one to perform the scan and confirm death. Dr Northridge had to arrange for another consultant to perform the procedure while she assisted by performing the scan.

[61] At the same time, Dr Northridge was also planning and delivering Ms Hunter's care and was very aware that she and her family had suffered the tragic loss of their own baby. Ms Hunter had been allocated an experienced midwife (Midwife McMartin) to look after her and Dr Northridge was the consultant on duty overseeing her case.

Ward Round

[62] When Dr Northridge came on shift, she did a handover as usual at 08.00 and the ward round took place. Her recollection was that she did the ward round with Dr Hawco, a speciality trainee in her fourth year ("ST4"), while the senior trainee started on the elective list. She instructed the senior trainee to consent all of the patients, tell her about any concerns or issues and ultimately check with her before proceeding which he did.

[63] Before Dr Northridge went into the Tulip Suite to see Ms Hunter, Dr Hawco had reviewed the medications prescribed to Ms Hunter as she had been asked to prescribe subsequent doses of misoprostol for Ms Hunter by the midwife. Dr Hawco asked Dr Northridge about the dose of misoprostol which Ms Hunter had been given earlier as she felt it may be higher than recommended in this situation. Dr Northridge remembered that they looked at the kardex for Ms Hunter which was on the desk outside the Tulip Suite as well as well as the kardex for the woman who was having the feticide. Both had been prescribed misoprostol which was a difficult drug to sense check as there were different doses required for different situations. The woman having the feticide had been prescribed 800 mcg. Ms Hunter had been prescribed 400 mcg.

[64] Dr Northridge thought that Ms Hunter's dose might be high for a full term induction for an intrauterine death, although it was not a dose she had not seen before in that situation. Dr Northridge's plan was to see Ms Hunter and review her, then take a view on what to do. She knew the guidelines had recently been updated and wanted to check those, as well as checking on how the patient was, before she made a plan.

[65] Midwife McMartin gave Dr Northridge a briefing outside the Tulip Suite before she went in. Dr Northridge knew Ms Hunter was a first time mum with a known intrauterine death and that misoprostol had been administered about an hour previously. She thought it had mostly been absorbed already. She was aware that a potential side effect was uterine hyperstimulation or contractions which were excessive. Hyperstimulation was regularly seen in labouring mothers and they knew how to manage it if it recurred.

[66] Dr Northridge remembered having a discussion with Ms Hunter and her husband in the Tulip Suite, who were sitting together on the settee. She recalled Ms Hunter had no venflon or gown on during the discussion and she was dressed in her normal clothes on the settee. The discussion took around 38 - 40 minutes.

[67] As neither Dr Hawco nor Dr Northridge had met them previously they started by offering their condolences and trying to build a therapeutic rapport with Ms Hunter. Ms Hunter and her husband were both understandably upset and they both asked a lot of questions about their baby.

[68] She remembered that they asked to have the baby sexed before delivery so that they could have the right clothes to dress the baby in and this was arranged.

[69] During the discussion they covered the basics about the facilities in the room and the awful circumstances. Dr Northridge explained that it was not their fault, as parents were often already in a blame cycle in that situation. Dr Northridge thought they said that the baby's movements were "different" the previous day but she did not recall them saying anything else. She asked how she had been over the last few days and she said she had been fine so there was nothing jumping out medically to explain why their baby had died.

[70] She remembered that they wanted to discuss what investigations would be carried out after the birth to establish what had happened. Dr Northridge did not tend to go into huge detail at that stage about post-mortem arrangements but she told them that the pathologist would look at why their baby died if they wished and genetic samples could be taken at post-mortem.

[71] They then covered pain relief. Dr Northridge reassured Ms Hunter that she could have as much analgesia as she needed and although there was a theatre and labour suite available she was not expecting her to need it.

[72] Dr Northridge thought she said Ms Hunter would be given another, lower dose of misoprostol later if they thought it was necessary but she did not say that there had been an error in the earlier prescription because at that stage she was not sure there was an error. She had not checked the guideline.

Discovery of Overdose

[73] When Dr Hawco and Dr Northridge left the Tulip Suite they checked the new guideline on Dr Northridge's phone and confirmed that in fact the dose that Ms Hunter had been given was more than the guideline dose. Some drugs which were administered vaginally were in the form of a pessary which had a string attached so that they could be pulled out and removed if required. Misoprostol was not one of those. It was a small tablet which quickly dissolved in the vagina and became a sort of chalky paste. Dr Northridge did not attempt to remove it as she considered it would largely have been absorbed by that time and taking effect.

[74] Generally, when there had been a drug error, it was Dr Northridge's usual practice to have a discussion with the patient, explain what had gone wrong, apologise and document that discussion in the notes. Dr Northridge fully intended to do that in Ms Hunter's case later in her care. She did not feel it was appropriate to discuss it with

her on first meeting as she was trying to build a rapport in a distressing situation and did not want to alarm her.

[75] There was a dispute between the parties in relation to the actions of Dr Northridge, which is dealt with at paras [245] - [277].

[76] At no point was Midwife McMartin concerned regarding the difference in dose. She told Ms Hunter and her husband that the protocol had changed that day but she did not go into detail about the overdose because she did not wish to cause further anxiety and because she was not worried about it from a clinical perspective. She did say that Ms Hunter may not need any extra doses. If she had thought that giving that dose was a mistake and required emergency action then she would have discussed it with the midwifery team leader but the dose of misoprostol prescribed varied from clinicians and it was a dose that had been given in the past.

[77] Midwife McMartin regretted not being fully candid with Ms Hunter and Mr Quate in respect of the change in protocol and discrepancy in dose but she was not concerned and did not think it was clinically significant.

[78] In hindsight, Midwife McMartin regretted not challenging the variation in prescribing misoprostol doses when more often than not it was different to the protocol. However she would never have administered a dose which was unusual or caused her concern. She looked after all her patients with care and compassion. She was diligent in her practice and if she had felt that the misoprostol dose was out of the ordinary, she would never have given it to Ms Hunter. She had reflected at length about her care of Ms Hunter and believed she looked after her to the best of her ability.

Management of Labour

[79] Dr Northridge was kept up-to-date on Ms Hunter's progress throughout the day although she did not get back to see her. She saw Midwife McMartin go for diamorphine and was advised that Ms Hunter was in early labour. Progress was satisfactory and as there was no cause for concern, she was not called for. She did not expect Ms Hunter to deliver before her shift finished and thought she would see her several times before then but due to other demands on her time she was unable to return.

[80] Midwife McMartin explained that managing labour when the baby was known to have died was fundamentally different to normal labour arrangements, in which the monitoring of the baby was obviously important. They left the parents in peace as much as they could unless the parents asked them to stay with them throughout, which they were happy to do.

[81] Midwife McMartin would have popped her head in between 09.00 and 10.00 to check if Ms Hunter and her husband needed anything but did not make any notes to record that if they were okay and she did not actually do anything for them. She was confident that an hour was longer than she would have left them. She regretted not making more detailed notes about this and other aspects of Ms Hunter's care, but the absence of notes did not mean that the care was not delivered. She was sorry that her documentation was not fuller and that she had not been more descriptive in her assessment and timings of abdominal tone.

[82] Midwife McMartin's recordkeeping was inadequate and was not in accordance with NHS Tayside's recordkeeping policy.

[83] Over the course of the morning not much happened and Ms Hunter remained comfortable and well with no real signs of labour. Between 10.05 and 12.00 Midwife McMartin would have been in the room a couple of times to check but she would not document those times when no care was delivered. She recalled that Ms Hunter started getting uncomfortable around 12.00. Midwife McMartin documented that Ms Hunter declined any analgesia at that stage so there was nothing to cause concern. Her usual practice in that situation would always be to palpate the abdomen to check for uterine tone. She first palpated Ms Hunter's abdomen at 12.00. In addition, she did a set of observations which were normal because she had documented an early warning score of zero.

[84] In order to carry out palpation, Ms Hunter would have been sitting up or reclining back on a labouring bed and Midwife McMartin would have gently put her hands on her abdomen to feel it for going soft and hard. She would have been looking for the abdomen to be soft and non-tender between contractions which were normal findings. She regretted not having recorded each time she palpated.

[85] At 12.45 she noted that Ms Hunter buzzed for help. She went straight to the room and again palpated her abdomen. She recorded mild / moderate contractions and noted that the tightening were a bit irregular. That meant that she could feel them when she palpated her abdomen but they were not lasting long on palpation.

[86] There was a factual dispute between the parties as to whether Ms Hunter became hyperstimulated, which is dealt with at paras [190] - [244].

Ultrasound Scan for Sex of Baby

[87] Consultant Obstetrician Dr Mary Smith remembered Ms Hunter and specifically remembered going to scan her at around 10.45. She remembered being told that Ms Hunter and Mr Quate were keen to know the sex of their baby as Mr Quate was going to buy clothes and they wanted to get something that they felt was suitable for the sex of their baby.

[88] Dr Smith took the portable scanning machine to the Tulip Suite where Ms Hunter and Mr Quate were. She introduced herself and advised she was there to do the scan. She gave her condolences and explained what she was scanning. She did not know if she looked at the patient notes before she went in. Dr Smith's recollection was that she was called away from conducting an out-patient clinic to perform the scan for them so she thought she would have just gone in and done the scan that had been requested and then got back to her other patients as she had a waiting room full of women waiting to be seen.

[89] Dr Smith was not involved in any other aspect of the care for Ms Hunter. She would have had no reason to look at her kardex. She wrote in the notes to record that she had carried out the scan and thought the baby was probably a girl.

[90] Dr Hawco was present while Dr Smith performed the scan. She wrote up the ward round notes after Dr Smith had been in the Tulip Suite.

Pain Relief

[91] Midwife McMartin recalled Mr Quate being quite distressed as his wife was in pain. She had witnessed many partners commenting on how helpless they felt to see their partner in pain but Ms Hunter appeared to be labouring as she would have expected. Her contractions were increasing in intensity but she had good resting tone in between contractions. She was given co-codamol and looked uncomfortable but not distressed. Co-codamol could sometimes be enough to take the edge off.

[92] At 13.15 Ms Hunter appeared to be becoming more uncomfortable so they again discussed her options for pain relief and Ms Hunter opted for diamorphine. There was a small amount of vaginal blood loss which was not unusual. A bit of blood could be normal in the form of show because as the cervix began to open, a bloody mucus show was sometimes passed. However, with any blood loss she would palpate the abdomen to check for any sign of abruption, which could present with vaginal bleeding. She was reassured by this examination.

[93] Ms Hunter's labour was continuing to progress and she wanted some more pain relief. Midwife McMartin could recall the contractions appeared more intense but there was still resting tone between contractions. She wondered if Ms Hunter might be advancing rapidly in labour. She obtained verbal consent to perform a vaginal examination to ensure that birth was not imminent. From the notes she could see that she was 3cm dilated. She told Ms Hunter and Mr Quate of the findings and left the room to speak to the anaesthetist Dr Forster about siting an epidural. They tried to

prioritise the comfort of women in the Tulip Suite as much as they possibly could and Dr Forster came immediately to start an epidural when she asked him.

Maternal Collapse

[94] The next entry in Ms Hunter's records was a retrospective note at 17.15 which detailed events from 14.23. Those times were estimated initially as no-one was scribing when Ms Hunter first collapsed. They were all focussed on resuscitation.

[95] At around 14.25 Consultant Anaesthetist Dr Michael Forster attended at the Tulip Suite, having been requested to administer an epidural for Ms Hunter. Ms Hunter was sitting on the edge of the bed facing him, responsive and using gas and air. Mr Quate was behind her. She was in established labour but she appeared to be absolutely fine.

[96] Dr Forster and Midwife McMartin assisted Ms Hunter into a better position on the bed for the epidural but Ms Hunter slumped forward and it was then decided that Ms Hunter should sit on the floor for comfort. Ms Hunter then became floppy and appeared to be experiencing a vasovagal episode (a faint).

[97] At around 14.28 Ms Hunter was laid into the recovery position on the floor and she was able to respond to Dr Forster's request to lift her head so that a pillow could be placed under her head. Her pulse was checked and found to be normal. Midwife McMartin once again palpated her abdomen, which was soft. There was no vaginal bleeding. Midwife McMartin went through, in her head, what might be causing Ms Hunter to collapse. Midwives did regular training on what to do in those scenarios

and she had recently completed training on maternal collapse in the Tulip Suite with Dr Forster so it felt like a real life repeat of that training scenario.

[98] At around 14.29 Ms Hunter became unresponsive. Midwife McMartin pulled the buzzer.

[99] At around 14.30, facial oxygen and IV fluids were commenced. Ms Hunter's airway was maintained.

[100] An emergency ABC assessment was carried out by Dr Sarah Hawco to check Ms Hunter's airway, breathing, circulation and response.

[101] At around 14.40, a "2222" crash call was made. Ms Hunter however remained unresponsive to stimulus.

[102] Dr Northridge was dealing with the feticide when she was bleeped to attend for an emergency. She went straight away and arrived when Ms Hunter was still on the floor after her collapse. She was told Ms Hunter had collapsed a couple of minutes before. She checked with Consultant Anaesthetist Dr Forster whether Ms Hunter was conscious as she was considering a peri-mortem caesarean section but she was still conscious and would have felt any operative procedure. At that point Dr Northridge thought there might have been a uterine rupture leading to excessive bleeding so she put out a major haemorrhage call and advised theatre they were coming for a caesarean section and anticipated that full intubation and general anaesthetic would be required. They put her on a pat slide and got her onto a bed and into theatre.

Resuscitation Efforts

[103] At around 14.50 Ms Hunter was transferred to theatre for further resuscitation including peri-mortem caesarean section. Ms Hunter's cervix was 3cm dilated, she was unconscious but still had cardiac output with normal pulse rate and blood pressure. Her oxygen saturation was 94%.

[104] At around 14.52 a cardiac arrest was declared. A peri-mortem caesarean section was performed by Dr Northridge whilst the anaesthetic staff were intubating Ms Hunter simultaneously. There was always a caesarean tray set up in the theatre and Dr Northridge grabbed the scalpel from that tray without scrubbing for theatre and started the incision. The caesarean section needed to happen within 4-5 minutes of collapse for there to be a chance of resuscitating Ms Hunter so the only logical thing to do was to begin unscrubbed. She had called for another Consultant Obstetrician (Dr Nicoll) but he was still on his way at that point.

[105] Dr Nicoll prepared a detailed contemporaneous note at the end of the resuscitation efforts. His recollection of events was much better then than it was now. On his arrival he scrubbed and took over the caesarean section and Dr Northridge went to scrub then came back. They were surprised and disappointed to find that Ms Hunter did not have a ruptured uterus as they could have resolved that by surgical repair and given blood to replace the blood loss. Her uterus appeared intact. When Dr Nicoll realised there was no obstetric cause for Ms Hunter's collapse, he became much more pessimistic about her prospects of surviving. Nevertheless they continued to exhaust all

options for over an hour in the hope that Ms Hunter might be successfully resuscitated and survive.

[106] At around 14.56, baby Olivia Lennox Hunter-Quate was delivered by caesarean section.

[107] Cardiopulmonary resuscitation and defibrillation commenced and went on for a long time. Automated Electronic Device pads were placed on Ms Hunter's chest but she did not have a shockable rhythm.

[108] A chest x-ray was performed and the surgical team were requested to attend at theatre. Ms Hunter was given tranexamic acid and a blood transfusion and fresh frozen plasma transfusion was commenced. A cardiologist was asked to attend and performed an echocardiogram to rule out cardiac tamponade.

[109] Consultant Obstetrician and Gynaecologist Dr Gordon was in a meeting when he was called. He attended the maternity theatre at around 15.50. The resuscitation had been underway for over an hour by that time. He changed into theatre clothes. There were already a large number of senior clinicians present.

[110] The information Dr Gordon was given was that this was a woman who was undergoing induction of labour for an intrauterine fetal death. Ms Hunter had arrested and was undergoing resuscitation. Dr Gordon was briefed by Dr Northridge and Dr Nicoll about the situation and asked if there was anything he could add to the resuscitation. At that time their efforts had been ongoing for some time, there was coagulopathy and there was a difficulty in controlling the bleeding. An interventional radiologist was present to try to help control the bleeding.

[111] The only advice Dr Gordon gave related to clamping the uterine arteries. Uterine artery clamps were applied. There was nothing else that he could add to what had been done so far in resuscitation. They briefed him that they suspected an AFE. Dr Gordon also thought that this seemed the most likely diagnosis. He remained in theatre until the resuscitation was halted. The multi-disciplinary team agreed there was nothing further that could be done to resuscitate further.

[112] Resuscitation measures and advanced life support continued in theatre until 16.29 when Ms Hunter's life was pronounced extinct by Dr Forster.

[113] The emergency caesarean section and cardiopulmonary resuscitation involved contributions from consultant anaesthetists, consultant intensivists, consultant obstetricians, general surgery and cardiology. The resuscitation efforts were of an extremely high standard. No steps which could have been taken were omitted.

[114] A large team of very senior clinicians worked together as a team for several hours in theatre. They did absolutely everything they could to exhaust all explanations for what happened and provided every possible treatment to give Ms Hunter the best chance of survival. Dr Northridge was very proud of the performance of the team even though the outcome was the opposite to which everyone had hoped and worked towards. They were all very shocked and upset by Ms Hunter's death

[115] Dr Forster calculated that in the context of his whole career, maternal death in a unit the size of Ninewells Hospital would statistically happen every 3 years. He had experienced two maternal deaths in his career: one in Africa related to malaria; and one in Singapore. Maternal deaths usually occurred weeks down the line and not at that

stage. It was really unusual for someone who was well to drop down so quickly. Most anaesthetists would never see this in their career. Dr Forster did not think there was anything else they could have done. Senior staff were in attendance instantly. It was a multi-disciplinary team that worked well together. AFE was rare. When Dr Forster started his career nearly all people who had an AFE died but there had been progress since then.

Reporting of Death

[116] Dr Northridge broke the news of Ms Hunter's death to Mr Quate and her family and went with him to see his wife after she had died. They took Olivia with them as he wanted them to be together.

[117] That evening Dr Northridge called the procurator fiscal and the police and advised them that they had an unexpected and unexplained maternal death and that the patient had received a non-standard dose of misoprostol. Dr Northridge was completely upfront about what had happened. Dr Hawco filled out a DATIX for the drug error.

[118] Dr Northridge filled out the paperwork the following morning for the procurator fiscal and submitted it by email as well as having a phone conversation with him.

Post-Mortems

[119] Dr Northridge arranged for two post-mortems to be conducted in the same place so that Ms Hunter and Olivia would not be separated. Normally one of the

examinations would take place in Aberdeen and one in Dundee but Mr Quate did not want that to happen so they made alternative plans to make sure Ms Hunter and their Olivia could stay together.

[120] Ms Hunter and Olivia's bodies were conveyed to the Dundee mortuary and on 15 May 2020 were examined by Dr David Sadler, Forensic Pathologist and Dr Paul Brown, Paediatric Forensic Pathologist. The causes of Jacqui Hunter's death were recorded by them as:

I. (a) amniotic fluid embolism; and

II. pregnancy, intrauterine death

[121] Dr Brown obtained his medical degree in 1987 and was admitted into the Royal College of Pathologists in 1994. He had carried out post-mortems on thousands of babies and was instructed by both defence agents and the procurator fiscal.

[122] Dr Brown explained that for AFE to occur, two things required to happen: (i) the amniotic fluid had to enter the maternal circulation; and (ii) the mother required to have an extreme allergic reaction resulting in a cardiovascular collapse. It was well documented in the literature that AFE could occur where no tear was identified by the naked eye on examination of the membranes around the amniotic sac or placenta. That did not exclude a microscopic tear being present. It was something that they did not have an understanding of because cases were rare and they did not have any evidence of it happening in real time. This was the first AFE case in which he had done the autopsy himself. Dr Brown had seen AFE cases carried out by other pathologists, including his predecessor. It was a very complex syndrome.

[123] The first issue was that of amniotic fluid and debris, for instance, cells coming from the baby's skin. That got into the maternal vessels in the uterus. The second issue was the amniotic fluid moving to a different part of the circulation. That movement was what they called embolism. It was agreed in the literature that the fluid and debris moved from uterine vessels and got to at least lung circulation and within the lung circulation an allergic or allergic like reaction to that material happened. Characteristically, it came on extremely suddenly and that fitted with Ms Hunter's circumstances.

[124] In this particular case, debris from the amniotic fluid was found in Ms Hunter's brain vessels. That finding confirmed AFE. Within the thrombosis (blood clot) there were scattered squames. Squames were the flat skin cells on the surface of the skin that fell off naturally. Babies shed them into the amniotic fluid and they could not been seen by the naked eye but they could be seen microscopically. It was conjecture, but a microscopic membrane tear might have occurred which was not detected at caesarean section or at autopsy.

[125] Autopsy of the stillborn infant revealed inflammatory changes in the placenta and membranes in keeping with ascending infection (chorioamnionitis) as the cause of intrauterine death of the baby. A fetal inflammatory response was present, in keeping with the infection occurring prior to the baby's death. Post-mortem bacteriology was negative in the baby and this presumably reflected the interval between the baby's death and autopsy. The maternal death was attributed to AFE secondary to intrauterine death.

[126] In Dr Brown's view, Olivia died from a combination of chorioamnionitis and delayed villous maturation. Given findings of maceration (changes in the baby's skin including skin slippage) at post-mortem, he was of the view that she died at least four to 6 hours before her death was confirmed. However, it was possible that Olivia had been dead for at least a day and possibly up to a week. This was a complex area and though he thought in this case it was likely to be less than a week, he was unable to be definitive.

Changes to Prescription Practice

[127] After Ms Hunter's collapse, Dr Lynch realised that she had signed her name next to the first doses of misoprostol. Dr Lynch was not aware she had done this. She could only assume she did it subconsciously when she had the notes in front of her. She had signed many thousands of prescriptions over a long period and thought she must have done so automatically. Dr Lynch accepted this was an error and that it was her responsibility to check the dose. That was what she intended to do. She would not usually be prescribing the drug. One of the registrars would generally do it but everything was being done differently at that time because of the pandemic.

[128] Dr Lynch usually gave six doses and only two were signed. The dose she prescribed was the most common dose for that drug. Many women were given a significantly higher dose if they were at an earlier stage of their pregnancy.

[129] Ninewells Hospital now had a new prescription software called HEPMA which reduced the potential for this mistake to happen. After Ms Hunter's death and prior to

HEPMA they introduced a double check on dosage of this drug. Dr Lynch was confident that the same error would not occur now because of the changes they had introduced since Ms Hunter died.

[130] Dr Antony Nicoll qualified as a doctor from the University of Dundee in 1995. He completed his specialist training in obstetrics and gynaecology in July 2006 and was immediately appointed as a Consultant Obstetrician and Gynaecologist in NHS Tayside and had worked in that role since then. Since 2010 he had worked exclusively in obstetrics. He was the Clinical Director for Women's Health Services in Tayside from 2014 to 2018. Between 2019 and 2021 he was an Associate Director of Medical Education. He was reappointed as Clinical Director for Women's Health in March 2021 and worked in that role until July 2023.

[131] Dr Nicoll was made aware of the misoprostol dose when he left the maternity operation theatre immediately after Ms Hunter's death and met Dr Lynch. She informed him that Ms Hunter received a high dose of misoprostol.

[132] Misoprostol was a tablet formulation and at the time of this episode was stocked in the labour ward at Ninewells Hospital as a 200 mcg tablet (Cytotec). The dose range for misoprostol within women's health was 25mcg - 800mcg. Misoprostol was used across obstetrics and gynaecology for the management of termination of pregnancy, for induction of labour following an intrauterine death and for the management of postpartum haemorrhage. The dose of misoprostol varied depending on the clinical situation and gestation. Misoprostol could be administered in the form of one eighth of a tablet or up to four tablets.

[133] There was a prescription error. Within the local guideline for the induction of labour following intrauterine fetal demise in the third trimester of pregnancy, the suggested dose for misoprostol was 50 mcg. In Ms Hunter's case 400 mcg of misoprostol was prescribed and subsequently administered.

[134] Dr Nicoll met Ms Hunter's family with the medical nurse directors in May 2021 and offered his sympathies and condolences for their losses. He also apologised to them at this time for the fact that he had not met with them following Ms Hunter's passing.

[135] Decisions about post-pregnancy follow-up care and support were made by the women's health management team and neither Dr Northridge nor Dr Nicoll were involved in providing care for Ms Hunter's family following her passing and the loss of her baby. Dr Northridge and Dr Nicoll were willing to meet Ms Hunter's family to answer their questions and ensure that all support was available to them. Dr Nicoll again wished to offer his sincere condolences to Ms Hunter's family in respect of her very sad death and offered his sympathies for the loss of Ms Hunter and Olivia.

[136] Dr Nicoll explained in his oral evidence that there were many differences between the way that misoprostol was administered currently compared to the situation at the time of Ms Hunter's death. At the time of Ms Hunter's death misoprostol was prescribed by an individual on a handwritten kardex. Under the old system a higher dose could be given without checks and staff were used to giving different doses in different settings.

[137] Following on from Ms Hunter's death, misoprostol required to be prescribed by a consultant. Before it was administered, a checklist required to be completed which

detailed indications for misoprostol and split it into different gestations. Thereafter, it would be prescribed on a kardex and then the checklist and kardex would be brought together.

[138] The person who administered misoprostol was usually the midwife. Now two midwives checked the prescription of misoprostol. There were multiple safety nets to make sure the person administering and the person receiving were using an appropriate dose since Ms Hunter's passing.

[139] Hard copies were printed but the checklist was also available electronically on the intranet so that everyone was able to have access to the document in the women and children's section to refer to it if appropriate. Hard copies were kept on the labour ward and required to be completed before any medication was given. It required to be signed by a consultant, prescribed by a consultant and then signed by a midwife as well. The midwives had taken on a second check themselves to protect women and themselves.

[140] The process was always under review and should be updated every 3 years. Since the checklist had been brought into place there had not been an adverse event in relation to misoprostol. Since Ms Hunter's passing they had not incurred an overdose of misoprostol for any women even though it was used relatively commonly.

[141] HEPMA was the electronic prescribing system. That was used across NHS Tayside and was introduced to maternity services in January 2024. A consultant on the labour ward would use the checklist, log into HEPMA and prescribe misoprostol. There was an alert on HEPMA when selecting misoprostol as an option indicating that it was associated with adverse outcomes in a maternity setting and to use the checklist. There

was also an alert for when misoprostol was administered. These issues had been raised nationally.

[142] Professor Marian Knight, perinatal epidemiologist and public health physician was currently a professor of maternal and child population health at the University of Oxford. She had led the UK Obstetric Surveillance System (UKOSS) UK National Study of AFE since 2005. Her research focused on prevention and management of uncommon and severe complications of pregnancy. She used a range of methodologies including observational studies, clinical trials and quality to research. She had led the MBRACE-UK Confidential Enquiries into Maternal Deaths since 2012.

[143] Concerns around erroneous use of excessive misoprostol doses had been raised since 2014 by the MBRACE UK Confidential Enquiries into Maternal Deaths, yet such errors continued to occur. Guidance from the Royal College of Obstetricians and Gynaecologists on the appropriate dose to use for induction of labour in women with a late intrauterine fetal death had been available since at least 2010, although formulations to allow administration at low doses vaginally without division of tablets were not available.

[144] Professor Knight agreed that it would be much harder to give a big overdose now in light of the evidence from Dr Nicoll that 25 mcg tablets were being used now. That would require 16 tablets to be prescribed and so that was a human error that was unlikely to happen. Human factors were important aspect of any patient safety concerns.

Scope of Inquiry

[145] In light of the considerable volume of evidence that was not in dispute, the scope of the inquiry was restricted to the following three issues:

(i) Did Ms Hunter report reduced fetal movements to Midwife Calder on Monday 11 May 2020 and might further investigations have avoided her death?

(ii) Was Ms Hunter hyperstimulated as a result of the incorrect dose of misoprostol on Wednesday 13 May 2020 and might the correct dose have avoided her death?

(iii) Should Dr Northridge have discussed the overdose of misoprostol with Ms Hunter on Wednesday 13 May 2020 and had she tried to remove it might her death have been avoided?

Authorities

[146] Parties referred me to the following authorities:

- *Bellfield, Marion* [2011] FAI 21;
- *David Grier* v *Lord Advocate* [2022] CSIH 57;
- *Myles, Lynsy (FAI)* (unreported, 27 February 2004); and
- *Fraser Sutherland* v *Lord Advocate* [2017] CSOH 32.

(i) Did Ms Hunter report reduced fetal movements to Midwife Calder on Monday 11 May 2020 and might further investigations thereon have avoided her death?

Evidence of Mr Quate

[147] Mr Lori-Mark Quate was employed as a property valuer as was working towards his RICS chartership. He explained how he had gone to school with Ms Hunter, before going to different universities and rekindling their relationship towards the end of 2007. They married on 8 September 2018. His hope was that the inquiry would uncover lessons to be learned. He felt that his wife had lost her life in such a tremendously tragic and needless way.

[148] Mr Quate drove his wife to the appointment at Lochee Medical Practice on Monday 11 May 2020. He was transitioning between jobs at that time and was working part-time.

[149] The appointment took place during the first COVID lockdown so he was not allowed to go into the medical practice with his wife and waited outside. The period of time between dropping her off and her coming back out felt very quick. He did not know what the appointment was to entail. At that stage they did not know the sex of their baby. The plan had been to have a surprise.

[150] When his wife came out of the appointment, she got into the car and said that it was just a quick appointment for taking blood and urine samples. As she put on her seatbelt, Ms Hunter said she was aware that their baby's movements were not the same in that they had reduced. That was a warning flag for Mr Quate because he understood that his wife was telling him about reduced fetal movements, even though he was not a

pregnancy expert. Ms Hunter was just making conversation and said while she was in the appointment she noticed how their baby had reduced in movement. She said she wondered if it was because the baby was 39 weeks old and so close to being due and was therefore so large and the womb so small that the baby was not able to move and kick as hard as it was before. She made a gesture like the baby was all tucked in. She said the midwife responded and said that it was most likely the case, which confused Mr Quate so he waited for a bit more information. Ms Hunter told him that the midwife told her what sex she thought the baby was going to be and that if she did not deliver by the next appointment then she could have a sweep. In the meantime the midwife gave Jacqui advice which Mr Quate could not remember verbatim but included eating pineapple, walking sideways and bouncing on a ball to encourage the shifting of the baby. With that, any concerns Mr Quate had were alleviated. His wife did not seem to have any concerns so they just returned home and had a late breakfast. She had friends coming over for lunch.

[151] Prior to the appointment his wife had not mentioned anything about the baby moving less in an overt kind of way. On Sunday 10 May 2020 she mentioned very much as a throw away comment, nothing of concern, that the baby was being a bit quiet that night. It was not like a reduced movement so Mr Quate did not consider that his wife had said anything to him that indicated a reduction of movements, just that the baby was a bit quieter that night.

[152] When Mr Quate got home from work later that day on Monday 11 May 2020, Ms Hunter was having a bath. She looked concerned. He asked if she was okay and she

did not verbalise that she was really worried or stressed but she just looked it. She pretty much repeated what she said before about movements, ie that the baby was just not kicking as hard, that it felt like more of a swishing sensation. She felt a bit tired and wanted to have an early night so she went to bed.

[153] Due to COVID Mr Quate and his wife were sleeping in separate rooms because they did not want to take the risk of passing on COVID because he was driving out and about. Mr Quate had his dinner and let his wife go to sleep.

[154] When he woke up the next morning on Tuesday 12 May 2020, he heard his wife speaking downstairs. He struggled to remember the time but felt it was quite early on. He wondered what was going on and whether they needed to get to the maternity unit quickly. His wife said she had woken up in the middle of the night at around 03.00 and went to the toilet. She realised she had not felt a kick feeling from the baby so decided to count the kicks that she could feel but fell asleep doing so and woke up at 06.00. She put two and two together and deduced that the baby must not have been kicking to keep her awake. She went downstairs, thinking that the baby was still possibly asleep. Food was usually the one thing that got the movements going so she had some toast but it did not elicit any change or kicks. She had a moment of panic so she got a big glass of ice cubes and glugged the whole lot down, which did not elicit a change. There was nothing else to do but call triage and ask what steps to take next and that was what Mr Quate heard when he came downstairs.

Evidence of Midwife Calder

[155] Midwife Abbie Calder trained at Robert Gordon University and obtained her Batchelor of Midwifery degree. She started work at the Dundee Midwifery Unit in 2017 and had worked in triage, labour suite, ante-natal and post-natal wards. Since September 2018 she had been working as a Community Midwife.

[156] The pandemic completely changed how she and her colleagues dealt with pregnant women. Prior to the pandemic they had been very much focussed on continuity. During COVID women saw whoever was working that day.

[157] On 11 May 2020 Ms Hunter had a 39 week appointment at Lochee Medical Centre. Due to COVID she attended alone. The appointment was a blood pressure and urine check. Midwife Calder checked Ms Hunter's blood pressure, which was normal. She checked the urinalysis, which was negative. Her temperature was taken and within normal limits. Ms Hunter was feeling well. At 39 weeks onwards Midwife Calder always asked about any signs of labour in case there were any concerns and she said there were no signs of labour.

[158] As always Midwife Calder asked about fetal movements and Ms Hunter said they were normal. There were no concerns at that check. The normal routine advice given to Ms Hunter as with all women was to keep up, keep active, try to walk upstairs sideways to get the head between the pelvis, to try and relax and from 36 weeks onwards try to eat six dates a day to encourage labour. She did not mention pineapple. She did mention bouncing on a ball to maximise the position of the baby. She remembered discussing a sweep because Ms Hunter then told her about a funny

interaction she had with her workplace when she discussed that. She remembered guessing the baby's sex but it was obviously a matter of chance and there was no science behind it.

[159] Ms Hunter did not say anything about her fetal movements being reduced. She said they were normal. Midwife Calder could not remember the exact phrase but she remembered having a conversation about fetal movements and there being no concerns. Ms Hunter never said anything that meant a reduction in fetal movements. She did not say anything about the way the baby moved being different from before.

[160] Midwife Calder did not say anything about the baby being so large and the womb being so small that the baby could not kick as hard as before. She did not remember any conversation like that. It was Midwife Calder's position that none of those things were said at the appointment and that Ms Hunter did not raise any concerns with her about fetal movement. There was no scope for misunderstanding. It simply did not happen.

[161] If Ms Hunter had reported reduced fetal movements of any sort then Midwife Calder would have referred her to triage and listened to the baby's heartbeat. The type of language that women tended to use was to say that the baby had been a bit quiet that day. Midwife Calder always asked if the baby was moving the same as normal. She always asked about movements because that was the main indicator of the baby's health. She would ask how the baby was moving today and if there had been any change in the normal pattern.

[162] Midwife Calder specifically noted on 11 May 2020 that fetal movements were felt as normal. She would always write what happened in an appointment and would never record something in a patient note that had not happened. There was no reason to tell Ms Hunter that she did not need to be concerned about reduced fetal movements. It would not generate additional work or any tasks for Midwife Calder if she felt something needed to be done.

[163] Midwife Calder would always refer a woman to triage if she was unsure about her baby's movements, even if it was just 100% normal. Sometimes the wait time could be lengthy so she would have to state the reason why she was sending the woman to triage and say it was for the benefit of the baby. She often had to talk women into going to triage because they did not want to sit around for hours waiting to be seen. She would never give advice that a small womb and a big baby might make movements lesser. Regardless of fetal size, movements should always remain the same.

Expert Evidence of Dr Owen

[164] Dr Philip Owen had produced five reports dated 3 September 2021; 29 May 2023; 10 November 2023; 5 February 2024; and 10 May 2024 which he adopted as part of his evidence to the inquiry, as well as his CV. He had been a Consultant Obstetrician for 27 years, having graduated from the University of Wales in 1985. In 1990 he became a member of the Royal College of Gynaecologists and he became a Fellow of the Royal College of Gynaecologists in 2013. He had produced more than 500 expert reports and had given expert witness testimony on four occasions prior to this inquiry.

[165] Dr Owen confirmed that the number of planned visits were deliberately reduced in his hospital during the COVID period. Many patients received telephone calls. However, if a woman was to report reduced movements to a community midwife or directly to maternity triage then he did not recall a change being made to the advice to attend. The women would typically attend by themselves because their partner was not permitted. That may or may not have raised the bar for some women reporting reduced movements or accepting advice but that would be in the minority rather than the majority.

[166] The ease of identifying reduced movements depended on the individual woman. In the 1980s a kick chart was given to women and they were asked to chart when they felt the baby moving 10 times. That was an objective method of recording which had great promise to reduce the incidence of stillbirth. However when proper scientific analysis was applied there was no difference so kick charts were abandoned.

[167] The emphasis was then placed on women becoming aware of their individual pregnancies and reporting any variation, particularly if there had been reduction. That put a great deal of onus on the woman. Most pregnant women led busy lives and concentrating on individual movements was not necessarily a priority although they were aware. A great deal of emphasis was placed on perception of movement and reporting.

[168] The correlation between the movements that a woman felt and movements that could be seen on a scan was very imprecise and was in no way diagnostic. If women were asked to report movements and that was plotted against advancing gestation then

there was a progressive reduction in the amount of movement. At no point was it normal to have a dramatic reduction or an absence of movements. Trying to dig deeper was unhelpful and obstetricians did not do it.

[169] It was a matter of agreement between the parties that if Ms Hunter reported reduced fetal movements to her midwife at the appointment on 11 May 2020 that morning, she ought to have been referred to Ninewells for further intervention and assessment, which would have likely have included a cardiotocograph. Dr Owen explained that the cardiotocograph would have shown two things: the baby's heart rate and the presence or absence of uterine activity. If Olivia had still been alive, then on the balance of probability the cardiotocograph would not have been normal and would have prompted further investigation. Whilst false positive tests were relatively common, false negatives were exceptional, ie where the cardiotocograph was normal but the baby died in the next 24 hours. Therefore, in his opinion the cardiotocograph would have prompted some sort of emergency intervention on the part of the clinicians that day. That would have made caesarean section more likely.

[170] The whole point of asking women to report fetal movements was so that they could act on monitoring. Dr Owen did not know the induction of labour protocol in place at Ninewells Hospital at the time but it was unlikely misoprostol would be used. It was likely to have been one of the prostaglandin gels. Misoprostol was very infrequently used for induction of labour when the baby was alive. It was sometimes used following birth by caesarean section if the uterus was not contracting for completeness. So it was possible misoprostol would be used but probably not.

[171] To the best of Dr Owen's knowledge, there was no inevitability about a woman experiencing AFE no matter what the sequence of events was. Since it was so rare, one could reasonably consider that pretty much any other sequence of events rather than the one that proceeded may have resulted in the absence of AFE. Whether that reached the balance of probabilities, however, was very challenging.

[172] It was necessary to consider the risk factors that she had. Her age would have been the same. She would have undergone a caesarean section which in itself was a recognised association for AFE. It was necessary to be really careful with the statistics. An actuary was required and Dr Owen was not one.

[173] In his opinion, had Ms Hunter reported reduced fetal movements to her midwife at the appointment on 11 May 2020 that morning and been referred to Ninewells for further intervention and assessment, it was *possible* that Ms Hunter would not have experienced AFE but it would be quite a reach for him to say that it was *probable*. AFE was a difficult syndrome to understand and almost impossible to predict. He had based his opinion on routine clinical practice but also the post-mortem finding of delayed villous maturation.

Expert Evidence of Professor Knight

[174] Professor Knight created two reports, dated 9 September 2022 and 14 November 2023. She adopted her reports as part of her evidence to the inquiry. Professor Knight indicated that AFE was a very rare condition and there was very little robust evidence on which to base her conclusions in relation to the question of whether a failure to refer

Ms Hunter to hospital for immediate medical action following a report of reduced or altered fetal movements caused or materially contributed to the development of AFE. The resultant medical action may have been to commence induction of labour. AFE was consistently associated in studies with induction of labour. That course of action would have led to Ms Hunter having an increased risk of AFE. Professor Knight could not therefore conclude that failure to undertake those steps materially contributed to the development of AFE and Ms Hunter's death, as she may still have been at increased risk of AFE.

Submissions

[175] The Crown acknowledged that resolving the factual dispute in relation to the reporting of reduced fetal movements was not straightforward. It was conceded that it was not put to Midwife Calder during the inquiry that she was being untruthful. Nonetheless, the Crown submitted that I should find that Ms Hunter did raise concerns around reduced fetal movements.

[176] Ms Hunter's reported account to Midwife Middleton the following morning was entirely consistent with Mr Quate's evidence. Midwife Calder could not remember the exact words Ms Hunter used. The Crown therefore invited me to find that it would have been a reasonable precaution for Midwife Calder to have referred Ms Hunter to hospital for tests following the appointment on 11 May 2020 but conceded that there was no evidence before the inquiry that failure to do so materially contributed to the development of AFE and Ms Hunter's death.

[177] Mr Quate submitted that Ms Hunter raised a concern of reduced fetal movements with Midwife Calder and that she failed to pick that up and failed to send her for triage. Doing so would have resulted in the live and successful birth of Olivia and avoided the fatal event of AFE. Both would be here today. Reference was made to Dr Owen's report of 10 November 2023, which indicated that AFE was a very rare, unpredictable chance complication of birth such that if Ms Hunter had given birth under different circumstances to those which then occurred, then the balance of probability was that the AFE would not have occurred.

[178] NHS Tayside submitted that in keeping with the usual principles of natural justice, a court could only make a finding that a precaution was one which could reasonably have been taken by a medical professional if it had evidence to support such a finding. That evidence could come from two possible sources. The first was a concession by a clinician that they did not take a precaution that they should reasonably have taken, and thus that their practice was, with the benefit of hindsight, not reasonable. The second potential source was evidence from a suitably and sufficiently qualified expert to the effect that the doctor or midwife's practice had not been reasonable, even where the doctor or midwife did not make that concession. Reference was made to the determinations in *Lynsy Myles*.

[179] Midwife Calder gave a very clear account to the inquiry of the final occasion when she saw Ms Hunter. She gave unchallenged evidence to the effect that she did not receive a report of reduced fetal movements. It was not suggested that she was lying or

even that she must be mistaken. She was the only witness the inquiry heard from who was actually present on the occasion in question.

[180] It was important to be clear about just how serious an allegation Midwife Calder was potentially being subjected to in the inquiry. Her position was clear: that she asked about fetal movements and got a reassuring response. The alternative was that Ms Hunter reported reduced fetal movements; that Midwife Calder deliberately informed her that this was nothing to worry about in the knowledge that such advice was contrary to all accepted standards of midwifery practice; created a falsified contemporaneous note; deliberately sent Ms Hunter away in the certain knowledge that the health of her baby was potentially in grave danger; repeatedly lied during the internal investigation; and perjured herself before this inquiry. There was nothing in the way that Midwife Calder gave her evidence to suggest that such events took place. Her unchallenged evidence was that simply sending Ms Hunter to triage to investigate reduced fetal movements would have generated no further work at all. She gave unchallenged evidence that she regularly sent women to triage in that situation and often had to talk them into going when they themselves did not want to do so.

[181] The effect of a finding that it would have been a reasonable precaution for Midwife Calder to have sent Ms Hunter for triage would be of the utmost seriousness for her professional career. Applying the same principles of basic procedural fairness discussed by the Inner House in *Grier* v *Lord Advocate*, if the suggestion was that she was lying, or even that she was wrong, fairness dictated that this ought to have been raised with her in cross-examination.

Findings

[182] There was a dispute between Midwife Calder and Mr Quate about what Ms Hunter said on Monday 11 May 2020. However, each of them gave evidence about *different* conversations. Mr Quate was not party to his wife's discussions *during the consultation* with Midwife Calder and Midwife Calder was not party to Ms Hunter's discussions with her husband *after the consultation*. Both witnesses gave their evidence in a straightforward manner and endeavoured to answer all questions put to them as fully as possible. I found both witnesses to be credible and reliable and accepted their evidence about the nature of each of their different conversations with Ms Hunter.

[183] The only person present in the room during the consultation with Ms Hunter was Midwife Calder. Mr Quate could only give evidence about what his wife *told him* she discussed with Midwife Calder. It was not the case that Midwife Calder did not know if Ms Hunter reported reduced fetal movements, or could not remember, or was unsure. On the contrary, she remembered having a conversation about fetal movements and there being no concerns. That was consistent with the contemporaneous note that she made in Ms Hunter's records. I therefore attached more weight to Midwife Calder's evidence about what she *remembered discussing* with Ms Hunter than to Mr Quate's evidence about what his wife *told him* she discussed with Midwife Calder.

[184] Mr Quate had a number of discussions with his wife about their baby's movements. I accepted his evidence that on Sunday 10 May 2020 she mentioned that the baby was being a bit quiet that night. I accepted his evidence that Ms Hunter told him

after the consultation on Monday 11 May 2020 that she was aware that their baby's movements were not the same in that they had reduced. I accepted that later on 11 May 2020, Ms Hunter told him that the baby was not kicking as hard and that it felt like more of a swishing sensation.

[185] I therefore determined that Ms Hunter *experienced* reduced fetal movements from Sunday 10 May 2020 onwards and spoke about them *to Mr Quate*. However, I did not accept that Ms Hunter reported that reduction in movements *to Midwife Calder*. Accordingly, I determined that it would have not have been a reasonable precaution for Midwife Calder to refer Ms Hunter to Ninewells Hospital for further investigation in the absence of such reporting.

[186] Even if I am wrong in my factual determination, the expert evidence from Dr Owen was that referral to Ninewells Hospital would have likely resulted in a caesarean section, which had a recognised association with AFE. He indicated that while it was *possible* that Ms Hunter would not have experienced AFE, he could not say that it was *probable*. His position in this regard was slightly more nuanced than that outlined in his report of 10 November 2023.

[187] Similarly, Professor Knight indicated that the resultant medical action may have been to commence induction of labour, which was consistently associated with AFE. Professor Knight could not therefore conclude that failure to undertake those steps materially contributed to the development of AFE and Ms Hunter's death.

[188] I therefore determined that *even if* Midwife Calder ought to have referred Ms Hunter to Ninewells Hospital for further investigation, her failure to do so did not materially contribute to the development of AFE and Ms Hunter's death.

[189] Accordingly, I made no formal findings in respect of the reporting and significance of reduced fetal movements on Monday 11 May 2020.

(ii) Was Ms Hunter hyperstimulated as a result of the incorrect dose of misoprostol on Wednesday 13 May 2020 and might the correct dose have avoided her death?

Evidence of Mr Quate

[190] Midwife McMartin was quite clear with Mr Quate that she could be as present or absent as much as they wanted her to be. On the basis that he and Ms Hunter expected to be waiting until tomorrow for things to happen, they were content that she was at the end of the buzzer. She said that was fine and would just come in occasionally and check if they wanted anything. If they wanted toast they should just press the buzzer.

[191] At one point Midwife McMartin came in and said that the protocol for misoprostol had changed and that it was now every 6 hours for the dosage. There was no mention about overdose at all.

[192] As per the timeline of events that Mr Quate had compiled, contractions began around 11.00. He and Ms Hunter joked that she was normally built like an ox and seldom took pain medication. From 11.30 onwards things definitely started to progress. There was a bloody show. Thereafter it looked like there was somebody slowly clicking

the dial of potency upwards. Towards the tail end of 12.30 – 13.00 it was starting to get too uncomfortable to contend with. Mr Quate was texting his sister, who said that Ms Hunter should not be a martyr and just needed to get through this. So she wanted to look at the pain medication options.

[193] Midwife McMartin said they could do co-codamol to start off with. That did not seem to touch the pain at all. The contractions were coming in waves and the period between contractions seemed to get less and less. At the end there were around 10 seconds between contractions. Ms Hunter asked for diamorphine but she was still struggling after that and Midwife McMartin talked about gas and air on top of diamorphine. That worst case scenario probably lasted about 30 - 40 minutes and was hellish to watch. Diamorphine managed to help in some way but not for too long, the pain was slowly ratcheting upwards.

[194] Between around 13.30 – 14.00 Ms Hunter was aware that diamorphine, gas and air had run their course and she was struggling with what she was going through and at that point mentioned an epidural. That was when Midwife McMartin said she would check dilation. Ms Hunter was disheartened to hear she was only 3cm dilated. That was when Ms Hunter decided to have an epidural.

[195] The anaesthetist came into the room and required Ms Hunter to sit more towards the head end of the bed. Blood flowed from her vagina. She stood and collapsed. The nurses helped her into the recovery position. She had very laboured breathing. Mr Quate heard that they had tried hard painful stimulation but she was not responsive. The team took her to theatre.

Evidence of Midwife McMartin

[196] Midwife Sally McMartin trained as a midwife in Ninewells and at Perth Royal Infirmary. She completed a diploma qualification in 2001 and a degree in 2004. When she first qualified, she worked in Blackpool Victoria Hospital for 6 months before coming to work in Tayside. She did community midwifery for a year in 2002 but apart from that she had been hospital based throughout her career. From 2005 - 2022 she worked on the labour ward and trained to be a high dependency unit midwife in 2014.

[197] Midwife McMartin no longer worked on the labour ward and continued to be haunted by Ms Hunter's death. She had never been involved in a maternal death before or after this. She thought of Ms Hunter all the time and her death had had a huge impact on her. She had chosen to move her area of work as she felt traumatised by her death and did not feel able to continue to work on the labour ward.

[198] Uterine hyperstimulation was a condition which Midwife McMartin had considerable experience of over many years of labour ward midwifery. If a mother had uterine hyperstimulation, she usually felt it straight away as the abdomen was generally solid to touch and there was little or no resting tone between contractions. That sent immediate alarm bells.

[199] Ms Hunter continued to have good resting tone in between contractions and did not feel hyperstimulated. If Midwife McMartin felt that there was any sign at all of hyperstimulation she would have acted on that immediately. There were drugs that

could be given to counteract hyperstimulation and that was not something she would ignore.

[200] Midwife McMartin did not stay in the room between 13.00 and 13.15. At 13.15 she noted further analgesia was requested. She recalled palpating Ms Hunter's abdomen again and finding there was resting tone between contractions and no evidence of hyperstimulation. The pattern was very typical of contractions in a patient who had been treated with misoprostol. Hyperstimulation would have presented very differently, with more frequent and longer lasting contractions and a lack of resting tone.

Evidence of Dr Northridge

[201] Dr Northridge was aware of the possible increase in risk of hyperstimulation and was aware that the experienced midwife (Midwife McMartin) would respond properly and appropriately if it were to happen. They could give a drug called bricanyl to counter hyperstimulation if it did occur.

[202] Hyperstimulation was particularly problematic for women who had a previous caesarean section or other uterine surgery because a scar on the uterus could be a potential area of structural weakness and could rupture if the uterus became hyperstimulated. Dr Northridge knew that Ms Hunter had an unscarred uterus and this additional risk did not seem likely. As events transpired, Dr Northridge was of the view that Ms Hunter did not develop uterine hyperstimulation as a result of the misoprostol

dose that she was given and Dr Northridge did not believe that the misoprostol dose caused her to suffer from AFE.

Evidence of Dr Nicoll

[203] Dr Nicoll indicated that the pathologists subsequently confirmed that Ms Hunter died because of an AFE. That was a rare obstetric complication with an estimated incidence of 1.7 per 100,000 maternities and was one of the main causes of maternal mortality in high income countries. Although AFE could occur in any pregnant woman, there were women that were more at risk of that rare complication. Induction of labour using any method was a recognised risk factor (2.37 times greater risk). The risk was greater when prostaglandins were used for induction of labour (2.46 times greater risk). Ms Hunter required induction of labour for the management of an intrauterine fetal demise and in this situation it was appropriate to offer induction of labour using a combination of mifepristone and misoprostol. Ms Hunter was administered 200 mcg of mifepristone orally and a single 400 mcg vaginal dose of misoprostol.

[204] AFE was listed as an adverse event in the summary product characteristics for misoprostol with an incidence that was "not known". What was also unknown was whether a higher dose of misoprostol was associated with a higher risk of AFE. Misoprostol was administered at higher doses for termination of pregnancy and induction of labour at earlier gestations and administered in doses of up to 800 mcg. It was not uncommon to prescribe a 400 mcg dose in other circumstances such as

termination of pregnancy prior to 26 weeks' gestation and in those circumstances the majority of women would receive that medication without adverse effects.

[205] Low doses of misoprostol were currently recommended for induction of labour during the third trimester of pregnancy to avoid hyperstimulation. Historically misoprostol was administered at higher doses for the management of intrauterine fetal demise and one published case series described outcomes for women in the third trimester of pregnancy using a 400 mcg oral / vaginal regime with no women in this cohort experiencing AFE. Furthermore, no women in this cohort had uterine hyperstimulation.

[206] Although misoprostol administration was a recognised risk factor for AFE, there were very few case reports describing this association. There was a case report of AFE after single dose misoprostol administration for the management of haemorrhage following surgical abortion, but that case was associated with the higher dose of misoprostol (800 mcg) that was administered per rectum. A more common adverse effect of misoprostol was uterine hyperstimulation and it was recognised that the incidence of hyperstimulation following misoprostol administration was dose dependant.

[207] Although Ms Hunter received a single high dose of misoprostol, the attending health care staff did not witness, nor document uterine hyperstimulation prior to her collapse. Furthermore, hyperstimulation was not an absolute precursor to AFE. Hyperstimulation was commonly seen on a labour ward in association with induction of

labour and most women with uterine hyperstimulation would not have an adverse outcome.

[208] Ms Hunter had other risk factors that may have contributed to her AFE. Women over the age of 35 years had a 2.4 times greater risk of AFE and that was of a similar magnitude of risk as induction of labour with prostaglandins. To provide some context for that level of risk, there were other risk factors that Ms Hunter did not have that carried a greater risk of AFE including: multiple pregnancy (6.28 times greater risk); polyhydramnios (5.04 times greater risk); placenta praevia (13.26 times greater risk); and placental abruption (14.40 times greater risk).

[209] In Dr Nicoll's view one would never know if the single dose of misoprostol that was administered to Ms Hunter caused her AFE and therefore her death. Given the other risk factors which Ms Hunter had, she may well have had an AFE regardless of the dose of misoprostol administered. She may also have had an AFE if she laboured spontaneously and had not been given any misoprostol at all.

Expert Evidence of Dr Owen

[210] Dr Owen explained that a recognised side effect of misoprostol was uterine hyperstimulation. Uterine hyperstimulation was defined as five or more uterine contractions in a 10 minute period. Uterine hyperstimulation may represent a risk factor for AFE although the very large majority of women experiencing hyperstimulation did not experience an AFE. The significant adverse event review concluded that uterine hyperstimulation was not present.

[211] The relaxation of the uterus between contractions was an indication of the absence of hypertonus. Hypertonus was where the uterine muscles did not fully relax and was characteristic of placental abruption (not a feature in this case). The absence of hypertonus did not exclude hyperstimulation. Dr Owen acknowledged that the midwife present at the time, Midwife McMartin, was best placed to determine the presence or absence of uterine hyperstimulation but the absence of documentation indicating the frequency of uterine activity by Midwife McMartin limited his ability to comment more usefully regarding the presence or absence of hyperstimulation.

[212] Dr Owen had listened very carefully to Mr Quate's very dignified and detailed testimony via WebEx. Having also watched the testimony of Midwife McMartin recorded on WebEx the previous evening, Dr Owen considered that testimony to be the most reliable indicator of the presence or absence of hyperstimulation.

[213] Midwife McMartin did not document the interval between contractions, solely the duration, but she had a clear recollection of the uterus relaxing between contractions. The definition of hyperstimulation was more than five contractions during a 10 minute period so clearly one could have more than five contractions in a 10 minute period if the contractions lasted for 30 seconds. Midwife McMartin was reassured by the uterus relaxing in between contractions but relaxation between contractions was not really part of the definition of uterine hyperstimulation. The absence of relaxation related to an allied but different condition called hypertonus, which meant excessive tone. Hypertonus may also be a feature of hyperstimulation but it was more commonly a clinical feature of placental abruption.

[214] Just to confuse matters further, a placental abruption could be a consequence of uterine hyperstimulation as well as the cause of hypertonus. Working on the balance of probabilities, it was not possible to know whether Ms Hunter suffered from placental abruption. It could manifest in different ways. It could be present if there was bleeding from the edge of the placenta which would cause vaginal bleeding and there was vaginal bleeding in this case. However on examination of the placenta, nothing was seen. Uterine rupture was also extremely unlikely because Ms Hunter had not had surgery on her uterus before.

[215] Dr Owen was trying to make matters as clear as possible but it was not straightforward, he wished it was. What was missing was the absence of documentation of the frequency of contractions. If pressed to give an opinion on whether hyperstimulation was present or not, then on the balance of probabilities he thought that there was not hyperstimulation, partly because of Midwife McMartin's unequivocal testimony that he had watched on WebEx. She had a clear memory and indicated she considered the possibility and discounted it.

[216] Despite the dose of misoprostol being 400 mcg in the context of a third trimester intrauterine loss and the previous dose of mifepristone sensitising the uterus to prostaglandins, the literature was very limited in this regard. A paper from 2005 gave this very regimen orally or vaginally in his hospitals to 29 women and there were no cases of hyperstimulation. So it was *possible* that Ms Hunter was hyperstimulated but he did not consider it to be *probable*.

[217] Dr Owen highlighted in his report of 13 September 2021 that AFE was a rare and often fatal obstetric condition, characterised by sudden cardiovascular collapse, altered mental status and disseminated intravascular coagulation. The pathogenesis of AFE was not clearly understood. The entrance, by various proposed mechanisms and routes of amniotic fluid into the systemic maternal circulation which then triggered clinical manifestations of the condition continued to be the main mechanism involved in the pathogenesis of AFE.

[218] The MBRACE report of 2019, which reviewed maternal deaths in the UK between the years 2015-2017, recorded six maternal deaths during that triennium. That represented a maternal mortality rate of 0.26 per 100,000 maternities or 1 per 400,000 maternities. To provide context, in a maternity unit with approximately 4,000 deliveries per annum such as Ninewells Hospital, that unit would record one maternal death from AFE per century.

[219] AFE was not universally fatal. There was a review of all reported cases of AFE referred to the UK Obstetrics Surveillance System (UKOSS) between February 2005 and January 2014 (120 women) compared with 3,839 control women. Case fatality for AFE was 19%. The authors identified the odds of suffering AFE were significantly increased if they were aged over 35, underwent induction of labour, had a multiple pregnancy or placenta praevia. The odds of AFE were raised in women who had labour induced with a prostaglandin. The type of prostaglandin used was only known for women with AFE. The type of prostaglandin used for induction of labour was not known for women who

did not experience AFE. Only one woman received misoprostol at a dose of 800 mcg. AFE was preceded by a planned (pre-labour) caesarean section in 17 women.

[220] Dr Owen indicated in his report that misoprostol was a synthetic prostaglandin analogue used widely in obstetrics and gynaecology. The dose of misoprostol varied considerably according to its indication for use and gestational age. The correct dose to be administered to Ms Hunter was 50 mcg of misoprostol per vaginam: that was the dose recommended in the Ninewells Hospital protocol and also that recommended via the Royal College of Obstetrics and Gynaecology Green-top Guideline number 55 Late Intrauterine Fetal Death and Stillbirth (2010). The prescription of the incorrect dose by Dr Pauline Lynch represented a breach of her duty of care.

[221] In order to determine the relationship between a dose of 400 mcg of misoprostol and the subsequent AFE, Dr Owen had undertaken a literature search using the key words "misoprostol" and "AFE". As expected, the large majority of studies described experiences with doses less than 400 mcg. Dr Owen had been unable to identify published studies which demonstrated that the risk of AFE was proportional to the dose of misoprostol. The potential relevance of whether a woman had received mifepristone prior to the administration of misoprostol related to the effect of mifepristone. Mifepristone was an anti-progesterone, which sensitised the cervix and uterus to the effects of prostaglandins, ie mifepristone made a woman's uterus and cervix more responsive to prostaglandin such as misoprostol.

[222] The rarity of AFE and the relative infrequency of the use of dose of misoprostol 400 mcg per vaginam after prior administration of mifepristone meant that a definitive

opinion regarding the dose of misoprostol and subsequent death from AFE in this case could not be reached. There was a recognised *association* between induction of labour with prostaglandins (not specifically misoprostol) and AFE. Dr Owen had been unable to identify any studies or reports identifying a relationship between the dose of misoprostol and the risk of subsequent AFE. Dr Owen had identified several studies describing the use of 400 mcg or more of misoprostol in the second or third trimester where none of the women experienced an AFE. He had only identified one study where 400 mcg of misoprostol was administered vaginally following the use of mifepristone in women undergoing induction of labour following a diagnosis of late IUFD, ie the same regimen of mifepristone and misoprostol administered to Ms Hunter. 29 women received this regimen but no AFE was recorded.

[223] The association of induction of labour with prostaglandin and the subsequent AFE in the close chronological relationship between the administration of misoprostol and maternal collapse in the case of Ms Hunter meant that there was a *possible* causal relationship between misoprostol and the AFE. However, in his opinion the magnitude of that possibility did not reach the balance of probability. In other words, it was Dr Owen's opinion that whilst the incorrect dose of misoprostol *may* have caused the AFE in this case, it *probably did not*.

[224] Dr Owen thought that AFE could not have been predicted with the tools they had in 2020 or in 2024. It was a frustratingly very rare condition but unfortunately it was a very devastating condition. So obstetricians had an awareness but it seldom if

ever crossed their minds to include in decision-making. It was normally suggested after the event.

[225] AFE was so rare that it would not even be considered as a topic for discussion. The consequence of the increased dose in usual circumstances would necessitate a discussion that Ms Hunter may experience a slightly increased change in temperature, more pain, may require more analgesia and a higher chance of gastrointestinal upset, mainly diarrhoea. None of that was trivial and he did not dismiss the potential side effects but the magnitude of the harm was substantially less than occurred.

[226] Dr Owen therefore thought it was *possibl*e but *not probable* that the overdose was a contributory factor in Ms Hunter's death. It was *possible* but *not probable* if she had been administered the correct dose that her death could have been prevented.

Expert Evidence of Professor Knight

[227] Professor Knight explained that AFE was a very rare condition and thus evidence on which to base any assessment was limited. The condition was assumed to result from an abnormal inflammatory reaction to amniotic fluid material entering the maternal circulation. The escape of amniotic fluid material alone was not sufficient to cause AFE; an abnormal maternal inflammatory response was also required. It was not currently possible to predict when the abnormal inflammatory response may occur and some experts had gone as far to say as it was unjustified to causally link induction of labour with AFE.

[228] AFE was known to be *associated* with induction of labour, the presumed pathophysiological mechanism being related to stronger and more frequent uterine contractions leading to an increased risk of amniotic fluid entering the maternal circulation. Excessive uterine contractions (hyperstimulation) caused by an inappropriately high dose of high uterine stimulant had been associated with maternal death from AFE. There was, however, no definitive epidemiological evidence specifically linking the type or dose of uterine stimulant used for induction of labour to the occurrence of AFE.

[229] Professor Knight flagged up that observations differed between staff and family concerning Ms Hunter's contractions at the time of her collapse. Neither the expert obstetric assessment nor the significant adverse event review determined definitively that Ms Hunter had hyperstimulation. Professor Knight therefore concluded that there was no clear evidence that the excessive dose of misoprostol materially contributed to her death, over and above the known risk association with labour induction.

[230] A recent international comparative population-based study conducted by Professor Knight's research group identified maternal age; multiple (twin or triplet) pregnancy; polyhydramnios (excessive amniotic fluid round the baby); placenta praevia (a placenta attached too low to the wall of the womb); placental abruption (early separation of the placenta from the wall of the womb before the baby is born); and induction of labour using any method as associated with the occurrence of AFE. Induction of labour was consistently identified as a risk factor for AFE across multiple other studies.

[231] Misoprostol was a type of prostaglandin. The same international comparative study showed the odds of having AFE were more than doubled in women induced with a prostaglandin drug compared to those induced without a prostaglandin. The study did not investigate risk associated with different types of prostaglandins. Professor Knight had been unable to identify any studies investigating different types of prostaglandins in association with AFE. Only multinational studies conducted over several years would be able to answer that question due to the rarity of AFE.

[232] The MBRACE National Confidential Enquiries into Maternal Deaths reported maternal deaths in both AFE and uterine rupture in association with misoprostol administration in doses higher than those recommended, notably in the situation of induction following an intrauterine death. Therefore, while Professor Knight could find no research evidence of a specific link between administration of misoprostol and the occurrence of AFE, in her opinion there was clear evidence of an association between induction of labour using a prostaglandin in AFE and maternal deaths from AFE had been reported following misoprostol administration. In Professor Knight's opinion it was therefore likely that induction of labour using misoprostol was *associated* with AFE. However, all the studies were observational and causation could therefore never be proven.

[233] Professor Knight explained that it had been hypothesised that the abnormal inflammatory response may be stimulated by infection and/or bacterial material in the amniotic fluid material. That might be pertinent to Ms Hunter, since her baby's death was noted to be due to infection. She may therefore have been at higher risk of an

abnormal inflammatory response in the event of leakage of amniotic fluid material into the maternal circulation. Assuming that release of amniotic fluid material was due to strength, frequency and duration of uterine contractions, hyperstimulation was more likely to lead to escape of material into the maternal circulation. That was thought to underlie the observation that maternal deaths from AFE may be associated with uterine hyperstimulation.

[234] Administration of 400 mcg misoprostol in the case of Ms Hunter, if it caused hyperstimulation, could therefore have increased the risk of AFE. In the absence of hyperstimulation her risk could not be said to be any different to that of any other woman undergoing induction of labour. However, neither the expert obstetrician (Dr Owen) nor the significant adverse event review determined definitively that Ms Hunter had hyperstimulation, although Professor Knight noted that there was uncertainty because there were differences between the observations of the midwife caring for Ms Hunter and those of her husband. In the absence of clear evidence of hyperstimulation Professor Knight could not conclude that the dosing error made a material contribution to Ms Hunter's death. Similarly she could not conclude that the removal of erroneous dose when it was discovered would have altered the course of events.

Submissions

[235] The Crown submitted that in light of the expert evidence, there was no evidence of hyperstimulation.

[236] Mr Quate submitted that hyperstimulation was happening and that Midwife McMartin's evidence was unreliable in light of her poor record keeping.

[237] NHS Tayside acknowledged that it must have been immeasurably hard for Mr Quate to watch his wife experience the intense pain of labour in the knowledge that she would not be able to take their baby Olivia home at the end of it all. However, Midwife McMartin was a highly experienced midwife trained in identifying and responding to hyperstimulation and was better placed to assess whether hyperstimulation was present than Mr Quate, who had never been present with a labouring woman before.

[238] NHS Tayside also submitted that Professor Knight's evidence was that AFE was so rare, one could never establish a causal link. One could only identify certain possible associations. Professor Knight confirmed that a number of those possible associations were present in Ms Hunter's case, including increased maternal BMI; maternal age; and undergoing induction of labour. She specifically stated there was no evidence at all to support a dose related increase in risk of AFE for women who had been given misoprostol.

Findings

[239] As indicated above, I accepted Mr Quate as a credible and reliable witness. His evidence about watching his wife experience pain was clearly distressing for him to recollect but again he endeavoured to answer all questions put to him as fully as

possible. In his view, his wife was clearly hyperstimulated following the overdose of misoprostol.

[240] Midwife McMartin was candid that she regretted not making more detailed notes about aspects of Ms Hunter's care, in particular her observations on Ms Hunter's contractions. However, she did document her last examination prior to Ms Hunter's collapse, when she satisfied herself there was no evidence of hyperstimulation. Though her record keeping was inadequate and was not in accordance with NHS Tayside's recordkeeping policy, she was an experienced midwife and I found her to be a credible and reliable witness. In her view, Ms Hunter was not hyperstimulated.

[241] To determine which of these two conflicting views was factually correct, I relied upon the expert evidence in the inquiry, which was supportive of Midwife McMartin's position. Dr Owen thought that it was *possible* that Ms Hunter was hyperstimulated but he did not consider it to be *probable*. Similarly, Professor Knight flagged up that there was no definitive evidence of hyperstimulation.

[242] I therefore determined that Ms Hunter was not hyperstimulated on Wednesday 13 May 2020.

[243] Even if I am wrong in my factual determination, the expert evidence from Dr Owen was that the rarity of AFE and the relative infrequency of the use of dose of misoprostol 400 mcg vaginally after prior administration of mifepristone meant that a definitive expert opinion regarding the dose of misoprostol and subsequent death from AFE in this case could not be reached. There was only a recognised *association* between induction of labour with prostaglandins (not specifically misoprostol) and AFE.

Dr Owen therefore thought it was *possibl*e but *not probable* that the overdose was a contributory factor in Ms Hunter's death. It was *possible* but *not probable* if she had been administered the correct dose that her death could have been prevented.

[244] Accordingly, I made no formal findings in respect of the effect of the overdose of misoprostol on Wednesday 13 May 2020.

(iii) Should Dr Northridge have discussed the overdose of misoprostol with Ms Hunter on Wednesday 13 May 2020 and had she tried remove it might her death have been avoided?

Evidence of Dr Northridge

[245] Dr Northridge obtained a Batchelor of Medical Sciences degree at St Andrews University in 2004 and then a Batchelor of Medicine and Surgery degree at the University of Manchester, qualifying as a doctor in 2007. She became a member of the Royal College of Obstetricians and Gynaecologists in 2013. She was appointed in NHS Tayside as a consultant in August 2017.

[246] Dr Northridge believed that all of the hospital staff involved tried their best to look after Ms Hunter and Mr Quate in the utterly appalling circumstances in which they found themselves on Wednesday 13 May 2020 and then the following days. Whilst of course nothing could come close to the pain experienced by Ms Hunter's family and friends, it was fair to say that all of the staff were devastated when she died. What happened to Ms Hunter would remain with Dr Northridge for the rest of her life. It had affected her profoundly and she thought of Ms Hunter and her baby Olivia often.

[247] Due to the other pressures prevailing on the day, together with Ms Hunter's collapse from AFE a few hours later, Dr Northridge never had the chance to discuss the drug error with Ms Hunter. She realised that the fact that this discussion did not take place had caused Ms Hunter's family additional stress and she was very sorry for that.

[248] Dr Northridge was not trying to cover anything up and was devastated by the suggestion she was acting out of malice or trying to hide things. She did not prescribe the misoprostol and had not administered it so she would have had no reason to do so. She simply did not think it was the right time to discuss it. She fully expected and intended to explain what had happened to Ms Hunter later that day and she was sorry that she did not get the opportunity to do so.

[249] She recalled that she explained to Ms Hunter and her husband an initial plan but that she would pop back in later. She did go into the room shortly after she had checked the guidelines but only to introduce the consultant who was there to scan to sex the baby. She was then required to return to the patient who was having the feticide.

[250] Had she been able to see Ms Hunter before she collapsed, she expected she would have said something like:

> "Looking at your notes you received a higher first dose of misoprostol than is recommended in our protocols and I am sorry about that. Misoprostol is a strange drug and some people will have an effect and some will have no effect. We only give it to get you established in labour. Some women will need four or eight doses and some will only need one. We will assess you and keep a close eye on everything and give you a lower dose for the next dose if you need one and we will look at why it has happened. If you have too many contractions we can give you medicine that can counteract the contractions and space them out."

[251] She may also have advised that there were new protocols in place but would not have speculated further. She would have advised that everyone having a stillbirth automatically had their whole care examined so there would be time further down the line to ask why this had happened as well as advising that a DATIX would be filled out, which was their way of reporting adverse incidents.

[252] Dr Northridge was clear she would have been matter of fact and tried not to sound alarming if she had the chance to have this discussion with Ms Hunter. Having a baby was stressful and labour was stressful. A dead baby added into the scenario was horrific so any added anxiety on top of that was not something she would have wanted to encourage.

[253] Dr Northridge wished to record her sincere condolences to Ms Hunter's family for her tragic death. She had reflected carefully and at length about her role in her care and about her response to the dose of misoprostol that had been given to her. She wished she had the chance to go back and explain the overdose to Ms Hunter before she collapsed but it simply was not possible for her to do so.

[254] Dr Northridge had also carefully considered whether she should have attempted to wash out the misoprostol tablets. She remained of the view that it was reasonable for her not to do so. The dose was likely to have already been absorbed.

[255] Since the death Dr Northridge had openly and willingly co-operated with all requests to contribute to investigations by NHS Tayside, the General Medical Council, Police Scotland and the procurator fiscal. She felt she was a careful and conscientious doctor and Ms Hunter's death had a huge impact on her personally and professionally.

[256] As a result of this case she was referred to the General Medical Council ("GMC"), the only time that had happened in her career. The case was closed after investigation with no action taken against Dr Northridge. The impression she gained from reading material provided to the GMC was that the family felt that she was somehow uncaring or unremorseful about Ms Hunter's death and that she had deliberately tried to hide the misoprostol dose from them. Dr Northridge was so sorry they had formed that impression and it could not be further from the truth. She did her very best that day to try to resuscitate Ms Hunter and provide good care, including as good bereavement care as was possible in such dreadful circumstances. She was sorry that the family felt she fell short.

Evidence of Dr Nicoll

[257] Although he was not there at the time, there was a possibility that Dr Nicoll would have done the same thing that Dr Northridge did when it was recognised that a higher dose of misoprostol had been administered. He was not certain that when it was recognised that a high dose of misoprostol had been administered, he would have attempted to remove the misoprostol tablets. There was perhaps a misconception that these tablets could be easily removed. Misoprostol was administered into the vagina as small tablets and following administration these tablets usually dissolved into a paste. There was a product called mysodelle which was available for a number of years, which was a misoprostol tablet attached to a retrieval string that one could easily remove if

there were concerns about uterine hyperstimulation. Mysodelle was never used in NHS Tayside and the product was withdrawn a number of years ago.

[258] Dr Nicoll would have documented recognition of the dosing and administration errors in the maternal medical record and informed Ms Hunter and her family of those errors at the earliest appropriate time, based on his judgment of Ms Hunter's clinical and emotional well-being. One must be mindful of the fact that informing Ms Hunter and Mr Quate of those errors would likely cause additional distress and in Dr Nicoll's opinion it would not be unreasonable to wait until after the birth of Olivia to disclose this.

Expert Evidence of Dr Owen

[259] As far as removing the tablet was concerned, in Dr Owen's opinion there was no material obstacle to at least attempting to retrieve misoprostol fragments.
Dr Northridge may have been successful or may have been unsuccessful. There was no material downside in his view.

[260] However, if one was to take 100 obstetricians there would be an appreciable body of competent responsible obstetricians who would have acted in the way that Dr Northridge did. That was because there were variation factors. Dr Northridge was in unfamiliar territory with no guidance. Personally, Dr Owen saw it as common sense and pragmatic but then he had been around a long time and perhaps it was a little unfair to say under those circumstances that no competent obstetrician would decide not to remove it. So it was certainly a *missed opportunity* but having heard Dr Northridge's

testimony about her thought process via WebEx, he did not think it was a breach of duty of care or negligence.

[261] As a general principle the sooner that one divulged an error the better. To do so later might substantially add to the distress that was going to be caused when inevitably it was just disclosed later. It was an element of judgment. Dr Northridge had made it clear that she intended to return to share the information and it was in no way foreseeable that Ms Hunter would collapse. A counsel of perfection would be to divulge the information at the earliest opportunity but there would have been a range of practice under these very sensitive and tragic circumstances. Dr Northridge's decision to postpone sharing the information in anticipation of sharing it with the next two to 3 hours fell within the range of reasonable practice.

[262] Dr Owen indicated that there was a duty of candour on obstetricians but also a parallel exercise of building up a rapport. One way not to build up a rapport was to withhold information that would subsequently have to be shared or become apparent. It served no purpose.

[263] Dr Owen's position was that the optimal course of action for Dr Northridge when she became aware of the drug error was to disclose it and share it with Ms Hunter and Mr Quate. However, he had become aware of Dr Northridge's thought process via WebEx and what her intentions were and although it might sound mundane, she was also dealing with the competing interests of feticide at the time. Those were not performed very commonly and were of an incredibly sensitive nature. They could be technically challenging and required an obstetrician's undivided attention.

[264] When one knew one was going to be involved in feticide one intuitively did not clear one's mind but needed to focus on the task in hand. A recurring challenge in labour ward care which Dr Owen had done over 27 years and from contributing to the day time and out of hours rota, was to devote a suitable amount of time to patients who required time in a measured and unhurried fashion when competing emergencies or demands were placed on his time. Dr Owen was not making excuses, quite the opposite, but he did acknowledge today, perhaps better than he did previously in his reports, the situation that Dr Northridge was in and the other patient was in.

[265] Speaking to another colleague would have been an option but he did not know how realistic that would have been. He did not know the availability of a senior colleague at that time. He did not expect a pharmacist to be able to give a clinical input in relation to a 400 mcg dose that had been administered. That would require a literature review. Pharmacy were perfectly capable of doing so but that would not happen within the space of half an hour or even two hours. The proposed anticipated timeframe for sharing information in relation to the prescription error was not optimal but it did fall within the range of practices to be adopted by other consultants.
Dr Northridge thought she would come back to Ms Hunter and explain and apologise but a catastrophic event that was in no way foreseeable was experienced.

[266] Dr Owen was analysing the actions of Dr Northridge's decision-making through the lens of the worst possible outcome. In the normal course of events they would not be analysing that kind of decision-making. Some might call it procrastination, others

might call it delayed information sharing but normally one would not give so much scrutiny and comment upon it.

[267] Dr Owen did not disagree with the GMC guidance. It was the postponement rather than the absolute absence that was important. It became an absolute absence because of unforeseeable circumstances. They were completely unforeseeable.

[268] As far as record keeping was concerned, it was a question of what was optimal and what was outwith the range of practice. It was not exactly binary. It was optimal to make contemporaneous notes. Retrospective notes were also acceptable. Failing to document at all was not acceptable other than in mitigating circumstances. As obstetricians they became involved in maternal deaths infrequently and it required no imagination to see how the documentation of the thought process from earlier in the morning escaped Dr Northridge's recollection to document given the extraordinary and tragic circumstances that followed.

[269] To make a quick entry might subsequently be perceived as superficial. To be frank, if any entry was made in the records it should be a thorough entry. To write in the records that she would be returning to make an entry later risked making Dr Northridge a hostage to fortune because she may not have been able to return.

[270] The gold standard was contemporaneous and thorough record keeping. Competing interests, particularly in labour settings, were frequently exceptionally challenging and the circumstances that Dr Northridge found herself in due to the tragic circumstances of Ms Hunter's illness then became a whole new level of necessity to document what was happening from collapse onwards. Again, whilst not making

excuses, Dr Owen could see how the thought process from 6, 7 or 8 hours earlier may have been overlooked.

Expert Evidence of Professor Knight

[271] Professor Knight explained that in the absence of clear evidence of hyperstimulation, she could not conclude that the removal of the erroneous dose when it was discovered at 10.00 would have altered the course of events.

Submissions

[272] The Crown submitted that Dr Northridge did not make the prescribing error, nor did she administer the dose to Ms Hunter. Dr Owen's evidence was that failure to remove the tablets was a missed opportunity rather than breach of duty of care or negligence. Given the evidence of Professor Knight that no causal link could be made between the overdose and Ms Hunter's death, no findings should be made on this issue.

[273] Mr Quate submitted that Dr Northridge failed to remove the drug; failed in her duty of care; and failed in her duty of candour. She failed to document the error and made the decision to keep her patient uninformed about of the risks or response options. That was Ms Hunter's decision and she had the right to advocate for her healthcare and wellness needs.

[274] NHS Tayside submitted that Dr Northridge's actions were in keeping with steps that a reasonable body of obstetricians would have taken at all times. The furthest that Dr Owen was prepared to go was to suggest that failure to remove the misoprostol

tablet was "not optimal" and he emphasised that it would never have crossed any obstetrician's mind that Ms Hunter might suffer the outcome which ultimately transpired. No obstetrician gave evidence which would enable the inquiry to make any findings on this issue. Reference was made to *Sutherland* v *Lord Advocate* and the determination in *Marion Bellfield*.

Findings

[275] I found Dr Northridge to be a credible and reliable witness. She had clearly taken time to reflect on her actions and provided detailed explanations of her thought process. Expert evidence from Dr Owen indicated that an appreciable body of competent responsible obstetricians would not have attempted to remove the misoprostol. In light of that expert opinion, I did not find that Dr Northridge should have attempted to remove the misoprostol.

[276] Professor Knight indicated that she could not conclude that the removal of the erroneous dose when it was discovered at 10.00 would have altered the course of events. In light of that expert opinion, I made no formal findings in respect of the effect of removal of misoprostol.

[277] Similarly, in light of Dr Owen's evidence that the anticipated timeframe for sharing information in relation to the overdose fell within the range of practice adopted by other consultants, I made no finding in respect of discussing the overdose with Ms Hunter either.

Conclusion

[278] Ms Hunter's death and that of her baby Olivia were utterly tragic and I wish to express my sincere condolences to Mr Quate and to Ms Hunter's family, which were echoed in the submissions made by all parties.

[279] Though I have made no formal findings, Ms Hunter's death has led to a change in prescription practice at Ninewells Hospital in order to prevent such an error happening in the future and the issue has been raised nationally. Her death has not been in vain.

[280] I would like to thank the witnesses for their time, co-operation and candour with this inquiry. This was an inquiry which required expert opinion in relation to an extremely rare condition which was dependent upon detailed factual evidence from a range of clinicains. I am grateful that good use was made of the available technology so that Dr Owen was able to view the clinicians giving evidence via WebEx and consider that evidence fully before reaching his conclusions, some of which differed from his written reports, which were prepared without the benefit of such evidence.

[281] I am also very grateful to Mr Quate, the solicitors and counsel involved for their assistance in focussing the scope of the inquiry, conducting the inquiry via WebEx and for their detailed submissions. Mr Quate in particular conducted himself with great dignity throughout all the preliminary hearings the inquiry itself, despite having to listen to extremely distressing evidence. His questions were probing and relevant, despite the absence of legal training. The expert evidence of a *general association* between AFE and induction of labour with prostaglandins, rather than a *causal link* between

Ms Hunter's death and the overdose of misoprostol meant that I could not uphold his submissions, but nonetheless, I hope that this inquiry has addressed the concerns that he and Ms Hunter's family have had about what happened to Ms Hunter and why.