SHERIFFDOM OF TAYSIDE CENTRAL AND FIFE AT FALKIRK

[2025] FAI 15

GLW-B1011-23

DETERMINATION

BY

SHERIFF PRINCIPAL A Y ANWAR KC

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

into the death of

LEO LAMONT, ELLIE McCORMICK AND MIRA-BELLE-BOSCH

Glasgow, 14 March 2025

DETERMINATION

The Sheriff Principal, having considered the information presented at the Inquiry, determines in terms of section 26 of the Inquiries into Fatal Accident and Sudden Deaths etc. (Scotland) Act 2016 ("the Act") that:-

Leo Lamont ("Leo")

1. In terms of section 26(2)(a) of the Act: Leo Lamont died at 0710 hours on 15 February 2019 at the University Hospital, Monklands. He was 2 hours old at the time of his death.
2. In terms of section 26(2)(b) of the Act: there was no accident which resulted in Leo's death and accordingly there is no finding in terms of section 26(2)(d).

3. In terms of section 26(2)(c) of the Act: the causes of Leo's death were: (a) perinatal (intrapartum and postpartum) hypoxia; (b) placental abruption; and (c) extreme prematurity. He suffered from a deficiency of oxygen during and shortly after labour.

4. In terms of section 26(2)(e) of the Act: Leo's death might realistically have been avoided if Leo's mother, Nadine Rooney, had been advised to attend the maternity assessment unit at the Princess Royal Maternity Hospital, Glasgow for further assessment on 15 February 2019 and if she had acted upon that advice.

5. In terms of section 26(2)(f) of the Act: There was no guidance or checklist to assist triaging midwives in the assessment of preterm labour symptoms at the Princess Royal Maternity Hospital, Glasgow. There was no guidance indicating that a lower threshold ought to be applied when advising woman to attend for assessment where preterm labour was suspected. These were defects in the system of working at the maternity assessment unit in the Princess Royal Maternity Hospital, Glasgow which contributed to Leo's death.

6. In terms of section 26(2)(g) of the Act: the foregoing are the principal facts relevant to the circumstances of Leo's death. Other relevant facts are set out below.

Ellie McCormick ("Ellie")

1. In terms of section 26(2)(a) of the Act: Ellie McCormick died at 0220 hours on 5 March 2019 at Wishaw General Hospital, Wishaw. She was 5 hours old at the time of her death.

2. In terms of section 26(2)(b) of the Act: there was no accident which resulted in Ellie's death and accordingly there is no finding in terms of section 26(2)(d).

3. In terms of section 26(2)(c) of the Act: the cause of Ellie's death was hypoxic ischaemic encephalopathy due to intrapartum hypoxia. She suffered a brain injury caused by a lack of oxygen during labour.

4. In terms of section 26(2)(e) of the Act: Ellie's death might realistically have been avoided:

   (a) If Ellie's mother, Nicola McCormick, had been advised of the need for induction of labour at or before 40 weeks gestation when she attended for assessment on 13 February 2019 and if she had acted upon that advice; and

   (b) If Ellie's mother, Nicola McCormick, had been advised to attend Wishaw General Hospital for assessment following her telephone call to the maternity triage unit at 1629 hours on 4 March 2019 and if she had acted upon that advice.

5. In terms of section 26(2)(f) of the Act: the lack of an effective means of flagging or highlighting risks and complications in Ms McCormick's pregnancy was a defect in the system of working which contributed to Ellie's death.

6. In terms of section 26(2)(g) of the Act: the foregoing are the principal facts relevant to the circumstances of Ellie's death. Other relevant facts are set out below.

Mira-Belle Bosch ("Mira-Belle")

1. In terms of section 26(2)(a) of the Act: Mira-Belle Bosch died at 1230 hours on 2 July 2021 at Wishaw General Hospital. She was 12 hours and 1 minute old at the time of her death.

2. In terms of section 26(2)(b) of the Act: there was no accident which resulted in Mira-Belle's death and accordingly there is no finding in terms of section 26(2)(d).

3. In terms of section 26(2)(c) of the Act: the causes of Mira-Belle's death were: (a) hypoxic ischaemic encephalopathy due to; (b) breech home delivery with fetal head entrapment. She suffered a brain injury caused by a lack of oxygen during labour.

4. In terms of section 26(2)(e) of the Act: Mira-Belle's death might realistically have been avoided:

   (a) If Mira-Belle's mother, Rozelle Bosch, had been advised to attend Wishaw General Hospital for induction of labour approximately 24 hours after spontaneous rupture of membranes, being anytime after 4pm on 1 July 2021, and if she had accepted that advice; and

   (b) If Mira-Belle's mother had been offered the option of admission to Wishaw General Hospital on 30 June 2021 to await induction of labour when possible and she had chosen that option.

5. In terms of section 26(2)(f) of the Act: the interpretation and application of the recommendation set out in the NHS Lanarkshire Guideline for the management of Pre-Labour Rupture of the Membranes at Term (published in September 2020), to wait up to 47 hours after spontaneous rupture of membranes before induction of labour, was a defect in a system of working which contributed to Mira-Belle's death.

6. In terms of section 26(2)(g) of the Act: the foregoing are the principal facts relevant to the circumstances of Mira-Belle's death. Other relevant facts are set out below.

RECOMMENDATIONS

The Sheriff Principal, having considered the information presented at the Inquiry, makes the following recommendations in terms of section 26(1)(b) of the Act:-

1. **Recommendation 1:** Greater Glasgow & Clyde Health Board ("GGCHB") should develop a trigger list or similar system to (a) aid in the identification and assessment of symptoms that might be indicative of preterm labour and (b) inform a decision as to whether a patient should attend for clinical assessment. When a telephone assessment is carried out with a patient presenting with any symptoms of preterm labour, a list of relevant enquiries should appear on BadgerNet, similar to those that appear for conditions such as: term labour; reduced fetal movement; and rupture of membranes. GGCHB should conclude the development of a guideline for preterm labour as soon as possible. Each of these measures should specify a low threshold for attendance for clinical assessment to reflect the low threshold for admission and obstetric intervention recommended by the NICE Guideline on Preterm Labour and Birth, November 2015. All health boards that provide maternity services should review their practices and guidelines for the identification and management of pre-term labour.

2. **Recommendation 2:** all health boards in Scotland that provide maternity services should review the information displayed on electronic maternity records relating to previous preterm births. They should consider the creation of an automatically generated critical alert for previous preterm labour where one does not exist.

3. **Recommendation 3:** all health boards in Scotland that provide maternity services should ensure they have a procedure that requires an existing named midwife to create a handover note upon a planned change of named midwife. The handover note should be stored on BadgerNet, or similar electronic records, and should draw attention, in particular, to any prior complications or risk factors in a

woman's pregnancy to ensure that these are not lost sight of if continuity of care is interrupted.

4. **Recommendation 4**: all health boards that provide maternity services should ensure they have a system to allow a note to be added to a patient's electronic records in order to highlight a further reason for a referral to a pre-existing appointment with a consultant.

5. **Recommendation 5:** The Electronic Record Keeping Guidance and Audit Tool issued by the Royal College of Midwives should be reviewed to address situations in which midwives may not have access to electronic notes when triaging patients. Guidance should be developed providing that ordinarily, calls from expectant mothers should always be triaged having accessed the patient's electronic notes. Where that has not been possible, the guidance should provide that midwives should access the notes as soon as possible, complete a note of the communication and review the obstetric history to ensure that the advice dispensed was correct. If the advice requires to change in light of the information contained in the electronic notes, the patient should be contacted with further advice as soon as possible. Healthcare professionals assessing or triaging patients should require to confirm and record on BadgerNet (or similar electronic system) that that they have reviewed and considered the obstetric history before providing advice.

6. **Recommendation 6:** all health boards that provide maternity services should consider acquiring hand held ultrasound scanners to detect the presentation of the fetus when a women reports spontaneous rupture of membranes or attends for induction or augmentation of labour.

7. **Recommendation 7:** System C Healthcare Ltd and all health boards using BadgerNet should consider how the engagement of the presenting part can be better recorded on BadgerNet and specifically, whether an assessment of ballotability should be recorded.

8. **Recommendation 8:** Each maternity unit which receives emergency admissions in Scotland should introduce a telephone line for sole use by Scottish Ambulance Service crews giving them direct access to maternity units ("a red phone"). Ambulance crews should be provided with a simple means of identifying the correct telephone number for each red phone in each maternity unit in Scotland.

9. **Recommendation 9:** consideration should be given to the introduction of video facilities to aid communication between paramedics and midwives or obstetricians in emergency situations.

10. **Recommendation 10:** Questions posed by healthcare professionals designed to elicit from a patient both a medical or obstetric history and information on current presentation, should make it clear that information related to the present and the past is sought. Health Boards should review pre-populated questions on BadgerNet (or similar systems) to ensure that if they are deigned to elicit information relating to present and past concerns that is clearly stated.

11. **Recommendation 11:** If "worsening advice" is provided by triaging midwives which includes advice to take analgesia and to call back if symptoms do not improve, women should be provided with an approximate timeframe in which to do so.

The Sheriff Principal, having considered the information presented at the Inquiry, makes the following observations which may assist the conduct of future inquiries:

1. **Observation 1**: In the event of a neonatal death in circumstances giving rise to a report to the Scottish Fatalities Investigation Unit of the Crown and Procurator Fiscals Service, as soon as possible thereafter, the reporting health board should retain a copy of the mother's BadgerNet or electronic records, by way of screenshots of all relevant pages or a video of the information displayed.
2. **Observation 2:** all health boards that provide maternity services should consider the feasibility of making and storing recordings of triage calls to be made available to serious adverse event reviews and fatal accident inquiries.

Sheriff Principal

NOTE

PRELIMINARY MATTERS AND CONTENTS

[1] The death of a child is an unimaginable and deeply painful event in any parent's life; one from which it is undoubtedly difficult to recover. What ought to have been a time of celebration for the parents and families who awaited the births of Leo, Ellie and Mira-Belle, turned to one of sorrow and tragedy. Leo, Ellie and Mira-Belle's parents described the devastating effect of losing a newborn child. Mira-Belle's mother, Mrs Bosch, described it thus: "I knew that her nine month old life had come to an end and the journey we had hoped to walk with her had ended… the clothes which we had brought to take her home with would become the clothes which she would wear to the mortuary."

[2] The purpose of this Inquiry is to understand what happened and what might be done in future to avoid such tragedy. I again offer my deepest condolences to the parents of Leo, Ellie and Mira-Belle. Each gave evidence with great dignity and sought to assist the Inquiry, notwithstanding the anguish and heartache each has suffered.

[3] The Inquiry heard from numerous healthcare professionals. Many of those who assisted in the births of Leo, Ellie and Mira-Belle were also affected by the events that unfolded. It is important to recognise that each of them worked towards, and had hoped for, a different outcome. The toll that such cases can take on those who provide obstetric and midwifery care must not be overlooked.

[4] I am grateful to counsel and the solicitors who appeared before the Inquiry. In the best traditions of the professions, they worked collaboratively to agree evidence and to minimise the distress caused to witnesses by re-living the traumatic events of each death. I am grateful to them and to the staff of the Scottish Courts and Tribunal Service for making arrangements to ensure that the parents of Leo, Ellie and Mira-Belle were cared for sensitively while attending court and were able to join proceedings remotely during this long running Inquiry, if they chose to do so.

[5] I wish to acknowledge that preparing this determination has taken me longer than I would have hoped. Unusually, this Inquiry concerned three deaths on three separate occasions. They were conjoined to ensure that a holistic view was taken of any recommendations which might be made. As a result, as might be expected in an Inquiry of this nature, there were over 2,500 pages of productions, over 350 pages of affidavits, over 250 pages of submissions and several weeks of oral testimony to consider. I have sought to manage the expectations of the participants by providing updates and likely timescales for

the publication of this determination in order to minimise the distress which any delay might otherwise have occasioned.

[6] A determination following an Inquiry requires to adhere to the structure prescribed in the Act of Sederunt (Fatal Accident Inquiry) Rules 2017 ("the Rules"); however, as this is a conjoined Inquiry, to assist the reader and the participants, the note will comprise six chapters. Chapter one deals with the introduction and legal framework. Chapter two deals with some common features. All three deaths required an understanding of a software system called 'BadgerNet' which has replaced paper maternity records in most health boards in Scotland. The circumstances of all three deaths also required an understanding of the Pathways for Maternity Care which apply to all pregnancies in Scotland. Chapters three, four and five comprise the summary of facts, discussion and conclusions in respect of each death. Those representing the participants to the Inquiry provided comprehensive and considered written and oral submissions. These were very helpful. I have considered these in full; however, for brevity and to assist the reader, I have not repeated or summarised the submissions in this determination. Instead, the submissions are referred to where relevant in the discussion section of each chapter. Chapter six identifies any lessons which may be learned and the recommendations I make taking a holistic view of the circumstances of each death.

[7] Generally, I found all witnesses to be credible and to be doing their best to recollect events accurately to assist the Inquiry. The witnesses were, however, recollecting events (for some, traumatic events) which occurred several years ago. Being mindful of the effect of the passage of time upon the ability to accurately recount past events and the extent to which memory can be affected by new information or inferences drawn after the event, I have sought to resolve conflicting evidence by reference to other objective or documentary

evidence, where that is available. I have been mindful too of the observations made by Lord Reed in *McConnell* v *Ayrshire and Arran Health Board* 2001 Rep LR 85 (at paragraph 16-05) that the courts should treat with caution submissions made on the basis that medical records must be expected to be a complete record of events; complete accuracy might be a counsel of perfection, but the reality of the busy environments in which these entries are made requires to be borne in mind.

[8] Where there was conflicting evidence on a matter of importance, I have set out my assessment of that evidence. I have not, however, considered it necessary to summarise all of the evidence led in this case; to do so would be of limited value, particularly as much of the evidence was not controversial.

[9] The contents of this note are as follows:

CHAPTER 1: INTRODUCTION AND LEGAL FRAMEWORK

Introduction

[10] This Inquiry was held under the Inquiries into Fatal Accidents and Sudden Deaths etc. (Scotland) Act 2016 ("the Act"). Leo's death was reported to the Crown Office and Procurator Fiscal Service ("COPFS") on 18 February 2019. Ellie's death was reported to COPFS on 11 March 2019. Mira-Belle's death was reported to COPFS on 5 July 2021. The Lord Advocate considered the deaths to have occurred in circumstances giving rise to serious public concern and that it was in the public interest for inquiries to be held into the circumstances of each death. The Lord Advocate also considered the deaths to have occurred in similar circumstances. The inquiries were conjoined in terms of section 14 of the Act.

[11] This Inquiry relates to events at the Princes Royal Maternity Hospital, Glasgow ("PRMH") operated by NHS Greater Glasgow and Clyde Health Board ("GGCHB"). It also relates to events at Wishaw General Hospital and University Hospital, Monklands operated by NHS Lanarkshire Health Board ("LHB").

[12] Appendix 1 sets out the dates of the preliminary hearings and Inquiry hearings. This Inquiry commenced at Hamilton Sheriff Court. Upon my appointment as Sheriff Principal

of Glasgow and Strathkelvin, the participants requested that the Inquiry be transferred to Glasgow Sheriff Court in terms of section 13(3) of the Act to maintain judicial continuity.

[13] Appendix 1 also provides details of the participants of the Inquiry together with details of their representatives. The advocate depute, Ms Gillespie KC, represented the public interest at the Inquiry. I am grateful to Ms Gillespie KC and Ms Allan, the procurator fiscal depute, for the particular assistance they provided to the parents of Mira-Belle who regrettably had been unable to secure legal aid funding for representation at the Inquiry.

[14] Appendix 2 contains the details of the witnesses who appeared at the Inquiry or who provided affidavits or reports which were admitted without the need for cross-examination. Parties were able to agree the joint instruction of a number of experts: (i) Professor Tracey Humphry, currently the Executive of Clinical and Health Services at the University of South Australia and a Professor of Midwifery; (ii) Dr Rhona Hughes, a former consultant obstetrician and gynaecologist, former Director of Feto-Maternal Medicine at the Simpson Centre for Reproductive Health in Edinburgh and a retired senior lecturer at the University of Edinburgh; and (iii) Professor Benjamin Stenson, lead consultant neonatologist at the Royal Infirmary of Edinburgh, a Professor of Neonatology and former Chairman of the Scottish Neonatal Consultant's Group. Each of these expert witnesses was highly qualified and was able to speak authoritatively on their respective areas of expertise. They were impressive witnesses. I am grateful to them for the considerable assistance they each provided to the Inquiry.

[15] The court directed the participants to agree a glossary of medical terms to assist those involved in the Inquiry and those who have an interest in the proceedings. That glossary is set out at Appendix 3.

[16] The parties were agreed that formal findings in fact were not necessary.

The Legal Framework

[17] This Inquiry was held under section 1 of the Act. The Inquiry is a discretionary Inquiry in terms of section 4 of the Act. The Inquiry is governed by the Act of Sederunt (Fatal Accident Inquiry Rules) 2017.

[18] In terms of section 1(3) of the Act, the purpose of this Inquiry is to establish the circumstances of Leo, Ellie and Mira-Belle's deaths and to consider what steps (if any) might be taken to prevent other deaths in similar circumstances.

[19] Section 26 of the Act sets out the matters to be covered in the determination. These include setting out findings on the following:

(a) when and where the death occurred;

(b) when and where any accident resulting the death occurred;

(c) the cause or causes of the death;

(d) the cause of causes of any accident resulting in the death;

(e) any precautions which –

(i) could reasonably have been taken, and

(ii) had they been taken, might realistically have resulted in the death, or any accident resulting in the death, being avoided;

(f) any defects in any system of working which contributed to the death or any accident resulting in the death;

(g) any other facts which are relevant to the circumstances of the death.

They also include setting out such recommendations (if any) in relation to:

(a) the taking of reasonable precautions;

(b) the making of improvements to any system of working;

(c) the introduction of a system of working;

(d) the taking of any other steps,

which might realistically prevent other deaths in similar circumstances.

[20] The procurator fiscal represents the public interest in investigating, arranging and conducting an inquiry. It is not the purpose of an inquiry to establish civil or criminal liability. Fatal Accident Inquiries are an inquisitorial and not an adversarial process.

CHAPTER 2: PATHWAYS FOR MATERNITY CARE & THE BADGERNET SYSTEM

The Pathways for Maternity Care

[21] National guidelines recommend that all women have a "booking appointment" before 10 weeks gestation (National Institute for Health and Care Excellence (NICE), Antenatal Care Guidelines 2021). At a booking appointment, a midwife obtains a social and medical history, a history of any previous pregnancies, carries out a biophysical assessment and conducts a comprehensive risk assessment. Pathways for maternity care were developed as part of the Keeping Childbirth Natural and Dynamic Programme introduced by the Scottish Government. Since 2009, all pregnant women in Scotland have been placed on a colour coded pathway following assessment at a booking appointment, in accordance with the NHS Quality Improvement Scotland, Pathways for Maternity Care, March 2009. Professor Humphry explained that one of the objectives of the pathways for maternity care is to facilitate ongoing risk assessment of a pregnancy and to ensure evidence-based care by the appropriate professional for all women accessing maternity care across Scotland.

[22] The Pathways for Maternity Care is operated on a traffic light system with green, amber and red pathways. These were explained by Professor Humphry. The green pathway involves midwife led care; healthy women with uncomplicated pregnancies should be

offered a midwife as their lead professional. The amber pathway applies to women with any potential medical, obstetric or social risk factors; women who fall into this category should be further assessed. Following that assessment, they may return to the green midwife led pathway or may be referred to the red pathway. The red pathway involves a maternity care team and applies to women with significant medical or obstetric risk factors. A consultant obstetrician acts as the lead professional, sharing care with midwives, GPs and other care providers such as anaesthetists, diabetologists, cardiologists, neonatologists, psychiatrists. The purpose of these pathways is to ensure that the risks of pregnancy are identified, managed and documented and that each healthcare professional is aware of the level of risk during each interaction with a patient. The pathways involve continuous risk assessment. A woman can move between the pathways throughout her pregnancy, if her risk factors change.

[23] The types of obstetric risk factors relevant to a decision to place a woman on a red pathway include: a previous caesarean section; previous stillbirth; significant or recurring antepartum haemorrhage (bleeding occurring before the onset of labour, often referred to as APH); or a previous baby below the 10th centile (small for gestational age). The Pathways of Maternity Care list a number of significant medical risk factors which are relevant to a decision to place a woman on the red pathway, including a BMI of under 18 or above 35 or a history of smoking. If placed on the red pathway, the frequency with which women may require to meet with a consultant obstetrician or other professionals will be determined by the particular risk identified. For many women, they may only require to meet with a consultant obstetrician once for the purposes of planning their care.

[24] In an uncomplicated pregnancy, if a woman is on the green pathway, she can expect to be have her initial booking appointment at 10 weeks and thereafter appointments at 16,

22, 28, 31, 34, 37 and 40 weeks, with a further appointment at 41 weeks if required. Every woman is continually risk assessed and referred for further tests or management if issues arise, for example from growth scans or blood results.

BadgerNet

[25] BadgerNet is an electronic maternity healthcare record system which allows real time recording of all events in a pregnancy both in the community and in a hospital setting. Currently, all health boards in Scotland, with the exception of NHS Lothian, use BadgerNet. Upon its introduction, it replaced paper maternity and neonatal records. It was designed and is updated and maintained by Clevermed Ltd, now System C Healthcare Ltd.

[26] The evidence before the Inquiry included videos prepared by Cheryl Clarke, chief midwife for LHB and Moira Mooney, a former digital midwife at LHB, which provided an overview of the system and its functionality as it exists today. Each of these witnesses also provided affidavits, but did not provide oral testimony. While their evidence focussed on how BadgerNet was configured in LHB, they also provided the court with a general understanding of the system and its use across various health boards. In addition, GGCHB lodged several productions, including training material provided to staff on how to operate and use BadgerNet. Most of the clinicians who gave evidence during this Inquiry spoke to the information stored on, and the uses made (or which could or should have been made) of BadgerNet specific to each death. It is important thus to provide a summary of the evidence which I have accepted, in relation to the functionality and general use made of BadgerNet.

[27] Gwen Barr is a digital midwife with GGCHB. Her role involves supporting and advising on all aspects of digital change and development in maternity services in GGCHB with a particular focus on BadgerNet. She explained that BadgerNet was introduced in

GGCHB in 2017. Clevermed and GGCHB's e-learning department devised training and guidance for staff at the time. Newly qualified midwives receive 3 hours of training on the system. New staff who have some familiarity with the system have access to Learnpro modules and more intensive training is available upon request.

[28] Cheryl Clark is chief midwife for LHB. She explained that BadgerNet was introduced in LHB in 2016. Again, Clevermed staff and a specialist midwife provided 2 hour group training sessions for all midwives and obstetricians in LHB. Further individual training was provided to those who required it. LHB have appointed a digital midwife to support and advise on all digital development within LHB maternity services. Various online resources are available to staff which can be accessed on the LHB Intranet. LHB created a multi-disciplinary BadgerNet user group with representation from users of the system including system administration, midwives, specialist midwives, doctors and anaesthetists.

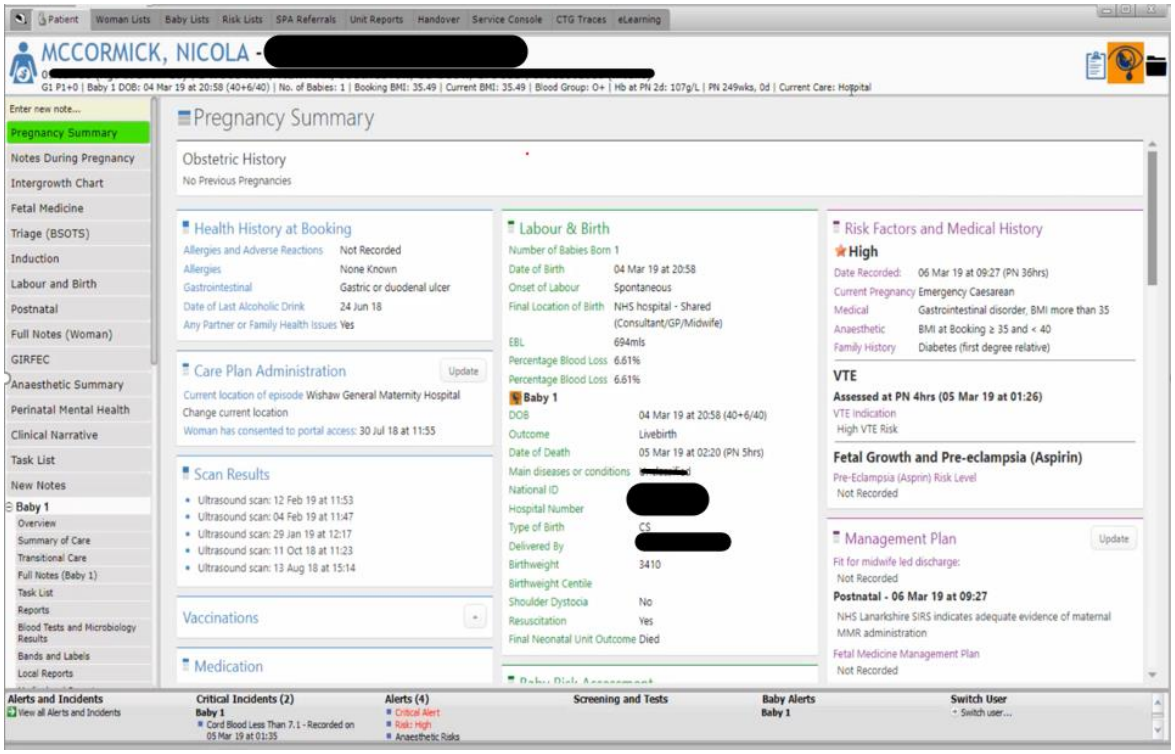
[29] The Scottish Digital Midwife Group is composed of digital midwives from each of the health boards in Scotland and meets quarterly. According to its terms of reference (dated April 2021), its purpose is to connect midwives in specialist digital roles to offer peer support and shared learning. One if its objectives is to "collaborate to identify key changes required within electronic maternity systems to work more effectively with system suppliers". Moira Mooney, former digital midwife at LHB, explained that the group agrees and prioritises change requests for BadgerNet.

[30] Each health board has a degree of control over the functionality of BadgerNet. They can choose to configure the system differently. Health Boards may seek specific changes to their local BadgerNet systems. In addition, System C updates BadgerNet every two months based on requests and functional improvements from health boards across the UK. Updates

and improvements were made to the risk assessment notes on BadgerNet following a review of the recommendations of the Final Ockenden Report (Review of Maternity Services at Shrewsbury and Telford Hospital NHS Trust, March 2022). Those updates included mandatory fields to ensure that risk assessments were completed at every contact with a patient. Since 2019, there have been around 700 changes to the system instigated by the supplier or made at the request of a health board. GGCHB and LHB each have a system for communicating changes to staff.

[31] Upon entering a patient's details into BadgerNet, such as a CHI number or date of birth, the user is presented with a home page entitled "pregnancy summary", similar to that below (each health board is able to configure this page differently). This page is pre-populated or automatically populated by BadgerNet extracting information from clinical notes made by practitioners. The screenshot below demonstrates how the pregnancy summary page is configured currently for LHB[1]:

[1] This screenshot has been reproduced and redacted following discussions with parties and having obtained permission from Ms McCormick.



[32] The pregnancy summary page allows the user to view key information about the patient's booking, current pregnancy, labour and birth and postnatal care. The user can click on any of the visible data to open the related more detailed note. The user can also scroll down each of the coloured columns to access further information. The left-hand series of tabs allows access to further, more detailed information. The "Notes from Pregnancy" tab allows the user to access each of the notes made at any appointment and each communication with a patient.

[33] On the top right hand corner of the screen are 3 icons: the clipboard icon is a shortcut to key details obtained at booking; the eye and tear drop icon is a visual designed to provide practitioners with immediate notification that there has been a stillbirth or neonatal death; the file icon provides information on whether the pregnancy record is open or closed and provides access to an audit trial which captures information about any changes made to existing entries, by whom they were made, when, and the nature of the changes made.

[34] The blue column on each of the pregnancy summary pages sets out the health history of the mother at booking and the care plan administration. Ultrasound scan results can be accessed from this page. The green column sets out key information about labour and birth following the current pregnancy (information on previous pregnancies is available from the obstetric history along the top of the page). The purple column sets out risk factors which have been identified, commonly upon booking or at antenatal clinics. By clicking on any of the entries, the user can access the raw data or note created by the practitioner. By scrolling down the purple column, practitioners can access key events. This feature has been available at LHB since March 2021. It lists, in chronological order (with the earliest listed first), all encounters with the patient including specialist reviews and communications with/attendances at a maternity services unit. For the purposes of this Inquiry, it is useful to note that the key events section provides a summary which is pre-populated from clinical notes, of the main reason for a patient contacting maternity triage services (such as for reduced fetal movements or PV bleeding). The key events section provides quick access to such information "at a glance"; however, the raw data or full record of each entry is also accessible by clicking on the particular event listed in the key events section.

[35] A red star icon for high-risk pregnancies has been visible in the purple column in LHB since 2021.

[36] Several risk factors are automatically populated in the purple column on the pregnancy summary page, from the risk assessment form at booking. Thereafter, clinicians update risk assessment forms (and accordingly the risk factors displayed on the pregnancy summary page are automatically amended/updated) if there has been a change in presentation at a subsequent encounter with the patient. Practitioners are provided with a drop-down menu of risk factors from which to select those applicable. Once a risk factor is

selected and entered into a risk assessment note, certain risk factors will automatically generate an alert. Identification of risk requires professional knowledge of high-risk factors in pregnancy, knowledge of local guidelines and antenatal pathways. Presently, antepartum haemorrhage, PV bleeding (bleeding per vaginum, or vaginal bleeding) and reduced fetal movements are available on the menu of risk factors and will lead to an automatic display of these risk factors in the purple column.

[37] The extended banner at the bottom of the screen is always present when navigating BadgerNet. All alerts and incidents related to the pregnancy can be accessed from this section. Critical alerts appear in red on the banner along the bottom of the page on the extended banner. These were live, in LHB in December 2019, although at that time critical alerts and risks were not highlighted in red type. Some of the critical alerts are automatically generated by the system based on information inputted by a practitioner. Practitioners have been able to manually input a critical alert since March 2018 in GGCHB. Multiple alerts can be listed. Ms Clark explained that local guidance exists in each health board to aid clinicians to decide how and what to input as a critical alert. For example, if a pregnant woman presents with recurrent reduced fetal movements or bleeding, the clinician will input this, knowing that this may affect the risk assessment of the pregnancy.

[38] On the top left of the screen, the user is able to click on "enter new note" to record interactions with patients. The user can select the "type" of communication or interaction from a drop-down list. When a template note is generated, it automatically records the time the note was created, when it was completed and saved and the details of the user who created the note. Many of the template notes are pre-populated with a series of questions which require to be answered and some space for free text to allow the user to add further

information. Once the template note is completed, it is saved and uploaded to the patient's BadgerNet records.

[39] The BadgerNet system was operated by GGCHB and LHB at the time of Leo, Ellie and Mira-Belle's deaths.

CHAPTER 3: LEO LAMONT

Summary

[40] In this section, I set out the facts which were largely undisputed.

[41] The court heard evidence from: Nadine Rooney and Anthony Lamont; Philippa Gentleman, a healthcare support worker and Shona McPhee, midwife, who both spoke to their involvement in Ms Rooney's care prior to Leo's birth; Professor Tracey Humphry and Dr Rhona Hughes. Affidavits were lodged in respect of Gwen Barr, the digital midwife for GGCHB, Mairi McDermid, the associate chief midwife for GGCHB and Suzanne Stewart, Ms Rooney's mother. Professor Benjamin Stenson provided a report. He did not provide oral evidence in relation to the circumstances of Leo's death; however, the content of his report was not disputed and parties agreed that the court could have regard to it. Affidavits were also lodged in respect of Euan McCourtney, paramedic, and Angela Easdon, ambulance technician, who were the first crew to arrive at Ms Rooney's home following the call to the emergency services and in respect of John Reilly, paramedic, who was part of the second crew to arrive. Ms Faheem had lodged a report by Hannah Matthews, a midwifery matron. It was not the subject of a joint minute of agreement and was not spoken to by any witness. I have not had regard to its contents.

Relevant agreed/uncontroversial facts

Events prior to Leo's birth

[42] Nadine Rooney and Anthony Lamont are Leo's parents. Ms Rooney had a history of preterm delivery. She gave birth to a child weighing 2.38 kg by normal vaginal delivery in 2011 at 35 weeks gestation. This was a preterm birth. A preterm birth is one which occurs before 37 weeks gestation.

[43] Ms Rooney suffered a miscarriage in June 2018 at 9 weeks gestation.

[44] Ms Rooney became pregnant for a third time in 2018. She was 25 years of age at the time. At around 7 weeks gestation she attended an assessment with her community midwife on 25 September 2018. She was a smoker and was referred for smoke cessation therapy. Owing to her recent miscarriage, Ms Rooney was booked for an ultrasound scan.

[45] On 4 October 2018 an ultrasound scan confirmed a singleton pregnancy. Ms Rooney was estimated to be around 8+2 weeks gestation.

[46] On 15 October 2018, Ms Rooney attended at the Princess Royal Maternity Unit, Glasgow (PRMH) for an antenatal obstetric booking appointment. Her physical assessment and routine blood tests were within normal parameters. She was recorded to have a number of antenatal risk factors; she was a smoker and had previously had a preterm delivery at less than 36 weeks. She was assessed as being at high risk of obstetric complications during pregnancy and childbirth and was referred for obstetric led care to PRMH. This a "red pathway of care" in terms of the national pathways of maternity care.

[47] She attended for a second ultrasound scan on 5 November 2018. Her expected date of delivery was confirmed as 14 May 2019 and no abnormalities were detected.

[48] On 27 November 2018, Ms Rooney attended at a planned antenatal appointment at Wishaw General Hospital. She reported keeping well, but reported pelvic pain and sciatica.

She was advised to self-refer to physiotherapy. The fetal physical assessments were reassuring and all markers were within normal limits.

[49] On 24 December 2018 a third ultrasound scan took place at around 19+6 weeks gestation. No abnormalities were detected. A further planned antenatal appointment took place on 15 January 2019 and all maternal and fetal markers were within normal limits. She reported suffering from thrush, a chest infection and urinary tract infection. She was advised to consult her GP if her symptoms did not improve.

[50] On 28 January 2019, Ms Rooney contacted the maternity assessment unit (maternity assessment unit) at PRMH by telephone at around 0905 hours. She was around 24+6 weeks gestation. She reported reduced fetal movements, describing having felt none since the previous day. She was advised to attend for assessment. She attended at PRMH at around 1120 hours. On assessment she was recorded as having a raised heart rate although that came down upon further assessment. All other markers were reassuring and within normal limits. The midwife recorded hearing fetal movements and the fetal heart rate was recorded at 150 beats per minute (bpm). Ms Rooney, however, reported she could not feel any fetal movements. She was reviewed by a doctor who prescribed oral antibiotics and further treatment for thrush. It was noted that Ms Rooney had a scheduled appointment with her named midwife the following week.

[51] Ms Rooney again made contact with the maternity assessment unit at PRMH by telephone on 6 February 2019. She was approximately 26+1 weeks gestation. She reported a minimal amount of "pink vaginal loss" when wiping. An assessment was carried out over the telephone. It was recorded that she reported no fresh bleeding, no pain and that she could feel fetal movement. She was advised to stay home, but to re-contact the maternity assessment unit should there be any fresh bleeding.

[52] On 13 February 2019 Ms Rooney attended a scheduled antenatal appointment with her named midwife. She was approximately 27+1 weeks gestation. She reported a history of infections over the previous months and thrush which had been treated four or five times. She reported fresh red bleeding on wiping and feeling regular movements. She was advised to contact PRMH for assessment. Her named midwife also contacted PRMH to advise that Ms Rooney would attend.

[53] Ms Rooney made contact with PRMH by telephone and spoke with midwife McPhee at 0945 hours on 13 February 2019. She reported fresh red bleeding on wiping and an active baby. She was advised to attend for assessment.

[54] Ms Rooney attended at PRMH at around midday on 13 February 2019. She was initially assessed by midwife McPhee. She was then assessed by a foundation year two doctor who performed a speculum examination. Ms Rooney's cervix was recorded as closed, a small cervical ectropion (which occurs when the cells inside the cervix are visible outside the cervix) was seen with some blood stained mucous on the speculum. A high vagina swab was taken. Ms Rooney was advised to return should there be any further bleeding or any discomfort (such advice is commonly referred to as "worsening advice").

[55] Ms Rooney was about to be discharged when she attended the toilet and reported passing a small fresh blood clot in the toilet. The doctor requested that a more senior colleague assess her. She was assessed by an obstetrics registrar at around 1354 hours on 13 February 2019. A further speculum examination was performed. It was again noted that the cervix was closed, a cervical ectropion was present and there was no evidence of bleeding. She was discharged home with worsening advice.

Events of 15 February 2019

[56] At around 0317 hours on 15 February 2019, Mr Lamont contacted the maternity assessment unit at PRMH by telephone on behalf of Ms Rooney. Ms Rooney was approximately 27+3 weeks gestation. She explained that she was experiencing back pain. She spoke first with Phillipa Gentleman, a triage healthcare support worker and then with midwife McPhee. Midwife McPhee advised her to take painkillers and to call the maternity assessment unit back if the pain did not improve.

[57] At around 0458 hours on 15 February 2019, Mr Lamont contacted the Scottish Ambulance Service. Ms Rooney had given birth at around 0450 hours on her bathroom floor. Leo was crying and breathing with intermittent gasping breaths. Mr Lamont was advised by the 999 call handler to tie the umbilical cord. He did so, using a shoelace.

[58] The first ambulance crew (paramedic McCourtney and ambulance technician Easdon) arrived at around 0517 hours. They were both trained and qualified to deal with obstetric emergencies and to provide resuscitation to a neonate (newly born child). On arrival they found Ms Rooney on the bathroom floor with Leo between her legs. They immediately assessed the situation. The umbilical cord was clamped.

[59] Paramedic McCourtney provided care to Ms Rooney while ambulance technician Easdon assessed Leo. Leo was found to be cyanosed (a bluish discolouration of the skin) and noted to have poor tone and intermittent gasping breaths. The second ambulance crew arrived at 0519 hours. Paramedic Reilly noted that Leo's heart rate was 60 bpm. The second crew immediately commenced cardiopulmonary resuscitation (CPR). Steps were taken to keep Leo warm. A Paramedic Response Unit arrived at 0520 hours.

[60] Leo was taken to University Hospital, Monklands by a paramedic and ambulance technicians at around 0527 hours, arriving at 0542 hours. Resuscitation attempts continued during the journey. Leo was recorded to have remained cyanosed throughout.

[61] University Hospital, Monklands was the closest hospital with an accident and emergency department. The attending paramedics alerted staff at the hospital that they were en route and provided details of Leo's condition. Ms Rooney was transported in a second ambulance.

[62] Upon his arrival at University Hospital, Monklands at 0549 hours, Leo was assessed and noted to be displaying agonal gasps, appeared mottled in colour and his heart rate was lower than 60 bpm. Medical staff continued resuscitation measures for 30 minutes, including the insertion of an intraosseous needle into Leo's right hip to allow adrenaline to be administered. Leo's heart rate did not improve; it remained at 65 bpm. Following a pulse check at around 0628 hours, the decision was taken to discontinue resuscitative measures. Leo was displaying agonal respiratory effort, but there were no other signs of life. Leo was placed with his parents.

[63] Leo died at 0710 hours on 15 February 2019.

[64] Following Leo's death, Leo and Ms Rooney were transferred to PRMH arriving at 1120 hours on 15 February 2019.

The post-mortem findings

[65] A post-mortem examination was conducted on 20 February 2019 at the Queen Elizabeth University Hospital, Glasgow. The consultant paediatric and perinatal pathologist recorded the cause of death as:

Ia Perinatal (intrapartum and postpartum) hypoxia

Ib Presumed placental abruption

II Extreme prematurity.

[66] The final post-mortem report concluded:

> "This is a neonatal death at 2 hours (27 weeks gestation), following recurrent maternal urinary tract infections, antepartum haemorrhage and precipitous delivery at home, on a background of previous preterm delivery at approximately 35/40 gestation and previous miscarriage at approximately 8/40 gestation. . .
>
> The following organs show evidence of acute hypoxic stress (skin, thymus, heart, lungs, testis, liver, oesophagus, kidneys), in keeping with an acute mode of death…
>
> . . . in addition, histological changes are seen on examination of the placenta, which while not entirely diagnostic would support a clinical impression of placental abruption. No underlying cause for abruption is seen…These findings would be supportive of the impression that there was an intrauterine haemorrhage prior to delivery."

Events following Leo's death

[67] A Significant Clinical Incident (SCI) investigation was undertaken by GGCHB and the Scottish Ambulance Service by a team who had no prior involvement in Leo or Ms Rooney's care. It reported in April 2019. Its remit was to identify the root causes and key learning from the incident and to use the information to significantly reduce the likelihood of future harm to patients. The team consisted of staff from obstetrics, midwifery, neonatology and the ambulance service. They produced a report dated April 2019. The material findings from this report are discussed below.

DISCUSSION AND CONCLUSIONS

[68] In this section, I set out my assessment and conclusions on the key chapters of evidence, including any disputed evidence. Thereafter, I set out my conclusions on precautions which might reasonably have been taken and which might realistically have

avoided Leo's death, and on any defects in any system of working which contributed to his death.

Key chapters of evidence

What was said during the telephone call at 0317 hours on 15 February 2019?

[69] This matter is of central importance. There was conflicting evidence before the court.

[70] Ms Rooney explained that during the evening of 14 February 2019, she experienced back pain. At around 8pm, she exchanged a series of Facebook messages with her mother in which she explained that the pain was only really bad when she was sitting and that she did not think she was in labour as she had been assessed at PRMH the previous day; she surmised that she may be experiencing Braxton Hicks contractions (practice contractions) or that her back pain was related to the amount of activity she had undertaken that day. She could not recall whether she took any painkillers. At around or 2am on 15 February 2019, she woke with what she described as "agony pains" from her back to her stomach; the pain was worse than that experienced the previous evening. At 0308 hours she exchanged the following Facebook messages with her mother:

Ms Rooney:	"mum are you up?"
Ms Stewart:	"what's up"
Ms Rooney:	"Am in agony and terrified"
Ms Stewart:	"call hospital"
Ms Rooney:	"we goin to but need someone to take [daughter], am actually terrified"
Ms Stewart:	"drop her off, best getting checked out"
Ms Rooney:	"ok thanks, he can't come this early."
Ms Stewart:	"No. Hopefully they can stop it"
Ms Rooney:	"a dono it's scaring me"
Ms Stewart:	"might just be Braxton Hicks kicking in"
Ms Rooney:	"a dono av bein up since 2 in tears of agony"
Ms Stewart:	"get in there soon as you can. I'm up now"
Ms Rooney:	"[Antony's] on the phone to hosp the now"

[71] During her evidence, Ms Rooney described herself as experiencing pain levels at a score of 9/10, similar to pain she experienced previously when in labour with her daughter. She was anxious because of her previous history of preterm birth and she was aware that her pregnancy had been assessed as "high risk". Mr Lamont called PRMH at 0314 hours. Ms Rooney had no recollection of what Mr Lamont said during that conversation. She recalled that midwife McPhee asked to speak to her. Ms Rooney's recollection was that she explained to the midwife that her pain was worse than Braxton Hicks and that it was unbearable and she was in agony. She explained that she had been unable to speak much because of her pain. She recollected being advised that as she was only 27 weeks gestation, it was unlikely that she was in labour and she was advised to take two painkillers, a bath or a hot water bottle and return to bed, but to call back if the pain got worse. She did not recollect being asked about her previous medical history or her recent attendances at PRMH. She denied describing her pain as "mild". After the call, she sent a Facebook message to her mother explaining the advice and advising her mother to return to bed. Ms Rooney was, however, unable to return to bed, because of the pain she was experiencing. She could not recollect whether she took painkillers, but believed that she had. Over a period of an hour, the pain worsened. Mr Lamont decided that he would transport Ms Rooney to PRMH; however, she began delivering Leo.

[72] Mr Lamont recalled being woken by Ms Rooney who told him she was in agony and that the pain she was experiencing was similar to previous labour pains. Ms Rooney was crying and looked terrified. Mr Lamont contacted PRMH and explained that Ms Rooney was in pain (which upon cross-examination by Ms Gillespie KC he described as "severe" pain in her back and in her stomach area), had previously passed blood clots and that she had woken him. He was asked to hand the telephone to Ms Rooney. He overheard Ms

Rooney describe her pain as severe pain, or agony, in her lower back which had woken her from sleep. He recalled Ms Rooney saying to the midwife "it's definitely not Braxton Hicks" and that the pain was similar to that experienced in her previous labour. Ms Rooney was upset while on the telephone, albeit she had tried to be composed. After the call was over, Mr Lamont started to note the timing of Ms Rooney's pain. He noted the pain was coming in waves and the intervals were closer together. Over around one hour, the episodes of pain increased in frequency from 10 minute intervals to 2 minute intervals. He decided to transport Ms Rooney to the hospital and to drop off their daughter with Ms Rooney's mother en route; however, Ms Rooney began to deliver Leo.

[73] Philippa Gentleman is a healthcare support worker at PRMH. She worked within the maternity assessment unit and answered Mr Lamont's call initially before passing it on to Ms McPhee. She had no recollection of her discussion with Mr Lamont. She referred to her BadgerNet note of the call. She had recorded the reason for the call as "other pain; backache" and passed the call to midwife McPhee.

[74] The following extract from BadgerNet is the template note populated by Ms McPhee during her call with Ms Rooney:

Background	
Reason for Call:	Backache
Contractions?:	No
Any pain (other than contractions)?:	No
Have your waters gone?:	No
Any PV bleeding?:	No
Other PV loss:	No
Any visual disturbances?:	No
Any problems passing urine?:	No
Has there been a change in the baby's movements?:	No
Comments:	lower backache worse when sitting when upright pain better Braxton hicks has not tried analgesia yet

Actions	
Early labour advice given:	Paracetamol 1g 4-6 hourly, Warm bath/shower
Advice Given:	knows to contact mau if pain does not imrove with analgesia
To come in?:	No
Ring back:	No

Recommendation
Decision Support: Woman agrees with plan

[75] Midwife McPhee has been a midwife for around 25 years. She did not recall every aspect of her conversation with Ms Rooney on 15 February 2019; however, she explained that at the time of the telephone conversation, she recalled that she had seen Ms Rooney two days previously and had been aware that Ms Rooney had attended for assessment because of bleeding. She had been aware of Ms Rooney's risk factors, that she had been assessed as high risk and that she was a smoker with a previous preterm delivery. She spoke to reviewing Ms Rooney's medical notes on BadgerNet and speaking to her regarding the reason for her call. Midwife McPhee explained that she had been advised by Ms Rooney that she had been lying in bed, had got up, was aware of pain in her lower back which was "constant not crampy" and was "mild", was worse when sitting and eased or disappeared upon a change of position. Upon cross-examination by Ms Faheem, midwife McPhee described the pain as "just an ache". She explained that she worked through the questions or prompts on BadgerNet and answered yes/no to each according to Ms Rooney's responses. She assessed Ms Rooney as sounding calm; it was a "normal conversation"; she was not

tearful. She spoke to Ms Rooney about her visit to PRMH two days earlier and about her previous episodes of PV bleeding. She concluded that Ms Rooney was suffering from intermittent muscular pain which she described as very common in the third trimester of a pregnancy.

[76] She recorded the word "Braxton Hicks" in her note on BadgerNet. In her affidavit, she explained that she had noted this "because I had raised it with Ms Rooney and she had reported these earlier in the day", suggesting that she instigated the discussion of Braxton Hicks contractions with Ms Rooney. During her evidence before the court, she stated that Ms Rooney had volunteered that she had experienced Braxton Hicks earlier that day and that she had experienced such pain for around two weeks. Her call commenced at around 0323 hours and she had completed the BadgerNet entry by 0328 hours. In that time, she had spoken with Ms Rooney, looked at her medical history on BadgerNet, including the home page, specialist reviews, previous delivery information, risk factors and the most recent scan and thereafter completed the BadgerNet entry. She explained that the process of accessing and reviewing information on BadgerNet could be done quickly.

[77] Midwife McPhee accepted that in relation to the third entry in the "background" section of the note which read "any pain" she could have recorded "yes", but she considered that she had noted back pain under the reason for the call. She had not recorded PV bleeding because she was recording the present position, not previous episodes. She had advised Ms Rooney to take paracetamol and use a hot pack on her back. It was put to midwife McPhee that the advice she had provided had been recorded as "early labour advice given". She explained that this had not been because she considered Ms Rooney to be in early labour, but rather because options for analgesia happened to be part of a drop-down menu under the heading "early labour advice given" on BadgerNet. That option also

populated the words "warm bath/shower", but she had not provided that advice to Ms Rooney. She accepted that she could have recorded her advice to Ms Rooney in the free text area of her note on BadgerNet without selecting "early labour advice given" from the drop-down menu. She accepted that her entry could be misinterpreted as her providing early labour advice.

[78] Midwife McPhee completed and signed a typed note on 28 February 2019, 13 days after Leo's birth. She consulted Ms Rooney's records on BadgerNet before she did so. In her note, she described Mr Rooney's pain as "mild". It was put to her that her description of "mild" pain was informed by her recommendation to take paracetamol; it was an inference she had drawn rather than a clear memory of what she had been told by Ms Rooney at the time. She denied that her recollection of events was influenced by information she had subsequently considered when writing her recollection of events on 28 February 2019 or preparing for the subsequent reflective exercise. She stated that she considered the possibility of preterm labour but having regard to the description of symptoms provided by Ms Rooney, did not consider her to be in preterm labour. She accepted there was no information in her note on BadgerNet that she had in fact accessed and viewed any of Ms Rooney's medical history, however she was clear that she was aware of her previous preterm delivery and of her previous episode of bleedings days earlier and that she discussed these with Ms Rooney by telephone on 15 February 2019. She understood that back pain could be a symptom of preterm labour.

[79] After Leo's death, midwife McPhee required to take part in a "reflective exercise" which included research and reading into the symptoms of preterm labour, incidents of occurrence after previous preterm labour and NICE guidelines on preterm labour. She accepted that her notes ought to have been clearer. With the benefit of hindsight, and

knowing the outcome, she would have invited Ms Rooney into PRMH for assessment; however, she explained that she had exercised her clinical judgment based on the symptoms reported to her and had concluded that there was no indication of preterm labour.

Submissions on the area of disputed evidence

[80] Broadly speaking, I was invited to prefer Ms Rooney's recollection of the call and her description of her pain by the Crown and by Leo's parents. GGCHB and midwife McPhee's solicitor invited me to prefer her account. Each pointed to the consistencies and discrepancies in the differing accounts.

Assessment of the disputed evidence

[81] Having considered the evidence, I am satisfied on a balance of probabilities that Ms Rooney gave midwife McPhee an account of pain which was more severe than mild back pain. Ms Rooney accepted that her memory of what was said on the evening of 15 February 2019 was "a blur"; that is understandable having regard to the tragic circumstances which unfolded. There were many aspects of the call she was unable to recollect, such as whether she was asked the series of questions on the communication entry in BadgerNet; whether she was advised to call back if she remained in pain; and whether she had taken painkillers thereafter. There were aspects of the telephone conversation which midwife McPhee too was unable to recall. That too is understandable in light of the passage of time and the number of patients she might triage in one night shift (she explained she could deal with 30-40 calls in one night shift, although she could not recall how busy the maternity assessment unit had been on 15 February 2019). On the critical matter of Ms Rooney's description of her pain, I have preferred Ms Rooney's account for the following reasons:

(a) her account was consistent with the contemporaneous Facebook messages she exchanged with her mother in which she described herself as "in agony", terrified, scared and in tears; those messages were exchanged at around 0308 hours and continued while Mr Lamont was making a call to PRMH (Ms Rooney refers to Mr Lamont being "on the phone to the hosp the now"); the exchange ended at 0328 hours, being the time at which midwife McPhee completed her entry of the call on BadgerNet. This exchange of messages, in Ms Rooney's own words, captures both her state of mind and her experiences of pain in the relevant timeframe. It was clear from these exchanges that Ms Rooney anticipated receiving advice to attend PRMH and was making arrangements for her daughter's care to enable her to do so. It is, in my judgment, implausible that she would express herself in such terms to her mother, or anticipate the need for such arrangements, yet at the same time downplay her concerns or describe her pain as "mild" to midwife McPhee;

(b) her account was consistent with Mr Lamont's description of her condition (he was the only eyewitnesses to the physical manifestation of Ms Rooney's pain and had described her as panicking, upset and in tears). Ms Rooney's account was also consistent with Mr Lamont's account of the discussion with midwife McPhee, namely that Ms Rooney had described being in severe pain;

(c) she has been consistent in her account of pain. The pathologist who completed a post-mortem examination for Leo and reported her findings in August 2019, noted that Ms Rooney "woke around 0230 hours with severe abdominal pain and back pain. She believed she was having contractions. However, on contacting the maternity assessment unit she was told that contractions were unlikely given her gestation". It can be reasonably assumed therefore that this account of Ms Rooney's pain and her

recollection of the discussion between herself and midwife McPhee was provided at some time between February and August 2019;

(d) The Significant Clinical Investigation into Leo's death carried out by a multidisciplinary team, which included an interim lead midwife and a clinical risk midwife at PRMH, noted "it was not normal for a patient to be in sufficient enough pain as to require calling for advice in the middle of the night". In Dr Hughes' opinion it was more unusual for a woman to contact maternity services on account of backache during the night. Professor Humphry noted that it is "unusual for backache to be so painful that it would lead a woman to call the maternity assessment unit in the middle of the night." While midwife McPhee suggested that such a call was not unusual, I have preferred the opinions of the experts, which accords with the opinion expressed by the multidisciplinary team who took part in the SCI. The evidence supports the conclusion that it is improbable that Ms Rooney would have contacted PRMH in the early hours of the morning to seek advice in relation to mild pain. While some patients may seek advice for minor symptoms, it is noteworthy that Ms Rooney did not seek advice from maternity services when she had experienced some pain the previous evening; she had been able to differentiate between pain which eased upon a change of a position and pain for which she required medical advice;

(e) her account is more likely having regard to what transpired; she was likely to have been in preterm labour at the time of the call (see paragraph [108] below) and likely to have been in significant pain; she gave birth to Leo around 80 minutes later (the call ended at 0328 hours and Mr Lamont called for an ambulance at around 0450 hours noting that Ms Rooney had given birth);

(f) in my judgment, midwife McPhee's memory of her call with Ms Rooney was based, not on a clear recollection of events, but upon an examination of her entry in the BadgerNet records many days later. At times, perhaps understandably, she was defensive during questioning. However, by her own admission, her entry on BadgerNet was inaccurate in a number of respects; notwithstanding the reference to "early labour advice", she did not consider Ms Rooney to be in early labour; she did not give advice to Ms Rooney to take a bath or shower; she had recorded "no" against "any pain". The word "mild" did not feature in her entry as a description of Ms Rooney's pain. Her entry under "comments" appeared to be a summary of symptoms experienced by Ms Rooney the previous evening, rather than a note of the symptoms which had prompted her call. In my judgment, her recollection was influenced by the knowledge of Leo's subsequent death. It is of note that the word "mild" as a description of Ms Rooney's pain appeared in a written statement dated 28 February 2019, after Leo's death. Midwife McPhee explained that she created the statement "to keep matters fresh in her mind" and not because she knew that there would be an investigation; however, her statement is prefaced with the words "this is my factual account of events as requested". She did not accept that, five years on, her recollection of Mr Rooney's description of pain might be inaccurate. I found her confidence in her recollection to be misplaced and more likely to be influenced by her advice to Ms Rooney (to take pain relief medication and apply heat therapy) and her subsequent knowledge of what transpired;

(g) If midwife McPhee's note of 28 February 2019 was an accurate reflection of her recollection some 13 days after the telephone call with Ms Rooney, it is surprising that it made no reference to Braxton Hicks contractions. During her evidence, she stated

that she was clear that it was Ms Rooney who had mentioned "Braxton Hicks" and moreover had explained that she had experienced Braxton Hicks contractions for around 2 weeks. Her evidence raised doubts in relation to the reliability of her memory both 2 weeks after the telephone call and by the time she gave evidence to the Inquiry.

[82] On behalf of GGCHB, Mr McConnell KC submitted that around one hour had lapsed between Ms Rooney waking and the call to the hospital. Had she been in severe pain, it was difficult to understand why Ms Rooney would wait to call the hospital or wait to wake Mr Lamont. I do not accept that this short passage of time undermines Ms Rooney's account; it is not unreasonable for an expectant mother to wish to assess whether the pain she was experiencing was likely to subside before seeking medical advice. Whatever the level of pain prior to Ms Rooney waking Mr Lamont, by the time she did so, and by the time she exchanged messages with her mother, I am satisfied that she was in a great deal of pain.

[83] Mr McConnell KC also referred to a passage of Mr Lamont's evidence which, he submitted, indicated that Ms Rooney was a naturally anxious individual who was reticent when communicating with strangers. She often preferred Mr Lamont to initiate communications with strangers. It was submitted that it was likely that Ms Rooney underreported her symptoms to midwife McPhee because of a combination of fatigue, anxiety and shyness. On behalf of midwife McPhee, Mr Rodgers made a similar submission. In my judgment, Ms Rooney was able to give her evidence clearly in court. I did not consider her to be displaying signs of anxiety beyond those which might be experienced by most witnesses who are recounting traumatic events. While I accept Mr Lamont's evidence that Ms Rooney can be an anxious individual, I am not persuaded that this would cause her to downplay her symptoms or impede her ability to communicate on a matter as important

as her own wellbeing and that of her child. Mr Lamont confirmed that when he was not available or when an issue of significance arose, Ms Rooney would manage her anxiety. Indeed, there were several entries in BadgerNet which illustrated that Ms Rooney had done just that and was able to communicate adequately with medical staff (she had contacted PRMH on 28 January to discuss her concerns regarding reduced fetal movements and on 6 and 13 February to discuss bleeding). There was no suggestion that on any of these dates the information provided by Ms Rooney had been downplayed or affected by her anxiety. Indeed, on each occasion, the information she had provided had caused medical staff (including midwife McPhee, on 13 February) to invite Ms Rooney into PRMH for further assessment.

[84] Both Mr McConnell KC and Mr Rodgers suggested that it was inherently unlikely that an experienced midwife would simply ignore a patient's symptoms and distress; she would have no motivation to do so. Professor Humphry accepted that ignoring such symptoms or distress would be a "shocking" failure which would be contrary to training and standards of practice. I am, however, satisfied on a balance of probabilities that midwife McPhee received an account of pain which was more severe than mild pain and failed to appreciate or consider the possibility that Ms Rooney might be experiencing early labour symptoms. It is not necessary to find that she deliberately chose to ignore Ms Rooney's symptoms, and I do not do so; it is more likely that she misunderstood, failed to correctly assess them or to understand their significance in terms of the possibility that Ms Rooney was experiencing preterm labour. I wish to make clear that I do not conclude that midwife McPhee's evidence lacked credibility. I am satisfied she sought to assist the court. I found her evidence unreliable.

[85] I accept midwife McPhee's evidence, however, that she did consult Ms Rooney's notes on BadgerNet, had been aware of her assessment at PRMH on 13 February 2019 and had been aware of her risk factors. That evidence was largely unchallenged.

Was the antenatal care received by Ms Rooney prior to 13 February 2019 appropriate?

[86] This matter was addressed in detail by Professor Humphry who considered the assessment of Ms Rooney's previous medical, obstetric and social history to have been comprehensive and complete when she attended for her booking assessment on 25 September 2018. Her booking assessment had been carried out before 10 weeks gestation in accordance with present national guidelines (NICE (2021) Antenatal Care Guidelines).

[87] Professor Humphry considered that Ms Rooney was correctly assessed, and correctly referred for obstetric led care and placed on the red pathway of care. Dr Hughes agreed.

[88] The factors which identified her as being at high risk were her previous preterm delivery and the fact that she was a smoker. A preterm birth is one which occurs before 37 weeks gestation. Mr Rooney had given birth to a child at 35 weeks gestation in 2011. A previous preterm birth increases the risk of subsequent preterm births. Maternal smoking is associated with pregnancy loss and premature births. According to NHS England Saving Babies Lives Care Bundle Version Two, March 2019, smoking doubles the risk of preterm delivery. Dr Hughes explained that smoking impairs the health of the blood vessels to the uterus and placenta and was a relevant risk factor for placental abruption, which in turn could cause preterm labour. She explained that Ms Rooney's previous miscarriage was a relevant consideration; however, it did not of itself inform decisions on Ms Rooney's antenatal care as miscarriages are relatively common in early pregnancy.

[89] Both Professor Humphry and Dr Hughes agreed that Ms Rooney was correctly referred for an early pregnancy scan in light of her risk factors. Upon her obstetric booking appointment on 15 October, the obstetrician planned for fetal growth scans at 30 and 34 weeks gestation due to Ms Rooney's previous preterm delivery. Again, Professor Humphry considered the plan for scans to be appropriate as preterm birth is associated with small for gestational age foetuses. She concluded that appropriate midwifery care was delivered and documented throughout the pre-planned appointments.

[90] In relation to Ms Rooney's contact with the maternity assessment unit at PRMH on 28 January 2019 and 6 February 2019, again, Professor Humphry described the midwifery care received as appropriate and comprehensive. On 28 January, upon Ms Rooney's report of reduced fetal movements, she had been correctly asked to attend PRMH for assessment, had received appropriate care and reassurance and had been prescribed oral antibiotics and treatment for thrush. On 6 February 2019, upon Ms Rooney reporting a small amount of pink vaginal bleeding, the midwife who carried out the telephone consultation or triage had concluded that as no pain was disclosed and as Ms Rooney was experiencing fetal movements, she could remain at home and contact PRMH again if further bleeding occurred. Dr Hughes and Professor Humphry agreed that the midwife had acted appropriately.

[91] **Conclusion 1:** The evidence supports the conclusion that Ms Rooney was correctly identified and assessed as having a high-risk pregnancy and was correctly placed on the red pathway of maternity care. Her status as a smoker and her previous preterm birth were the factors relevant to that assessment. These factors placed Ms Rooney at a higher risk of a subsequent preterm birth. The antenatal care received by Ms Rooney prior to 13 February 2019 was appropriate.

Was the antenatal care received by Ms Rooney on 13 February 2019 appropriate?

[92] Following further bleeding, Ms Rooney was advised to attend for assessment at PRMH. She was assessed by a midwife and thereafter by a foundation year 2 doctor who performed a speculum examination. Upon a further report of bleeding before she was discharged, she was examined again by an obstetrics registrar who carried out an abdominal palpation and a repeat speculum. Both the doctor and the obstetrician noted the presence of a cervical ectropion or erosion which provided a likely explanation for the episodes of bleeding. Professor Humphry explained that the care provided was appropriate according to national guidelines (RCOG (2011) Antepartum Haemorrhage Green Top Guideline No 63 and RCOG (2018) Placenta Praevia and Placenta Accreta Diagnosis and Management Green Top Guideline No 27a). Ms Rooney's cervix had been noted as "closed" which indicated that at that time, there were no signs of early preterm labour or of placental abruption. While an ultrasound could have been performed, it would have been of limited value as such scans fail to detect around 75% of placental abruptions; the speculum examinations and the abdominal palpations had provided the likely explanation of the episodes of bleeding at that time.

[93] During the course of the Inquiry, the parties agreed that admission to hospital on 13 February 2019 was not a precaution which could reasonably have been taken and had it been taken, might realistically have resulted in Leo's death being avoided. For the reasons I have set out, I consider that concession was properly made.

[94] **Conclusion 2:** the antenatal care received by Mr Rooney on 13 February 2019 was appropriate.

Was Ms Rooney's previous preterm birth or her status as a smoker visible as a critical alert on BadgerNet?

[95] As BadgerNet is a live system which is continuously updated, it is impossible to know with certainty what information was displayed on Ms Rooney's BadgerNet pregnancy summary or home page in February 2019.

[96] However, the SCI team which reported in April 2019, had viewed Ms Rooney's electronic records. They noted:

> "in spite of the obstetric history of a preterm delivery being recorded, the weeks and days were incomplete (both need to be completed in order for an automatic critical alert to be displayed). This was however documented in the management plan to indicate the patient had a history of preterm birth. The gestation of her previous delivery was not displayed in the Obstetric history section of the pregnancy summary page."

[97] Gwen Barr has been employed by GGCHB as a Digital Midwife since 2019 and has been a midwife for 26 years. Ms Barr disagreed with the SCI findings; she explained that there was, and is, no facility for an automatically generated critical alert to make users aware of a previous preterm birth. Initially, critical alerts were only automatically generated when certain information was entered into the BadgerNet records. However, by March 2018, a facility existed to allow users to self-generate an extended banner alert (as critical alerts were formerly known). Thus, a critical alert could have been added manually if a practitioner felt it was necessary. She explained that the information of Ms Rooney's previous preterm birth was available on the risk assessment.

[98] She did not address the issue of why the obstetric history section along the top of the pregnancy summary page did not display the gestation of Ms Rooney's previous delivery. That might be explained, as the SCI suggest, by an incomplete entry of the gestation period of the previous delivery.

[99] Ms Barr created a video in which she explained the information displayed in Ms Rooney's current BadgerNet records. In this video, Ms Barr explained that there is now an automatic critical alert highlighting the patient's status as a smoker. At the time of Leo's birth, that facility had not been "switched on".

[100] Ms Clark explained that the red star on the top right hand box of the pregnancy summary page in the "risk factors and medical history" (see the image at paragraph [31] above) was not present in 2019; it was added in 2021. The bold letters indicating low or high risk were however present.

[101] **Conclusion 3:** It can reasonably be inferred from the conclusions of the SCI and from Ms Barr's evidence that at around the time of Leo's birth, there was no critical alert drawing the user's attention to Ms Rooney's previous preterm delivery nor was the gestation of her previous delivery displayed in the obstetrics history section of the pregnancy summary page on BadgerNet. Her status as a smoker was not visible as a critical alert and no red star symbol existed to draw the user's attention to her risk factors on her pregnancy summary page on BadgerNet.

[102] However, I have accepted midwife McPhee's evidence that, as at 15 February 2019, she had been aware that Ms Rooney was a smoker and that she had experienced a previous preterm delivery. While this information could have been displayed more prominently on BadgerNet at that time, it was nevertheless available to midwife McPhee and she was aware of it. The lack of prominence afforded to the information on the pregnancy summary page on BadgerNet did not impact upon the advice provided by midwife McPhee to Ms Rooney.

Was Ms Rooney in preterm labour around 0317 hours on 15 February 2019?

[103] The post-mortem report noted "abundant adherent retroplacental clot is noted on the maternal surface of the placenta. In addition, histological changes are seen on examination of the placenta, which while not entirely diagnostic, would support a clinical impression of placental abruption." Professor Stenson explained that the abundant fresh blood in Leo's airways and stomach was probably due to placental abruption. The fact that was abundant in the airways implied that gasping before delivery in association with intrapartum hypoxia had taken place.

[104] Dr Hughes explained that placental abruption occurs when the placenta begins to separate from the wall of the uterus. It reduces blood supply to the foetus and can cause death or brain injury. It can occur any time from 24 weeks of gestation. Placental abruption can cause preterm labour. The RCOG, Antepartum Haemorrhage Green-Top Guideline no 63, November 2011, at paragraph 4.1, lists predisposing risk factors for placental abruption. These include fetal growth restriction and smoking. Ms Rooney's daughter had been born small for her gestational age and Ms Rooney was known to be a smoker. The association between smoking and placental abruption was well recognised.

[105] Professor Humphry explained that placental abruption is associated with abdominal pain which can be severe and constant and it is usually associated with bleeding.
Dr Hughes gave similar evidence. The abruption can be "revealed" if blood is detected or "concealed" if no blood is detected. Dr Hughes suggested that around 10% of placental abruptions may be concealed. Other symptoms include reduced fetal movements and a tender abdomen. Placental abruption is normally detected as a result of abdominal pain, but pain can also be experienced at the front of the abdomen, sometimes in the thighs, pelvis or

in the back; it can manifest in atypical ways. Dr Hughes explained that some women may experience back pain only.

[106] By 15 February 2019, Ms Rooney presented with multiple risk factors for preterm labour. She was a smoker, she had experienced a previous preterm delivery, a history of urinary tract infections throughout her pregnancy, had attended for assessment on two recent occasions (6 and 13 February) following episodes of vaginal bleeding and was now reporting back pain.

[107] Professor Humphry considered that it was likely that Ms Rooney was in active labour when she woke in the early hours of the morning on 15 February 2019. If the Inquiry were to accept Ms Rooney's account of her symptoms on 15 February 2019, Dr Hughes agreed that those symptoms would suggest that Ms Rooney was in active labour; she believed that had Ms Rooney attended hospital it is very likely that a diagnosis of preterm labour would have been made.

[108] **Conclusion 4:** It was more likely than not that Ms Rooney was experiencing the symptoms of preterm labour following placental abruption when she contacted PRMH by telephone at 0317 hours on 15 February 2019. The post-mortem findings, her pre-existing risk factors, her previous attendances following episodes of vaginal bleeding, her description of back pain and the birth of Leo some 80 minutes after the telephone call support that conclusion. I note that in the event that Ms Rooney's account of pain was accepted, the members of the SCI investigation team also concluded that the symptoms she described were those of preterm labour.

Should the Scottish Ambulance Service have transported Ms Rooney to a hospital with neonatal and obstetric services?

[109] Paramedics McCourtney and Reilly and ambulance technician Easdon each addressed this issue in their affidavits. While Wishaw General Hospital has an obstetrics unit, transporting Leo to that hospital would have added 20 minutes to the journey, delaying his access to medical care. The paramedics and ambulance technicians followed existing guidelines (RCPCH (2018) Facing the Future: Standards for Children in Emergency Care Settings) which stipulate that if a patient is under active resuscitation, they should generally be transported to the nearest hospital with an accident and emergency unit. That was the University Hospital, Monklands. Ambulance technician Easdon had previous experience of transporting obstetrics patients to that hospital. He explained that had that hospital felt unable to provide the required care, staff would have made that position known during discussions with the ambulance crew.

[110] Professor Stenson considered the ambulance service personnel to have acted appropriately and did not consider that any different action by them would have changed the outcome. In light of his condition when he arrived at hospital, Professor Stenston concluded that "it is unlikely that [Leo] could have been saved by this time whatever hospital he arrived at". Professor Humphry agreed with that conclusion.

[111] Similarly, the SCI report noted "Given this baby was born at home together with the baby's condition on arrival at UHM [University Hospital, Monklands] A&E there was very little chance of survival and the outcome was unlikely to be changed even if the patient had been diverted to Wishaw General Hospital Maternity Unit."

[112] The SCI report recommended that consideration be given by the Scottish Ambulance Service to agree a national standardised pathway for special circumstances in which patients

are not taken to the nearest A&E but diverted to a tertiary unit able to provide specialist care for high-risk pregnancies and neonatal patients. It noted that in different circumstances, preferentially diverting to an appropriate centre, even if the journey time is slightly longer, would likely result in improved outcomes. The Scottish Ambulance Service Clinical Assurance Group considered this recommendation and produced a discussion paper in September 2020 with a draft proposed guideline. The discussion paper, in turn, recommended that local pathways are developed to advise that labouring mothers and newborns are transferred to hospitals with neonatal and obstetric services, bypassing hospitals with emergency departments but which do not have neonatal and obstetric services. The discussion paper, however, recommended the exclusion of circumstances where the newborn or the mother require cardiopulmonary resuscitation (as in Leo's case). Professor Stenson agreed with that approach. The National Perinatal Network Transport Group has been tasked with taking this matter forward and to engage with all relevant stakeholders. That work had not been concluded at the time of the Inquiry.

[113] **Conclusion 5:** The evidence supports the conclusion that the ambulance and paramedic staff acted appropriately and in accordance with existing guidelines by transporting Ms Rooney and Leo to Monklands Hospital. I note that five years after a discussion paper with a draft proposed guideline was produced by the Scottish Ambulance Service Clinical Assurance Group, the guideline had not been issued at the time of the Inquiry. The Inquiry was not provided with any explanation as to why that was the case. As this matter is not relevant to the circumstances of Leo's death, I make no further comment.

Could Leo have survived if Ms Rooney had given birth in a hospital environment?

[114] The medical evidence on this matter was clear. Professor Stenson, Professor Humphry and Dr Hughes were in agreement with the findings of the multidisciplinary SCI team; a baby born at 27 weeks gestation in a hospital with neonatal facilities would have a probability of survival greater than 80%. An experienced neonatal team could have put in place supportive measures such as administering magnesium sulphate for neuroprotection and steroids for lung maturation. While Professor Stenson questioned whether there would have been sufficient time for effective antenatal steroid or magnesium sulphate treatment, he agreed that had Leo been born in a specialist centre, he probably would have survived. Dr Hughes explained that magnesium sulphate was usually administered 4 hours prior to birth and steroids were usually administered in two dosages, 12 - 24 hours apart). She explained that in some cases, medication can be administered to slow down labour and to allow the steroids and magnesium sulphate to take effect. Had he survived, all expert witnesses agreed that Leo was at higher risk of neurodevelopmental disability.

[115] Professor Stenson agreed with the findings of the post-mortem report. The pathologist considered that Leo's death was caused by perinatal (intra-partum and post-partum) hypoxia, that is, a deficiency of oxygen in the tissues occurring during and shortly after labour. Leo's organs showed features of acute hypoxic stress and there was abundant fresh blood in Leo's airways and stomach. The presence of blood was probably due to a placental abruption.

[116] It was more likely than not that Leo would have survived had he been born in this condition in Wishaw General Hospital or PRMH. Intrapartum hypoxia would have added to the risks of prematurity and placed Leo at appreciable risk of later neurodevelopmental

disability in the event of his survival but Professor Stenston concluded "it is unusual for intrapartum hypoxia to determine survival in live-born preterm infants of Leo's gestation".

[117] **Conclusion 6:** The evidence supports the conclusion that had Leo been born in a hospital environment which had neonatal facilities (such as PRMH) it is likely that he would have survived. Had he survived, he would have been at high risk of neurodevelopmental disability.

Precautions which could reasonably have been taken

Advice to attend PRMH for assessment on 15 February 2019

[118] For the reasons I have explained above, had Ms Rooney been advised to attend at PRMH and had she acted upon that advice, it is more likely than not that Leo would been born in a hospital environment, most likely at PRMH, with access to specialist neonatal services. In those circumstances, he would have had an 80% chance of survival, albeit with a high chance of life long medical conditions associated with a very premature birth at 27+3 weeks gestation. Was advice to attend PRMH on 15 February 2019 a precaution which could reasonably have been taken and had it been taken, might realistically have resulted in Leo's death being avoided?

[119] The NICE Guideline on Preterm Labour and Birth (November 2015), deals with the care of women at risk of, or with symptoms and signs of preterm labour. It aims to reduce the risk of preterm birth for the baby and describes treatments to prevent or delay early labour and birth. Part 1.7 of the guideline deals with the care of women with suspected or established preterm labour. It provides that women reporting symptoms of preterm labour who have intact membranes (as in Ms Rooney's case), should be offered a clinical assessment which would include a speculum examination. Such an assessment would

ordinarily be performed in a healthcare setting. In response to the NICE Guidelines, GGCHB issued a local guideline: Greater Glasgow & Clyde, Obstetric Guideline, 2018. The GGCHB guidelines noted that for neonates born between 24+0 and 29+6 weeks gestation, the NICE guidelines suggested a low threshold for admission and obstetric intervention for women who present in suspected preterm labour. It can reasonably be inferred that the GGCHB guidelines supported the NICE guideline that a low threshold for admission and obstetric intervention should be applied by obstetricians when dealing with suspected preterm labour. Plainly, for any such intervention or admission to take place, those triaging calls which involve patients who are at risk of, and are reporting symptoms of, preterm birth should also apply a low threshold for advice to attend for assessment.

[120] Professor Humphry explained that the symptoms of preterm labour vary. They include: contractions; ruptured membranes (commonly referred to as "waters breaking"); pain or constant backache; and bleeding. In an atypical presentation of preterm labour, a woman may find it difficult to explain the nature and location of the pain. The pain can be intermittent or constant. The pain might typically be experienced in the lower front abdomen, but can also be experienced in the thighs or back. Backache is, however, very common in pregnancy for other reasons, such as bad posture or weight gain. Dr Hughes agreed. Professor Humphry also explained that midwifes encountered preterm labour situations fairly commonly. The delivery of a child at 27 weeks gestation was, however, unusual and might only occur in around 1-2% of cases.

[121] Ms Gillespie KC and Ms Faheem submitted that if the Inquiry concluded that Ms Rooney had provided midwife McPhee with an account of pain which was more severe than mild back pain, she ought to have invited Ms Rooney to attend PRMH for assessment. On behalf of midwife McPhee, Mr Rodger submitted that the situation facing midwife McPhee

had been complex and was rarely encountered. Standing the symptoms of pain described to her, Mr Rodgers submitted that midwife McPhee had acted reasonably. Mr McConnell KC, under reference to *Sutherland v Lord Advocate* 2017 SLT 333, submitted that inviting Ms Rooney to attend PRMH would have a been a reasonable approach, but the alternative approach taken by midwife McPhee was equally reasonable; it was a matter of clinical judgement.

[122] Both Professor Humphry and Dr Hughes explained that it was very difficult to diagnose preterm labour remotely by telephone. It is normally diagnosed by palpating the abdomen for contractions i.e. by a physical examination by touch, by assessing the frequencies and length of contractions, by noting whether the membranes had ruptured or whether there were signs of vaginal bleeding and by carrying out a vaginal assessment to check whether the cervix has contracted and has started to open.

[123] As preterm labour can manifest in atypical ways, midwifes should be alert to any risk factors which may increase the likelihood of preterm labour, such as whether the woman is a smoker, and should consider her obstetrics history. Professor Humphry offered the opinion that midwifes should err on the side of caution and apply a low threshold for inviting a patient in for a physical assessment in such situations where pain, bleeding, reduced fetal movements or a rupture of membranes is reported.

[124] In her report, the Professor noted:

> "the midwife [Ms McPhee] conducted a comprehensive telephone assessment and it was appropriately documented. As there was no uterine activity reported, no signs of ruptured membranes, bleeding and fetal movements were present, it is reasonable to advise self-management with directions to contact maternity services if it worsens or any other symptoms develop. However, situational awareness and clinical judgement could have triggered advice to attend the [maternity assessment unit] for assessment. The triggers being that that it is unusual for backache to be so painful that it would lead a woman to call the maternity assessment unit in the middle of the night, nor is the backache likely to

> be due to physical exertion as she would have been in bed. [Ms Rooney] also had a history of preterm labour and an APH in this pregnancy, both put her at higher risk of preterm labour. Presentation of preterm labour can differ from term labour, so clinical judgment should be encouraged in relation to the threshold for admission and assessment."

[125] Her report had been based upon the BadgerNet record of the telephone assessment conducted on 15 February 2019 and was not informed by the differing accounts provided by Ms Rooney and midwife McPhee. Assuming the record was accurate, her position was that while it was reasonable to advise self-management and provide worsening advice, the triaging midwife ought also to have considered the situation (a call at night) and could have exercised her clinical judgment to invite Ms Rooney for assessment. I took her to be suggesting that this was a matter of clinical judgement and that there may be a legitimate difference of approach between midwives in such circumstances, but for a patient with a history of preterm birth and who was a smoker, had recently attended hospital with a history of vaginal bleeding and had called in the early hours of the morning, a degree of additional caution was necessary. Dr Hughes, however, considered that regardless of the discrepancies in the accounts of the degree of pain experienced by Ms Rooney, midwife McPhee ought to have invited Ms Rooney for an assessment and ought to have been alert to the possibility of preterm labour; self-management and worsening advice was not appropriate in light of the risk factors present and the time critical nature of an accurate diagnosis of preterm labour. The investigation team conducting the SCI Investigation concluded that:

> "despite the patient informing the midwife that she had no uterine activity, it was not normal for a patient to be in sufficient enough pain as to require calling for advice in the middle of the night and she should have been invited in for review. The team agreed that the advice given would have been appropriate for a term patient but that preterm labour can present differently and can often be difficult to assess."

[126] It also noted that "making a clinical decision based on a telephone history can be difficult but that from the patient's recollection, she described symptoms of preterm labour".

[127] In *Sutherland v Lord Advocate* 2017 SLT 333, Lord Armstrong made the following comment at paragraph [34]:

> "It was submitted that it would be possible to envisage a situation, involving the exercise of clinical judgment, whereby a doctor was presented with two or more options and could not know which was in the patient's best interests. I accept that in such a situation where the optimal course was not taken, it would not be appropriate to determine that the selection of another of the available options would have been a reasonable precaution. I accept that to do so would distort the ordinary meaning of "reasonable precaution" and would in any event be of no assistance for the future."

[128] I agree with Lord Armstrong's analysis. Where a range of reasonable options is available, the decision as to which to choose falls to be determined by the knowledge, skill and experience of the clinician and the information available to him or her at the time; it is a matter of clinical judgement. If the selection of a particular option has resulted in death, it would not be appropriate to find that the selection of an alternative option was a precaution which could reasonably have been taken in terms of section 26(2)(e) of the Act; the statutory test would not be met. However, I am satisfied that the present case is not one where a range of reasonable options was available to midwife McPhee.

[129] For the reasons set out at paragraph [81], I have preferred Ms Rooney's evidence; she provided an account of pain which was more severe than mild back pain. Professor Humphry and Dr Hughes agreed that if the court accepted that account, the correct course of action would have been for midwife McPhee to advise Ms Rooney to attend the maternity assessment unit for a physical assessment. I understood both experts to have formed the view that, in such circumstances, that is the course of action a midwife would be expected to take. Midwife McPhee candidly accepted that had she received an account of pain which

was more severe than mild back pain, the correct course would have been to invite Ms Rooney into PRMH for assessment.

[130] I accepted the evidence of Professor Humphry and Dr Hughes that, having regard to Ms Rooney's description of pain and her risk factors, including her reported episodes of vaginal bleeding on 6 and 13 February, midwife McPhee ought to have advised Ms Rooney to attend for a physical examination to establish whether she was in preterm labour on 15 February 2019.

[131] The GGCHG and NICE guidelines which deal with preterm labour and birth, together with the evidence of Professor Humphry and Dr Hughes, plainly support the conclusion that it would have been both reasonable and practicable to advise Ms Rooney to attend for assessment.

[132] **Conclusion 7:** A precaution which could reasonably have been taken and, had it been taken, might realistically have resulted in Leo's death being avoided, was for Ms Rooney to have been advised to attend PRMH for assessment following her reported symptoms on 15 February 2019, and for Ms Rooney to have acted upon that advice. This conclusion is supported by Conclusion 6.

Could Ms Rooney have made contact with PRMH again on 15 February 2015?

[133] Self-evidently it was possible for Ms Rooney to choose to ignore midwife McPhee's advice and to attend at PRMH or to have called back for further advice; these are precautions which she might have elected to take. However, were these precautions which could reasonably have been taken in the circumstances?

[134] Professor Humphry suggested that it would have been reasonable for Ms Rooney to have acted upon the advice provided by Ms McPhee and to have waited up to 30 minutes to

see whether the paracetamol and heat therapy assisted her. Dr Hughes suggested that it would be reasonable for a patient to wait between 30 minutes and an hour after acting upon such advice. Midwife McPhee did not instruct Ms Rooney to wait for any specific period before calling back if her symptoms did not improve. Dr Hughes stated that such a timeframe ought to have been provided.

[135] While Ms Rooney could not recall whether she had in fact taken paracetamol, the pathologist who conducted Leo's post-mortem noted the presence of paracetamol in the toxicological findings. Her report stated: "paracetamol is known to cross the placenta and as such it is likely that the paracetamol is present due to the ingestion of paracetamol by the mother". That was consistent with Mr Lamont's evidence that Ms Rooney had followed midwife McPhee's advice. Mr Lamont gave evidence that he did not feel reassured by that advice, but decided to monitor Ms Rooney's condition for an hour. He kept a note of the period between each episode of pain. After an hour had passed, he remained concerned and took the decision to transport Ms Rooney to hospital. As he prepared to leave, which involved waking their daughter and getting her ready, Ms Rooney had felt the need to visit the bathroom and had given birth to Leo.

[136] In my judgment, while Ms Rooney could have made contact with PRMH again or, alternatively, she could have chosen to attend, notwithstanding midwife McPhee's advice, either immediately after the call or having experienced no improvements in her condition, I am satisfied that none of these actions can properly be described as precautions which could reasonably have been taken and which might realistically have resulted in Leo's death being avoided. First, it was not unreasonable for Ms Rooney to act upon midwife McPhee's advice; the very purpose of the call had been to receive the benefit of medical advice by one who was qualified to triage her symptoms. Whether she or Mr Rooney had been reassured

by the advice is irrelevant; they acted in accordance with it. Patients cannot be expected to second guess medical opinions. Second, it was not unreasonable for Ms Rooney to wait to assess whether the paracetamol had the desired effect; that is exactly what she had been advised to do. It is unfortunate that she was not provided with a timeframe in which to assess the situation. In light of Professor Humphry and Dr Hughes' evidence, waiting for up to one hour (as Mr Lamont decided to) was not unreasonable. Third, noting the timing of events, having reasonably waited an hour to assess the effect of pain relief, there was little time in which to act before Leo was born. The call with midwife McPhee ended around 0328 hours. Leo was born at around 0450 hours, around 82 minutes after the call with midwife McPhee. Assuming that Ms Rooney made a further call to PRMH having waited an hour, as she was advised to do, and thereafter travelled to PRMH having made arrangements for the care of her daughter, Leo was very likely to have been born en route.

[137] **Conclusion 8:** Electing to travel to PRMH in contradiction of the advice provided by midwife McPhee was not, in the circumstances, a precaution which could reasonably have been taken by Ms Rooney.

Defects in any system of working

[138] Like many maternity hospitals, PRMH operates a maternity assessment unit in which calls received from expectant mothers are triaged. The triaging midwife will obtain details of the reason for the call and then provide advice to the expectant mother having assessed the information supplied by the caller and having regard to the information stored on BadgerNet. The unit is a transient unit; if patients are advised to attend they are either admitted to a ward or discharged home from the unit. The triaging midwife thus has an important role to play in terms of ensuring access to medical attention for those expectant

mothers who may require it. In order to perform that role, triaging midwifes require to be alert to the risks associated with the caller's pregnancy and to be in a position to identify whether medical intervention may be necessary. In particular, triaging midwives require to be in a position to identify and assess symptoms that might be indicative of term labour and preterm labour.

[139] The very purpose of the Pathways for Maternity Care was to provide for continuous risk assessment at each interaction between clinicians and expectant mothers. Those at high risk were identified by being placed on the red pathway and noted on the BadgerNet system as such. That process is designed to ensure that at every interaction with a woman, clinicians are alerted to the need to take particular care and that both the women and the baby are monitored closely throughout the pregnancy. Regrettably, the evidence in relation to what occurred on 15 February 2019 supports the findings of the SCI Report that the "allocation of [Ms Rooney] as high risk, in reality resulted in no additional care and provided her with false reassurance that additional actions were planned for surveillance of this pregnancy." The SCI Report also noted that the advice to remain at home, monitor symptoms, take analgesia, apply heat therapy and to call the maternity assessment unit if the position worsened or did not improve, would have been appropriate for a term patient, not one who was in preterm.

[140] I accepted Ms Rooney's evidence that she was advised by midwife McPhee that, because she was only 27 weeks gestation, she was unlikely to be in labour. It was midwife McPhee's evidence that the information provided to her by Ms Rooney had not been suggestive of preterm labour. In light of her risk factors, Ms Rooney had been at increased risk of a preterm birth. In my judgment, that risk was not adequately assessed or recognised during the triage call on 15 February 2019.

[141] The evidence before the Inquiry (in particular that of Dr Hughes, Professor Humphry and the terms of the SCI Report) supported the conclusion that preterm labour can be difficult to identify. The symptoms vary (see paragraph [120] above). While the assessment of symptoms is a matter of clinical judgment, various guidelines, checklists and systems exist to assist clinicians to identify symptoms, to exercise their clinical judgment and to inform their decision making in relation to a range of conditions during pregnancy (such as in relation to the management of reduced fetal movements, breech presentations and ruptured membranes). Such guidelines, checklists or systems do not replace, and are not designed to replace, clinical judgment; they are designed to assist clinicians. The SCI Report noted that a list of relevant enquiries already appears on BadgerNet to assist midwives for other conditions, such as term labour, reduced movements and a rupture of membranes. There was no evidence before the Inquiry of any such guidelines or systems in GGCHB to assist midwives in the identification and assessment of a woman reporting symptoms that might be indicative of preterm labour, at the time of Leo's death.

[142] According to the NICE Guideline on Preterm Labour and Birth, November 2015, preterm birth is the single biggest cause of neonatal morbidity and mortality in the UK. The guideline notes that "babies born preterm have high rates of neonatal and infant mortality, and the risk of infant mortality increases as gestational age at birth decreases. Babies who survive preterm birth have increased rates of disability . . . the major long-term consequence of prematurity is neurodevelopmental disability" (at page 31). It recommends practitioners should "offer a clinical assessment to women reporting symptoms of preterm labour who have intact membranes" (at para 1.7.2).

[143] Following the issuing of the NICE guideline in 2015, GGCHB issued an Obstetric Guideline on Preterm Labour: Diagnosis and Management in 2018. It noted that babies born

at 24+0 to 29+6 weeks gestation are at a higher risk of mortality and morbidity than those born at more than 30 weeks gestation and have the most to gain from being prepared for preterm birth. The GGCHB guideline noted that that the NICE guideline suggested a low threshold for admission and obstetric intervention in these gestations if they present in suspected labour. Self-evidently, admission, preparation for preterm delivery and obstetric interventions (such as the use of tocolytics to slow the progress of labour or the administration of drugs e.g. magnesium sulphate for neonatal neuroprotection) are dependent upon those who triage being aware of the symptoms of preterm labour and applying in turn, a low threshold for inviting such women in for assessment where preterm labour is suspected. Professor Humphry explained that a low threshold should be applied in particular where pain, bleeding, reduced fetal movements or a rupture of membranes is reported. There was no evidence before the Inquiry of any instruction or guidance for midwives as to the threshold for advising women to attend for assessment where preterm labour was suspected.

[144] In my judgment, the absence of guidance or checklists for triaging midwives to aid in the assessment of preterm labour symptoms at the time of Leo's death and the absence of guidance as to the threshold which should be applied in such circumstances, was a defect in the system of working at the maternity assessment unit in PRMH which contributed to Leo's death. The Pathways of Maternity Care and the GGCHB Guideline on Preterm Labour: Diagnosis and Management, 2018 sought to introduce a comprehensive system for the assessment and management of risks in pregnancy, including the risks of preterm labour. The absence of guidance, instructions or support for triaging midwives to aid in the assessment of preterm labour symptoms represented a gap in that system.

[145] **Conclusion 9:** The absence of guidance or checklists for triaging midwives to aid in the assessment of preterm labour symptoms and the absence of guidance as to the lower threshold which ought to be applied for advising woman to attend for assessment where preterm labour was suspected, was a defect in the system of working at the maternity assessment unit in PRMH which contributed to Leo's death.

Recommendations

The use of a trigger list for preterm labour

[146] Professor Humphry and Dr Hughes offered the opinion that a trigger list to aid in the identification and assessment of symptoms that might be indicative of preterm labour and in turn inform a decision as to whether a patient should attend for a clinical assessment, could reduce the risk of a death in similar circumstances in future. The SCI Report made the following recommendation:

> "The Investigation team recommend that a trigger list is created within [BadgerNet] to aid the difficult recognition of the signs of preterm labour that do not present in the same way as term labour but are significant enough to warrant review. When a phone review of a patient presenting with any symptoms of preterm labour occurs (e.g. back pain, lower abdominal pain) a list of relevant enquiries should appear. These lists already exist for other conditions including (but not limited to) term labour, reduced movements and rupture of membranes."

[147] Professor Humphry described the advantages of using such a list; it could help midwives to provide more consistent advice and it could be very useful for midwifes who had less experience of preterm births. She noted, however, that one of the disadvantages of such a list is that some women present with atypical preterm labour symptoms and those might be misdiagnosed. She considered that, with expert input, a comprehensive list of symptoms could be established, recognising that some presentations are atypical. She was

also of the view that backache should certainly feature in any such list. It was put to her by Mr McConnell KC that such a list was unnecessary; the communication note in BadgerNet already prompted midwives to ask many of the questions or consider many of the issues which might form part of a trigger list and an assessment of a woman as high risk was visible on the BadgerNet pregnancy summary page. Professor Humphry explained that the communication note was designed to capture all types of symptoms for many possible conditions; a trigger list for preterm labour would concentrate on those which were important for that assessment only.

[148] Dr Hughes explained that a trigger list would seek to address the problem of health care professionals failing to identify significant risk factors and thus failing to stratify a woman's level of risk correctly. She explained that trigger lists for other conditions such as deep vein thrombosis had successfully reduced fatalities and increased awareness. Discussing the list of features set out in a trigger list systematically with a patient whenever the possibility of preterm labour is considered would make the correct diagnosis more likely. Such a trigger list could also have a scoring system which might aid diagnosis. She considered that the communication note in BadgerNet directed triaging midwives to consider the immediate position i.e. the reason for the call; a trigger list would encourage midwives to discuss obstetric history, and issues arising in the pregnancy such as recent episodes of bleeding. If, having achieved the requisite score, a clinical decision was taken not to invite a patient in for assessment for preterm labour, practitioners would require to document why. Dr Hughes concluded that without such a trigger list, other women who telephoned the maternity assessment unit with similar symptoms might be given the same advice as Ms Rooney.

[149] Ms Gillespie KC and Ms Faheem invited the court to recommend the introduction of a trigger list. On behalf of GGCHB, Mr McConnell KC submitted that a "trigger list" was only useful if a clinician was contemplating the possibility of preterm labour as being among the differential diagnoses. As midwife McPhee did not consider it, a trigger list would have made no difference in the present case. I am not persuaded that is so. I have concluded that the risk of preterm labour was not adequately assessed or recognised during the triage call on 15 February 2019. That assessment was likely to have been assisted by a trigger list which included back pain in the list of possible symptoms and is likely to have led midwife McPhee to suspect preterm labour. The SCI team envisaged that when a possible symptom of preterm labour was entered into BadgerNet (eg back pain, lower abdominal pain) a list of relevant enquiries would appear which would prompt the triaging midwife to consider more fully, the possibility of preterm labour.

[150] In any event, in terms of section 26(1)(b) and (4) of the Act, this Inquiry is concerned with whether the use of a trigger list *might* realistically prevent other deaths in similar circumstances, not whether it would have prevented Leo's death.

[151] Mr McConnell KC also submitted that BadgerNet was, at its core, a method of organising documents and not a diagnostic tool; it was not a substitute for clinical judgment. As midwife McPhee had been aware of Ms Rooney's risk factors at the time of their interaction, BadgerNet had fulfilled its function. In my judgment, the submission made on behalf of GGCHB is based on a simplistic description of the use, purpose and potential of BadgerNet. I accept that BadgerNet is, at its core, a method of organising documents and I accept Dr Hughes's evidence that it should not be viewed as a diagnostic tool or a substitute for clinical judgement. However, as Ms Smith KC submitted on behalf of LHB, it can also be described as a dynamic tool to assist clinicians with the care of pregnant women. It is clear

from the evidence before the Inquiry, particularly the evidence into Ellie's death and from Ms Mooney's affidavit that BadgerNet can been used to provide alerts for bleeding and reduced fetal movements. The evidence supports the multifaceted ways in which BadgerNet is used in practice; it is used to organise and store medical records, to record interactions with patients and advice provided, to highlight risk factors and critical alerts, and to direct healthcare professionals to guidance and checklists which might aid in diagnosis and treatment.

[152] There was no evidence before the Inquiry to suggest that the development of such a trigger list was a particularly onerous or costly exercise, that it was impracticable or that it may have significant unintended adverse consequences for diagnosis and treatment. To the contrary, the medical experts and staff employed by GGCHB who were part of the SCI team considered the development of a trigger list to be of value. As local clinicians working in GGCHB, they can be presumed to have considered the development and use of such a list as both workable and of assistance in terms of preventing future deaths in similar circumstances. During her evidence, midwife McPhee agreed that a trigger list would be of assistance to midwives.

[153] Ms McDermid, the associate chief midwife for NHS Greater Glasgow and Clyde, explained in her affidavit that she had been advised "that it would not be possible to make the required amendments to BadgerNet and create a specific trigger list". No further explanation was provided. Ms McDermid did not give oral evidence. Such scant evidence is not in my judgment, a sufficient basis upon which this Inquiry can draw any conclusions as to the impracticability of a trigger list. I have attached little weight to this evidence, particularly in light of the comments made by the SCI team (which consisted of a multi-

disciplinary team from GGCHB) that such lists already exist for other conditions, including (but not limited to) term labour, reduced movements and rupture of membranes.

[154] Ms McDermid also explained in her affidavit that instead of a trigger list, a learning summary was shared with midwives raising awareness that preterm labour may not present in the same way as term labour and therefore there should be a "very" low threshold for face to face assessment for all women. A copy of a document entitled "Women & Children's Directorate SCI Feedback April 2019" was provided to the Inquiry. It noted that GGCHB had "raised awareness with staff via newsletter and learning summary that preterm labour may not present in the same way as term labour therefore advice given should include a low threshold for attendance in order to exclude preterm labour". No further explanation was provided in relation to the content of the newsletter, in particular, it was not clear whether the newsletter set out the symptoms of preterm labour, to whom it was circulated and whether it was circulated once in April 2019 or is repeatedly circulated to ensure new staff are aware of its terms and that existing staff continue to have regard to it. I accept the criticism of the approach made by Ms Gillespie KC and Ms Faheem in their submissions, namely that a newsletter will raise awareness at the time when it is circulated only and only among those who receive it, whereas a trigger list would appear whenever a midwife is triaging a patient with symptoms indicative of preterm labour, without the midwife having to recall what she may have read in a learning summary which may have been circulated only once many years ago. In my judgment, a newsletter circulated years ago, while helpful, is unlikely to provide a lasting improvement to the system of triaging pregnant women and is therefore unlikely to prevent other deaths in circumstances similar to Leo's in the future.

[155] Ms McDermid also explained in her affidavit that a preterm guideline is currently in the final stages of completion. As she had not been involved, she was unable to comment on

the draft guideline but explained that it will provide guidance for staff when assessing women whose presenting symptoms may be suggestive of preterm labour. She explained that when the draft is completed, it will require to be approved by the Maternity Governance Group. No explanation was provided as to why, over 5 years after Leo's death, the guideline had not been finalised, approved and circulated among staff.

[156] **Recommendation 1: GGCHB should develop a trigger list or similar system to aid in the identification and assessment of symptoms that might be indicative of preterm labour and to inform a decision as to whether a patient should attend for clinical assessment. When a telephone assessment is carried out with a patient presenting with any symptoms of preterm labour a list of relevant enquiries should appear on BadgerNet, similar to those which appear for conditions such as term labour, reduced fetal movement and rupture of membranes. GGCHB should conclude the development of a guideline for preterm labour as soon as possible. Each of these measures should specify a low threshold for attendance for clinical assessment to reflect the low threshold for admission and obstetric intervention recommended by the NICE Guideline on Preterm Labour and Birth, November 2015.**

[157] All health boards in Scotland that provide maternity services should review their practices and guidelines for the identification and management of pre-term labour.

A critical alert for preterm labour

[158] Professor Humphry and Dr Hughes described the failure to record the exact gestation of Ms Rooney's previous preterm birth as a systemic defect; the absence of the information relating to gestation had the effect of preventing the generation of automatic critical alert on the pregnancy home page of BadgerNet. In this respect, the expert opinions

were based upon the findings of the SCI report which noted "in spite of the obstetric history of a preterm delivery being recorded, the weeks and days were incomplete (both needed to be completed in order for an automatic critical alert to be displayed)". However, in her affidavit, Gwen Barr, the digital midwife for GGCHB, disputed this finding. She explained that there is no automatically generated critical alert for a previous preterm labour. Previous premature births at less than 37 weeks gestation are highlighted on the risk assessment only.

[159] As explained as paragraph [84] above, I have accepted midwife McPhee's evidence that she was aware of Ms Rooney's previous preterm delivery. The question of whether a critical alert existed does not require to be resolved; as midwife McPhee was aware, the absence of a critical alert did not contribute to Leo's death.

[160] Ms Gillespie KC invited the Inquiry to conclude that an alert might assist clinicians in other circumstances who might otherwise be unaware that a woman is at risk of preterm birth.

[161] It can reasonably be inferred from the findings of the multi-disciplinary SCI team and the evidence of Professor Humphry and Dr Hughes, that these healthcare professionals considered the risks associated with a previous preterm birth to be one which ought to generate a critical alert on the electronic records. The generation of a critical alert would not appear to be technically challenging; these exists for other obstetric risks. I accept that each health board has a process for suggesting, considering and approving changes to BadgerNet. The Digital Midwives Network Scotland also provides an opportunity to share learning and to collaborate to identify key changes required within electronic maternity systems. In my judgment, health boards should use these processes to consider whether the information

relating to a previous preterm birth is adequately displayed and whether an automatically generated critical alert should be created.

[162] **Recommendation 2: all health boards in Scotland that provide maternity services should review the information displayed on electronic maternity records relating to previous preterm births. They should consider the creation of an automatically generated critical alert for previous preterm labour if one is not already available.**

Specialised Clinics

[163] Dr Hughes spoke of her involvement in a clinic introduced by Lothian Health Board with the aim of reducing the complications arising from preterm birth. She spoke to its success in terms of raising awareness of risk among expectant mothers, encouraging and supporting mothers to cease smoking and increasing awareness among clinicians of the symptoms of preterm labour. Women who had a history of preterm birth and others considered at high risk were invited to attend; they were cared for by a group focussed on looking for signs of preterm labour. She considered that the specialist clinic approach was one which other health boards should explore.

[164] Whether or not other health boards should introduce such clinics is matter for each health board. A decision on whether to do so will no doubt be informed by the resources available and the demographics within each health board area. I make no recommendation in this regard.

Other relevant issues

[165] There are two matters upon which I make no formal finding, however, I discuss below as of general relevance to the issues raised in the Inquiry. These matters are likely to

be of general public interest as examples of the continuous improvement and development of BadgerNet and the care of both expectant mothers and babies.

The use of a pain score

[166] There was conflicting evidence as to how Ms Rooney had described her pain. Dr Hughes explained that a scoring system to explain the severity of pain is more useful for clinicians as people can use different adjectives to describe pain; asking a patient for a score introduced an element of objectivity. At the time of Leo's death, BadgerNet did not require a triaging midwife to enquire into and record a patient's score of pain. Now, a score out of ten requires to be recorded in the communication note.

Confirmation that medical history has been reviewed by a triaging midwife

[167] I have accepted midwife McPhee's evidence that she reviewed Ms Rooney's medical history before she assessed Ms Rooney's symptoms. At the time, there was no means of recording whether medical history had been read and considered. Now, prior to completion of a communication note on BadgerNet in GGCHB, a prompt appears seeking confirmation that the triaging midwife has reviewed a patient's medical history. It was not clear whether this change is particular to GGCHB or has been implemented across all health boards in Scotland.

CHAPTER FOUR – ELLIE MCCORMICK

SUMMARY

[168] In this section, I set out the facts which were largely undisputed.

[169] The court heard evidence from: midwives Catherine Murphy, Catriona Hand and Caroline Campbell each of whom spoke to their involvement in Ms McCormick's care prior to Ellie's birth; Dr Lina McLellan, a consultant obstetrician; and from Professor Humphry, Dr Hughes and Professor Stenson each of whom spoke to their reports. Affidavits were lodged in respect of Ellie's mother, Ms McCormick, Cheryl Clark the chief midwife for LHB, and Dr Evelyn Ferguson who led the Serious Adverse Event Review (SAER) into Ellie's death.

Relevant agreed/uncontroversial facts

Events Prior to Ellie's death

[170] Nicola McCormick and Patrick McDonald are Ellie's parents. Ellie was their first child together and Ms McCormick's first pregnancy.

[171] On 30 July 2018, Ms McCormick attended her booking appointment at Wishaw General Hospital. Ms McCormick was 20 years old at the time of booking. She was 9+6 weeks gestation. Ms McCormick was recorded as having a body mass index (BMI) of more than 35, placing her in the 'obese' category. Obesity is a recognised antenatal risk factor. She was placed on the "red pathway" for maternity care as a high-risk pregnancy which would involve shared midwifery and obstetric care. She was booked for the obstetric clinic at 16 weeks gestation, given information about obesity in pregnancy and referred to 'healthy lifestyle' services. An oral glucose tolerance test was planned at 28 weeks gestation, a growth scan was booked for 36 weeks gestation, and she was to be weighed again at 38 weeks gestation.

[172] An ultrasound scan on 13 August 2018 confirmed a singleton pregnancy, no abnormalities were recorded and her expected date of delivery was noted as 26 February 2019.

[173] Ms McCormick attended the obstetric clinic at 16+1 weeks gestation as planned on 12 September 2018. The risks associated with obesity in pregnancy were discussed. Ms McCormick declined the 'healthy lifestyle' referral plan. She was to have increased blood pressure monitoring every three weeks until 32 weeks gestation and then every two weeks thereafter, if her blood pressure remained normal.

[174] Ms McCormick made telephone contact with maternity triage at Wishaw General Hospital on 19 September 2018 at around 1117 hours. She was 17+1 weeks gestation. She reported vaginal bleeding ('spotting') on wiping the previous evening and the week before, but no bleeding that day and no abdominal pain. Ms McCormick was advised not to attend for assessment as staff would be unable to listen to the fetal heartbeat (due to the gestation of the fetus), it was unlikely that an ultrasound scan would be performed that day, and as there had been no bleeding that morning, there was no need for a speculum examination. Ms McCormick was given advice to 'keep a pad on and observe' and to call back if there was any further vaginal bleeding.

[175] At around 2320 hours on 19 September 2018, Ms McCormick again contacted maternity triage at Wishaw General Hospital. She reported fresh bleeding on wiping. Ms McCormick was anxious that this was the third episode of vaginal bleeding. She was advised to attend at Wishaw General Hospital for assessment.

[176] She attended at around 0009 hours on 20 September 2018. Upon assessment, routine observations and physical measurements were all considered to be within normal limits. A speculum examination and high vaginal swab was performed, although the cervix was not

visualised. She was screened for urinary tract and vaginal infection. Ms McCormick was discharged home at around 0120 hours and advised to re-contact the triage unit if there was any worsening of her symptoms or any further concerns.

[177] On 23 September 2018, Ms McCormick called Wishaw General Hospital again at around 2007 hours. She was 17+5 weeks gestation. She reported small spotting on wiping. She was advised to continue to observe for any bleeding and to re-contact the triage unit if she experienced any abdominal pain or cramping.

[178] Ms McCormick called Wishaw General Hospital on 24 September 2018 at around 2114 hours. Ms McCormick reported it was 'stingy' when passing urine and she noted very slight pink staining on wiping. It was noted that she had an ultrasound scan scheduled at 20 weeks gestation. She was advised to take oral analgesia, have a warm bath or shower, increase fluids, to mobilise, and to re-contact triage if she experienced any further vaginal bleeding or any pain.

[179] On 11 October 2018, at 20+2 weeks gestation, Ms McCormick attended for a second ultrasound scan. This was a detailed fetal anomaly scan. No abnormalities were detected.

[180] On 1 November 2018, Ms McCormick attended for a routine antenatal appointment. She was approximately 23 weeks gestation. It was recorded that Ms McCormick had not yet felt any fetal movements. Fetal heart activity was checked and was heard. She was given advice regarding fetal movement and an antenatal check was to be carried out in one week. She was advised to contact triage if she had any concerns meantime.

[181] Ms McCormick attended a further antenatal appointment on 8 November 2018. It was recorded that she reported feeling the baby move regularly since 2 November 2018 and that she had no concerns at that time.

[182] On 23 November 2018, at approximately 26+3 weeks gestation, Ms McCormick called Wishaw General Hospital. She reported reduced fetal movements since the previous day. An appointment was arranged for her to attend University Hospital, Hairmyres for assessment. She attended at 1400 hours and maternal and fetal assessments were carried out. All findings were considered to be within normal limits and Ms McCormick was discharged home with 'worsening advice'.

[183] Ms McCormick attended an antenatal appointment on 6 December 2018, at around 28+2 weeks gestation, for a scheduled oral glucose tolerance test. She attended at a further appointment on 20 December 2018 for a blood pressure check. On 3 January 2019 and 17 January 2019 she attended again for routine appointments. All findings were considered to be within normal limits. She had a scan booked for 29 January and a scheduled obstetrics appointment on 30 January 2019.

[184] On 20 January 2019 Ms McCormick called Wishaw General Hospital at around 2046 hours. She was 34+5 weeks gestation. She reported further vaginal bleeding when wiping and was advised to attend for assessment. She attended at Wishaw General Hospital at around 2123 hours the same day. She was reviewed by a midwife and all observations were considered to be within normal limits. She was then reviewed by an obstetrician who noted that there had been a similar episode of vaginal bleeding at 17 weeks gestation. A speculum examination was performed. It was noted that there was no bleeding and that no definite cause was identified for the bleeding. She was discharged home and advised to re-contact if she had any concerns. It was also noted that she had a further scan booked as part of her plan for care, due to her high BMI.

[185] Ms McCormick attended for an ultrasound scan on 29 January 2019, at 36 weeks gestation. This was a fetal growth scan. She attended for an antenatal follow-up and

obstetrics review the following day, on 30 January 2019. It was recorded that Ms McCormick had good fetal movements, that there had been no vaginal bleeding, that the fetus felt small on abdominal palpation and was in cephalic presentation (head down). There was no reference to the vaginal bleeding episode at 34 weeks or 17 weeks gestation. A further fetal growth ultrasound scan was planned for two weeks later with a further obstetrics review thereafter. It was noted that if the fetal growth continued on the same line then conservative measures and fortnightly scans until delivery may be suitable. If there was evidence of static growth a vaginal examination, sweep and booking of induction of labour were to be considered.

Events of February 2019

[186] On 3 February 2019 at around 1741 hours, at 36+5 weeks gestation, Ms McCormick contacted maternity triage at Wishaw General Hospital to again report reduced fetal movements. She was advised to attend for assessment. She attended at around 1830 hours. It was incorrectly recorded that this was the first episode of reduced fetal movements. It was noted that Ms McCormick had a consultant appointment in 10 days' time. A cardiotocograph (CTG) was performed to assess fetal heart rate which was considered to be normal. This was the second episode of reduced fetal movements and Ms McCormick was referred for an ultrasound scan which was performed the following day. The referral correctly noted this was in fact the second episode of reduced fetal movements and so required a consultant appointment to be made. It was noted that there were no abnormalities detected on the scan.

[187] Ms McCormick attended for a further ultrasound scan on 12 February 2019 and an antenatal follow-up and obstetric review on 13 February 2019. At this time she was seen by

midwife Hand, who had no prior involvement in Ms McCormick's care. All observations were considered to be within normal limits and the ultrasound scan was considered to show normal growth and liquor volumes. Ms McCormick was also reviewed by a consultant, Dr McLellan. The notes relative to this review made no reference to complications in pregnancy, such as the episodes of reduced fetal movements or vaginal bleeding. Dr McLellan considered the scans to show normal or acceptable growth. Dr McLellan did not discuss performing a sweep or induction of labour. Ms McCormick was referred for midwifery-led care, with no planned obstetric follow-up.

[188] On 25 February 2019 Ms McCormick attended for a routine membrane sweep at 39+6 weeks gestation. It was recorded that Ms McCormick had some 'spotting' following this examination, and that her cervix was 1-2cm dilated. A further appointment was made for the following week on 4 March 2019.

[189] At around 1419 hours on 3 March 2019, Ms McCormick called the maternity triage unit to report further vaginal bleeding on wiping. It was recorded that she had no concerns regarding fetal movements. She was advised to monitor the loss and to contact triage again should there be any 'worsening, reduction in fetal movement, or intense cramping'.

Events of March 2019

[190] On 4 March 2019, at around 1208 hours, Ms McCormick attended for a second membrane sweep with named midwife Hand. She was 40+6 weeks gestation. It was recorded that her cervix was now 2 – 3cm dilated and that she was reporting contractions every 15 minutes for around 40 seconds with some bloody show. She was booked in for induction of labour at 0800 hours on 10 March 2019 (41+5-weeks gestation).

[191] At around 1629 hours on 4 March 2019, Ms McCormick called the maternity triage unit. She spoke to midwife Campbell. Ms McCormick reported some show since the sweep and that she was experiencing contractions every two to three minutes for around 40 – 60 seconds. It was recorded that the contractions were painful, but that Ms McCormick was managing to breathe through them, had taken paracetamol that morning at 0900 hours, but had not taken analgesia since. It was also recorded that Ms McCormick's waters had not yet broken and that fetal movements were normal. She was advised to take oral analgesia and to have a warm bath or shower. She was also advised to call back if she was 'not coping', required admission, her waters had broken, had vaginal bleeding, or had any concerns regarding fetal movements.

[192] Ms McCormick contacted maternity triage again at around 1932 hours the same day. She reported contractions every three minutes lasting 60 seconds and that she was not coping. She was advised to attend Wishaw General Hospital.

[193] At around 2029 hours on 4 March 2019, Ms McCormick was admitted to the maternity unit at Wishaw General Hospital. A midwife noted that her maternal observations were within normal limits. The fetal heart rate was recorded to be 75 beats per minute. A normal fetal heartrate is between 110 and 160 beats per minute. A CTG was commenced and a senior obstetrician attended, arriving at 2037 hours. The fetal heart rate was recorded to be 79 beats per minute on CTG and was not recovering. Ms McCormick was found to be in established labour and 6cm dilated. An amniotomy (artificial rupturing of the membranes) was performed and thick meconium was noted, which can be a sign of fetal hypoxia. The fetal heart rate briefly recovered to 120 beats per minute following Ms McCormick's waters being broken but was followed by further bradycardia (a slowed heart rate).

[194] At around 2043 hours the decision was taken to expedite Ellie's birth. Ellie was born at 2058 hours on 4 March 2019 by emergency caesarean section. It was noted during the delivery that there was meconium +++.

Events following Ellie's birth

[195] Following birth, Ellie was passed to the neonatal team. Ellie was in poor condition and there were no signs of life. She was floppy and had no detectable heart rate. Cardiopulmonary resuscitation (CPR) was commenced and Ellie was intubated. A detectable heart rate was noted at 11 minutes of age; however, it was only 60 beats per minute or below until 17 minutes of age when her heart rate was established over 100 beats per minute. She was transferred by incubator to the neonatal unit at around 2124 hours. At this time she was showing clinical signs of severe hypoxic encephalopathy. Despite maximal intensive care support, Ellie was noted to have multi-organ failure and was severely hypotensive.

[196] Ellie had been deprived of oxygen for too long and was unable to survive despite full resuscitation. The decision was therefore taken for active care and treatment to be withdrawn. It was noted that no obvious cause for the fetal distress was seen at the time of the caesarean section.

[197] Life was pronounced extinct at 0220 hours on 5 March 2019. Ellie was 5 hours old at the time of her death.

[198] A post-mortem examination was conducted on 12 March 2019 at the Queen Elizabeth University Hospital, Glasgow. The consultant paediatric and perinatal pathologist recorded the cause of death as:

1a. Hypoxic ischaemic encephalopathy

1b. Intrapartum hypoxia

[199] The final post-mortem report concluded that Ellie's biometric measurements were consistent with her gestational age. Her birth weight centile was within the normal range. It noted:

> "There is meconium staining of the fingernails and toenails, in keeping with meconium release due to acute intrauterine stress/hypoxia. Meconium is present in the lumen of the upper respiratory tract, in keeping with meconium aspiration.
>
> …the post-mortem shows evidence of hypoxic/ischaemic injury to the brain, in keeping with the clinical impression of intrapartum hypoxia. The latter term indicates perinatal hypoxia which has occurred during labour. Intrapartum hypoxia may be due to fetal, maternal and placental causes as well as factors relating to labour and delivery. The post-mortem has not identified a fetal cause of intrapartum hypoxia…the placenta has been discarded. It will not therefor be possible to confirm or exclude the possibility of a placental cause or an umbilical cord cause for antepartum or intrapartum hypoxia. However, there is no evidence of growth restriction or growth asymmetry to suggest chronic intrauterine stress due to placental pathology. That said, there exists a number of potentially recurrent placental pathologies…these possibilities cannot be excluded and should be considered in the context of management of any subsequent pregnancies."

[200] The consultant paediatric and perinatal pathologist suggested an opinion be obtained from a consultant neuropathologist on the timing of the hypoxia. Neuropathological examination confirmed global ischaemia.

[201] A Significant Adverse Event Review (SAER) was undertaken by LHB by a team who had no prior involvement in Ellie or Ms McCormick's care. It reported on 23 May 2019. Its purpose was to identify issues and promote learning from adverse events and use the information to inform future action plans, develop guidelines and improve processes. The team consisted of a consultant obstetrician, midwives, an anaesthetist and a neonatal consultant. The material findings of the SAER report are discussed below.

DISCUSSION AND CONCLUSIONS

Key chapters of evidence

[202] There was little disputed evidence in relation to the facts. Again, I do not regard it as necessary to set out all of the evidence; however, I set out below the key chapters of evidence which informed parties' submissions and my assessment of the issues arising.

The change in named midwife

[203] The Best Start: Five Year Plan for Maternity and Neonatal Care is a Scottish Government initiative introduced in 2017 to improve care for mothers and babies. Midwife Campbell explained that Best Start involved providing women with a named midwife. The aim was to provide holistic antenatal, intrapartum and postpartum care with a focus on continuity of carer. NHS Lanarkshire was identified as an Early Adopter Board for Best Start in 2017.

[204] The Best Start Programme commenced in the Blantyre area around February 2019. Midwife Hand was Ms McCormick's named midwife from February 2019. At that time, Midwife Hand had only recently taken up post as a community midwife, having previously worked as a ward midwife. She required to learn about the 30-35 woman allocated to her care and to learn how to use and navigate BadgerNet in her new role as a community midwife. When taking over Ms McCormick's care, she received a maternity clinical record, but no handover from the previous midwife. During cross-examination, she described her handover from the previous midwife "as non-existent". There was no evidence before the Inquiry from which to assess why that was so. Midwife Hand explained that she would have expected previous episodes of bleeding and reduced fetal movements to be highlighted during a handover from the previous midwife. She agreed, during cross-examination, that

she had been placed in an "unfair position" by the introduction of Best Start and described it as "a hard time for us all in the team". I accepted midwife Hand's evidence on this matter which was unchallenged.

[205] **Conclusion 10**: From her booking appointment until around February 2019 (at around 36 weeks gestation) Ms McCormick had been cared for principally by the same midwife at routine appointments. Upon introduction of the Best Start Programme in Blantyre, a new named midwife, midwife Hand, was allocated to Ms McCormick. There was no verbal or written handover from the previous midwife.

The events of 3 February 2019

[206] Midwife Murphy carried out the antenatal assessment on 3 February 2019 when Ms McCormick attended triage at Wishaw General Hospital at 36+5 weeks gestation reporting reduced fetal movements. She explained that BadgerNet was a fairly new system at the time and it was easier and quicker to obtain a history from the patient. Upon obtaining a history from Ms McCormick, midwife Murphy became aware that this was her second episode of reduced fetal movements. Midwife Murphy was concerned that Ms McCormick had explained that she had not felt any fetal movements on 2 February 2019. She explained the guidance at the time was that a patient should receive a scan within a day of reporting reduced movements and a follow up appointment with a consultant in 1 to 2 weeks. Following her examination, she noted a normal heartrate upon CTG and made referrals for a Doppler, Liquor Scan and ultrasound scan. She had marked these referrals as urgent and noted in the clinical summary for these referrals "this lady has second episode of reduced FM [fetal movement] Consultant Appt to be made". She noted that Ms McCormick was due to see a consultant in 10 days. That appointment had been made on 20 January to

review fetal growth. As she was aware of this scheduled appointment, midwife Murphy did not make a separate referral to a consultant for reduced fetal movements. She expected the consultant to have access to the CTG results and scan results and to be aware that Ms McCormick had attended for reduced fetal movements. She did not add an alert on the BadgerNet records highlighting the episodes of reduced fetal movements. She did not contact the consultant clinic by email or telephone to alert the consultant or named midwife of these episodes.

[207] Midwife Murphy did not recall whether she had been aware of Ms McCormick's previous episode of antepartum haemorrhage; her normal practice was to record any such knowledge in the notes following the assessment. She had not done so. Later in her evidence she stated that she had not been aware of the previous episode of bleeding on 20 January 2019. Her management, however, would not have changed, unless at the time of the assessment, Ms McCormick had been experiencing vaginal bleeding or pain. That would have indicated the need for a scan and a consultant appointment which was in any event, the course midwife Murphy had taken.

[208] Midwife Murphy explained that she had not been aware that Ms McCormick was on the red pathway of maternity care. At the time, the BadgerNet system did not highlight this. Had she been aware, she would have taken time to read and understand why Ms McCormick was on the red pathway; however, her management of Ms McCormick on 3 February 2019 would have been the same.

[209] Midwife Murphy was asked how the consultant would know that that there was an additional reason for Ms McCormick to see the consultant, namely, reduced fetal movements. She explained that the consultant would know by asking Ms McCormick. She agreed with Dr McLellan that there was no reliable mechanism for highlighting risks on

BadgerNet. If there was a system for adding alerts, midwife Murphy was not aware of it. She agreed that was a training issue. On the paper notes with which staff were familiar, previous bleeding or reduced fetal movements were very noticeably recorded at the front of the paper notes.

[210] **Conclusion 11**: During Ms McCormick's assessment on 3 February 2019, midwife Murphy did not record her knowledge of previous episodes of antepartum haemorrhage. She was unaware of Ms McCormick's previous episodes of bleeding on 19, 23 and 24 September 2018 (at 17 weeks gestation) or on 20 January 2019 (at 34 weeks gestation). She was unaware that Ms McCormick was on the red pathway for maternity care. Midwife Murphy was aware that Ms McCormick was attending in relation to a second episode of reduced fetal movements, however she had obtained that information from Ms McCormick rather than from a consideration of the BadgerNet records. She did not enter an alert on the BadgerNet records highlighting the episodes of reduced fetal movements nor telephone or call the consultant clinic to alert the consultant or the midwife that the episode of reduced fetal movements was an additional reason for a review with a consultant.

Events of 13 February 2019 – the assessment by midwife Hand

[211] Midwife Hand first met Ms McCormick, as her named midwife, on 13 February 2019. Midwife Hand could not recall specifically what information she had obtained before or during the assessment of Ms McCormick. She stated that she would have known Ms McCormick's BMI from reviewing her records and would have been aware that she was on the red pathway. She could not recall which particular notes on BadgerNet she had read. She had understood that a scan at 36 weeks gestation had indicated fetal growth on the 10th

centile. A further scan had been arranged for 38 weeks and the purpose of Ms McCormick's appointment on 13 February 2019 was to allow the consultant to review the growth scan.

[212] Midwife Hand carried out an antenatal check. She said she would have asked Ms McCormick questions such as "have there been any problems or concerns in your pregnancy?" She recalled that Ms McCormick had responded "no" and that everything had been fine. Although she could not recall their conversation, she could recall this question and answer. Midwife Hand checked Ms McCormick's blood pressure, urinalysis, palpated her abdomen and checked the fetal heart rate. In her affidavit, Ms McCormick did not address specifically what she was asked by midwife Hand. In relation to the discussions with Dr McLellan, she stated that had she been asked about bleeding or reduced fetal movements, she would have drawn attention to her previous episodes; she had been reassured by those who had assessed her throughout her pregnancy and thus did not have any real concerns.

[213] In her affidavit, midwife Hand stated that she could not recall if she was aware of the previous episode of reduced fetal movements at 34 weeks; however, she stated "I always give advice about this to mums to observe movements and report any concerns to maternity triage. I do not recall if I knew about her previous episodes of spotting as they were not highlighted in the notes". During evidence, she was asked whether, if she had been aware that Ms McCormick had attended triage reporting vaginal bleeding or reduced fetal movement, she would have recorded that in her note of the appointment on 25 February 2019, to which she responded "yes". She agreed that as she had made no such record, she was likely unaware. She accepted that it "could be that she did not know". She was asked whether it was surprising that she had not been aware of the reduced fetal movements on 13 February, she stated that she was surprised that she did not know. She accepted that had

she read the relevant notes on BadgerNet, she would have been aware. She explained that she had only 10 minutes to look through the notes prior to the appointment and could not read all the relevant notes. She had only recently been appointed as a community midwife and required to familiarise herself with up to 35 women. At the time, there were no alerts on the BadgerNet system drawing the user's attention to prior episodes of bleeding or reduced fetal movements.

[214] In her record of the antenatal assessment, midwife Hand had noted:

"Fetal Movements Felt: Yes

Fetal Movements Discussed: Yes

Fetal Movement Concerns: No"

She explained that this record was compiled on the basis of the answers provided by Ms McCormick. In re-examination by Ms Gillespie, midwife Hand was asked whether the question on the communication note regarding concerns and a discussion about fetal movements was directed at the present situation, the last few days or the last few weeks. She explained that it was directed at the last few weeks. When asked if she had specifically enquired in those terms, midwife Hand explained that "that's what I would think, but maybe I would not say it like that". In response to a question from Mr Deery, she explained that she could understand why Ms McCormick had answered "no concerns" in relation to fetal movements, having attended the maternity triage unit ten days earlier, a CGT having been performed and having received reassurance from the hospital staff. In her affidavit, Ms McCormick stated she was left reassured about the baby's movements after her assessment on 3 February. In my judgement, it is likely that Ms McCormick interpreted the discussion about fetal movements as a reference to the present, not her past concerns which had, in any event, been assuaged upon assessment.

[215] Following the antenatal assessment, midwife Hand had a handover discussion with Dr McLellan. She could not recall what she said to Dr McLellan, but her normal practice would involve explaining to the doctor why a patient was attending. She suggested that she would have told the doctor the reason for the review, namely that Ms McCormick was attending for a review of her growth scan, the scan at 36 weeks having indicated growth on the 10th centile. Her evidence in this regard was corroborated by Dr McLellan who explained that she had been informed by the midwife that Ms McCormick had a routine growth scan booked at 36 weeks due to having a BMI of over 35. There was a concern that the scan showed a baby plotting on the 10th centile on a customised growth chart. As a consequence Ms McCormick had been reviewed and a plan was put in place to have a scan at 37 weeks to check for liquor volume (fluid around the baby in the womb) and assess doppler of the umbilical artery (the blood flow in the baby's cord) and a further scan at 38 weeks to assess follow-up growth. The latter scan was booked on 12 September 2019, the day prior to her attendance at the consultant clinic.

[216] **Conclusion 12**: The evidence supports the conclusion that midwife Hand was aware that Ms McCormick was on the red pathway of maternity care due to her BMI. She was not aware of Ms McCormick's prior episodes of bleeding or reduced fetal movements when she carried out the antenatal checks on 13 February 2019 and accordingly, she did not pass on this information to Dr McLellan. Ms McCormick did not advise midwife Hand of her previous concerns regarding reduced fetal movements, her concerns having been assuaged during her assessment on 3 February 2019.

Events of 13 February 2019 – the assessment by Dr McLellan

[217] Dr McLellan worked as a consultant obstetrician from January 1998 until she retired in April 2022. She worked within LHB and was based predominantly at Wishaw General Hospital. She reviewed Ms McCormick at the consultant antenatal clinic in Douglas Street, Hamilton on 13 February 2019. As Ms McCormick was assessed as high risk and placed on the red pathway, she attended the consultant clinic for her risk to be further stratified. Dr McLellan explained that each consultant is responsible for a geographical area and the clinic is staffed by consultants and junior members of the team. Patients would see either a registrar or a consultant. Dr McLellan was the consultant for all high-risk women in Hamilton at the time.

[218] Typically, in her clinic, she could see between 17 – 30 women. Each appointment was allocated between 15 – 20 minutes. There are multiple rooms running at one time in the clinic. Some appointments were allocated to the end of the day and given longer, but most routine appointments were between 15 – 20 minutes. Dr McLellan did not have prior knowledge of which patients she would be seeing the following day. She explained that there was no time to prepare for appointments.

[219] Dr McLellan understood that on 13 February 2019 she was to review Ms McCormick's growth scan; that was the sole reason for the review. A plan of care was to be put in place. She explained that she reviewed the growth scans looking at both the customised growth charts which were devised by the Perinatal Institute and the baby's biometric growth charts. She was reassured that the baby's growth was normal on both the customised and biometric charts. In particular, she was reassured that the baby's abdominal circumference was well within the normal range and she considered this was the most important aspect of the ultrasound scan report. As was Dr McLellan's normal practice, when

managing women with a BMI of over 35, who have not developed signs of hypertension or diabetes and with a baby who is growing normally in the third trimester, she recommended that Ms McCormick be given routine care and thereafter that Ms McCormick be offered routine post term induction at around term plus 12 days. She recorded the words "MW care" in her specialist review entry on BadgerNet. She explained that this meant that the pregnancy could be managed by the midwife. Based on the history that Dr McLellan had been aware of and the scan reports, she considered that to be the best plan of care for Ms McCormick. There was no need for further scans or further consultant clinic reviews. Ms McCormick would be seen by a midwife at 40 weeks and 41 weeks and she would be offered membrane sweeps, with induction of labour if it did not commence naturally.

[220] At such appointments, Dr McLellan's routine practice was to listen to the concerns of the midwife, review the booking summary page on BadgerNet which highlighted obvious risk factors identified at the first booking appointment, and to review the "specialist reviews" completed by medical staff. She would ask the woman questions about general wellbeing and whether she had any concerns and focus discussions on concerns identified as the woman would already have a complete antenatal assessment by the midwife during the same visit to the clinic.

[221] Dr McLellan explained that she had reviewed Ms McCormick's records since she became aware of Ellie's death. She was now aware that there had been episodes of reduced fetal movements at 26 and 36 weeks and of antepartum haemorrhage at 17 and 34 weeks. It was put to the doctor that Ms McCormick had attended for a scan on 4 February 2019 not because of concerns in relation to the growth of Ellie, but because of reduced fetal movements. The doctor explained that she did not recall being aware of reduced fetal movements and could not recall whether she had seen the scan of 4 February.

[222] Dr McLellan explained that when she assessed Ms McCormick, she had information from the midwife, information from the discussions with Ms McCormick and information from her examination of records and notes on BadgerNet. In terms of BadgerNet, she had reviewed scan reports, looked at the booking page to understand why Ms McCormick was attending and looked at the footnotes which record the alerts in red.

[223] Dr McLellan had received a verbal handover from midwife Hand. There was no discussion about reduced fetal movements or previous episodes of bleeding. Dr McLellan was not sure if she had been made aware that midwife Hand had only recently taken over the care of Ms McCormick. She was not aware that this visit to the clinic was the first time that the midwife had met with Ms McCormick. If that were the case, she assumed there would have been a handover. Normally, there was continuity of a midwife who knew the patient well. She explained that "the system can fall down when there is no continuity, so you need to be more aware of that as a consultant". She explained that generally LHB had a very good system of continuity of antenatal care with the midwives getting to know their clients extremely well. That in turn enabled them to pass on a detailed history highlighting any concerns throughout the pregnancy, to the consultant. While Dr McLellan was clear that she did not seek to criticise or apportion blame to midwife Hand, whom she described as very competent, she stated "perhaps I should have reviewed the notes better. I just had the expectation that the midwife would have all the information to hand. You cannot go through every entry on BadgerNet. You can't run a clinic like that…perhaps I had too much faith in [midwife Hand] because she is so good. That's how we all operate. If I am less familiar with a midwife, I may be more cautious and double check."

[224] Dr McLellan could not recall what questions she asked of Ms McCormick. She considered that she would have followed her normal practice, asking general questions

about wellbeing and whether there were any concerns. In her affidavit, Ms McCormick stated that she was not asked any questions regarding previous episodes of bleeding or reduced fetal movements. Dr McLellan accepted that she did not ask Ms McCormick any specific questions about reduced fetal movements or bleeding. She may generally have asked if there were any other concerns but equally, she may not have asked that question on this occasion as the focus throughout the appointment had been on the growth of the baby.

[225] Midwife Hand was present during Ms McCormick's appointment with the consultant. She stated that she was able to recall that Dr McLellan asked Ms McCormick how her pregnancy had been and how her fetal movements were. Midwife Hand stated that Ms McCormick raised no concerns with regards to fetal movements. When challenged, she stated that while she could not recall that the specifics of what had been said, she did recall the doctor asked about fetal movements. She accepted that was the only point of detail she could recall. She did not recall exactly what the doctor had said nor Ms McCormick's response.

[226] I have preferred Dr McLellan and Ms McCormick's evidence in this regard. First, Dr McLellan was very clear and straightforward in her evidence. She spoke with candour when she accepted that she had been unaware of previous episodes of reduced fetal movements, having interrogated the records on BadgerNet, having spoken with Ms McCormick, and having obtained a handover from midwife Hand. Second, for the reasons explained below, the consultant also candidly accepted that her plan of care for Ms McCormick would have been materially affected by knowledge of past episodes of reduced fetal movement. Third, Dr McLellan had explained that it was not her normal practice to ask specific questions about fetal movements; there was no reason, standing the

information before her, for her to have departed from that practice on this occasion. Fourth, Ms McCormick's evidence supported Dr McLellan's account of their conversation.

[227] Following the review, Dr McLellan had formed the opinion that Ms McCormick was at a lower risk. She explained that it would be a misconception to say that Ms McCormick was moving from the red to the green pathway of maternity care; she would remain on the red pathway, but would not require to be seen by a consultant unless anything changed or complications arose. Her high BMI represented an ongoing risk which required to be monitored. Dr McLellan explained that the guidelines at the time specified that if there were no complications following review, a woman on the red pathway could be returned to midwifery care. While she described it as a misconception to conclude that Ms McCormick had changed to the green pathway, she accepted that that was effectively the position unless further complication arose. In her evidence, midwife Hand stated that she had concluded that Ms McCormick was now on the green pathway. Ms McCormick stated in her affidavit that there had been no discussion with her about her ongoing risks or about her returning to midwifery led care. She explained that she left the appointment believing that she was still being treated as a high risk pregnancy and remained on the red pathway. Dr McLellan did not address whether she advised Ms McCormick that the effect of her plan for care was that she would receive midwife led care unless further complications arose.

[228] **Conclusion 13:** The evidence supports the conclusion that Dr McLellan was not aware of Ms McCormick's prior episodes of bleeding or reduced fetal movements when she reviewed Ms McCormick on 13 February 2019. She planned for Ms McCormick to receive midwifery led care, which effectively placed her on the green pathway of maternity care, unless further complications arose.

Events of 25 February and 4 March 2019

[229] Midwife Hand met with Ms McCormick again on 25 February 2019 at Blantyre Health Clinic for a routine appointment at 40 weeks gestation (she was in fact 39+6 weeks at the time). Midwife Hand was unable to recall what notes she had consulted in advance of this appointment. In her affidavit, she stated that Ms McCormick had told her that the fetal movements were "fine and that she had no concerns". Normal antenatal checks were carried out. Midwife Hand carried out a membrane sweep as Ms McCormick was over her term date. She considered that she may have explained to Ms McCormick that if the membrane sweeps were not successful and she had not laboured by term +12 days, then labour would be induced; that was her usual practice. She stated that she would not have considered inducing earlier as Ms McCormick had been deemed fit to continue her pregnancy at 38 weeks by Dr McLellan who had placed her on the green pathway. Midwife Hand explained that two membrane sweeps can be carried out by the midwife to assist the labouring process. At the appointment on 25 February, she could not recall whether she was aware of previous episodes of fetal movements or antepartum haemorrhage; she again explained that neither were highlighted in the BadgerNet records. In her affidavit, Ms McCormick stated that there had been no discussion at this appointment about her previous concerns during her pregnancy, nor about the possibility of induction.

[230] Ms McCormick had a further appointment with midwife Hand on 4 March 2019 at Blantyre Health Centre. A full antenatal check and a second membrane sweep was carried out. At this stage, Ms McCormick was assessed as being in early labour. Midwife Hand explained that she "would have read" the BadgerNet note which recorded that around 1419 hours on 3 March 2019, Ms McCormick had contacted the maternity triage unit to report vaginal bleeding on wiping. The bleeding had been noted as "mucousy" in nature. It

was described as "show" (the plug of mucus coming away from the cervix in early labour). Midwife Hand explained that show would have been normal at this stage as Ms McCormick was in the latent stages of labour. She was contracting once every 15 minutes. At this appointment, Ellie's heart rate was recorded as 113 beats per minute and then at 144 beats per minute on a second reading. Ms McCormick recollected that there was a discussion about the possibility of inducing labour if her labour did not progress. She stated that there had been no discussion at this appointment about her previous concerns during her pregnancy.

[231] **Conclusion 14**: On 25 February and 4 March 2019, midwife Hand followed the advice of Dr McLellan, carrying out the normal antenatal checks and performing a membrane sweep on each occasion. It is unlikely that she reviewed any past history in Ms McCormick's BadgerNet records, placing reliance upon the plan for care determined by Dr McLellan. She assumed that the episode of bleeding on 3 March was "show"; the reported episode of bleeding on 3 March did not cause her to review Ms McCormick's obstetric history or to re-consider her plan for care.

Events of 4 March 2019 (40+6 weeks gestation)

[232] Midwife Campbell is a community midwife for the Blantyre area. She explained that, in February 2019, she was one of eight members of staff involved in the Best Start programme providing continuity of care to expectant mothers. They required to be on call and to accompany their allocated patients to hospital when in labour and thereafter provide immediate care for the child for ten days following birth.

[233] Midwife Campbell had received notification from midwife Hand earlier on 4 March 2019 that Ms McCormick might call the maternity triage unit; a membrane sweep had been

performed and it was possible that she was in the early stages of labour. Midwife Campbell was not aware that two membrane sweeps had been performed.

[234] Midwife Campbell was responsible for triaging Ms McCormick when she telephoned the maternity triage unit on 4 March 2019. This was her only involvement in Ms McCormick's care. The call commenced at 1629 hours. Midwife Campbell explained that the call lasted between 5 to 7 minutes. She uploaded the communication note of the call onto BadgerNet at 16:56. She created the following communication note:

Background	
Reason for Call:	Contractions
Contractions?:	Yes
When did they start:	04 Mar 19 at 14:30
How frequently?:	every 2-3 mins
How long are they lasting?:	40 seconds
How strong are they?:	Moderate
Are you coping?:	Yes
Comments:	Feels contractions painful but managing to breathe through same at present. Has taken Paracetamol 1g at 0900 this morning but nothing since.
Any pain (other than contractions)?:	Yes
Where is the pain?:	Other: lower backache
Have your waters gone?:	No
Any PV bleeding?:	No
Other PV loss:	Yes
Comments:	Has had some show since membrane sweep this afternoon
Any visual disturbances?:	No
Any problems passing urine?:	No
Has there been a change in the baby's movements?:	No
Have you felt the baby move in the last 2-3 hours?:	Yes
Has the woman travelled to West Africa in the last two months?:	No
Call Details:	Irregular uterine activity over the course of the morning, becoming more regular since membrane sweep at clinic this afternoon. Now feels contractions are coming every 2-3 mins and lasting 40-60 seconds. Slight Show pv following vaginal examination. No evidence of SROM. FM normal No contractions noted for duration of phonecall with Nicola.

Actions	
Advice Given:	Paracetamol 1g 4-6 hourly, Warm bath/shower, Mobilise/birthing ball, Fluids/diet discussed
Other Advice Given:	Advised to try to take some Paracetamol or cocodamol and have a warm bath. Latent phase of labour discussed. Light diet and fluids encouraged. To call back if not coping, requiring admission, SROM, Pv bleeding or concerns with FM
To come in?:	No
Ring back:	No

Recommendation	
Decision Support:	Guidelines/ pathway, Call back advice given, Woman agrees with plan
Ambulance Required:	No

[235] Midwife Campbell stated that she was able to recall the content of the telephone call with Ms McCormick. Ms McCormick had called because she was having contractions every 2 – 3 minutes with each contraction lasting around 40 seconds (I note that the communication note on BadgerNet recorded contractions lasting 40 seconds and later in the same entry they are noted as lasting 40-60 seconds). The contractions were moderate in nature. She had had a vaginal examination earlier in the day with midwife Hand. Ms McCormick had explained that she had noted some vaginal blood since the examination, this was not fresh red blood but was pink and mucus like; she had taken 1g of paracetamol that morning but nothing since; she had lower back pain; she could feel fetal movements; and there was no evidence that her waters had broken. Upon being asked, she explained that she was managing to breathe through her contractions. The midwife explained that some bleeding was normal after an examination. She assessed that Ms McCormick did not appear distressed and that there were no contractions during the call. She did not ask Ms McCormick for a pain score to help describe the pain nor ask whether she has experienced a contraction during the call. She advised Ms McCormick to take 1g of paracetamol or cocodamol every 4-6 hours, have a warm bath/shower, use a birthing ball if she had one, continue to mobilise, drink fluids, consume a light diet and to call back if she was not coping, required admission, if her waters broke or if she had any further concerns about vaginal bleeding or fetal movements.

[236] She stated that she had made a clinical judgment in relation to whether Ms McCormick was coping; she also asked her whether she was coping. She noted that Ms McCormick did not need to stop while speaking to breathe through a contraction. She assessed that there were no contractions during the call. She accepted it would have been reasonable to ask Ms McCormick if she had experienced contractions during the call. She

accepted that it was possible that Ms McCormick had experienced contractions while on the call; however, normally, a midwife would require to talk a patient through a contraction, assisting her with breathing techniques.

[237] She described Ms McCormick as being in the latent stage of the first stage of labour. For first time mothers, it was not uncommon for the first stage of labour to last a long period. Latent labour is when contractions start; active labour is when the cervix is 4cm dilated. When asked whether it would have been reasonable to invite Ms McCormick in for assessment to confirm whether she was in active labour, midwife Campbell stated that for a primigravida (a first pregnancy), generally, vaginal assessments are more than four hours apart to reduce the risk of infection. She did not offer an assessment because she did not consider Ms McCormick to be in active labour.

[238] Ms McCormick's call was diverted to midwife Campbell's work mobile telephone; the midwife was at home, on call. Midwife Campbell had access to a work laptop, from which she could remotely access BadgerNet. In her affidavit, she explained that she had been working a 9am to 5pm shift on 4 March 2019, but was on call from 7am to 7pm. She explained that it was not always possible to access BadgerNet while on call as there were occasions when she might receive a call while she was conducting house visits.

[239] Her position in relation to whether she had accessed Ms McCormick's records on BadgerNet appeared to change. She had provided a statement to the police on 16 April 2019 in which she stated, "we have a maternity online system which records the details of a call, it has a set questionnaire guideline to go through which mums that are in labour or anything for mums to call and to triage". The implication from her witness statement was that she had access to BadgerNet and had worked through the questionnaire when triaging Ms McCormick. While her position, as set out in her affidavit, had been that she could not

recall whether she had accessed Ms McCormick's BadgerNet records during the call, during examination in chief she stated that she may have logged off from BadgerNet as she had finished her core duties at 1645 hours, 11 minutes prior to Ms McCormick's call. She later accepted that she had logged on to BadgerNet after the call to complete the communication note. She could not explain why she had logged off from BadgerNet early.

[240] She accepted that she could have logged on to BadgerNet to review Ms McCormick's records during the call. The explanations she provided for not doing so were varied. She stated that midwives do not rely on BadgerNet to triage a patient; that the pre-populated questions are not always helpful and that midwives use their clinical judgement to ask the right questions; that it would take longer to triage calls if she required to scrutinise the records; and that Ms McCormick would have been detained on the telephone for longer. When asked whether it was helpful to have the BadgerNet records before her during a call, she replied that it was helpful to be able to document a conversation; notably absent from her response was the assistance that a midwife might obtain from reviewing medical history. Later in her evidence, she accepted that there might be useful information on BadgerNet relating to the risks of a pregnancy.

[241] It is clear, in my judgement, that while she was reluctant to admit it and sought to downplay the importance of accessing the BadgerNet records, midwife Campbell did not consider Ms McCormick's obstetric history which had been available on BadgerNet during her call. That appeared to be accepted by the parties in their submissions. LHB described the midwife's approach as "unfortunate".

[242] Midwife Campbell accepted that she would have noted whether Ms McCormick was on the red pathway had she accessed her notes. She stated that when she had logged on to BadgerNet to complete the communication note after the call, she noted that Ms McCormick

was on the red pathway because of her high BMI and no complications were noted. That knowledge would not have changed her advice. She was not aware of any prior history of reduced fetal movement or episodes of bleeding. Had she known, she stated that she would have advised Ms McCormick to attend at hospital. She was asked whether she could have called Ms McCormick back and invited her in for assessment, if, having logged on and reviewed Ms McCormick's obstetrics history, she had noted the prior episodes of reduced fetal movements and bleeding. She confirmed that she could have. It can be assumed from her response, that the midwife did not review the relevant information on BadgerNet related to prior obstetric history.

[243] She was asked why she was not aware of this prior history; she responded, "I was not told during handover, risk assessments were not documented in BadgerNet, I was not told by the patient and I would have needed to read specific parts of BadgerNet". She accepted that she could not know about prior complications in a pregnancy without accessing BadgerNet but stated that had she accessed BadgerNet during the call, she could "not be sure" that she would have noted the prior history. The records would not have easily disclosed the prior history and there was no alert to draw her attention to prior episodes of reduced fetal movements or bleeding; now, critical alerts are used.

[244] In her affidavit, Ms McCormick stated that she had been asked by midwife Campbell to score her pain out of ten. Ms McCormick replied, ten out of ten. When this was put to midwife Campbell during examination in chief, she twice stated that she did not normally ask patients for a pain score. When asked on a third occasion whether she had been told by Ms McCormick that her pain score was 10/10, she stated "I say it didn't happen". Had she been told that Ms McCormick's pain was scored at 10/10, she would have advised her to attend for assessment. During cross examination by Ms Smith KC, she was asked whether it

was possible that she would not respond to Ms McCormick description of pain. Midwife Campbell replied in the negative. She accepted that one of the prepopulated questions on a checklist of questions on BadgerNet sought a pain score. She stated that no midwife in the Best Start team used the pain score. She had noted the strength of the contractions as "moderate" which was also a prepopulated option on BadgerNet.

[245] Only Mr Deery commented on this chapter of evidence in any detail in his submissions. He invited the Inquiry to prefer Ms McCormick's evidence. I have been mindful that Ms McCormick's evidence was before the court in affidavit form only. Ordinarily, less weight might attach to such evidence, particularly where it is contradicted and has not been capable of being tested. I am also mindful that it is uncomfortable and perhaps unfathomable that a healthcare professional would not note and react to a pain score of 10/10. I have had cause to reflect on this chapter of evidence in particular detail. I note that on 24 April 2019, shortly after Ellie's death, Ms McCormick had written to NHS Lanarkshire expressing her concern that having described her pain score as 10/10, she was not invited into hospital for assessment. It would appear that Ms McCormick has been consistent in her account. Midwife Campbell's evidence was regrettably inconsistent and unreliable, in a number of respects. She was defensive and guarded. While she was speaking to an electronic note she created shortly after her call with Ms McCormick, she had not noted a pain score, notwithstanding a prepopulated prompt to do so. I noted that her recollection was informed to a large extent by what was stated in the note she created of the call; I was not persuaded that she was able to accurately recollect a matter not addressed in that note, namely, whether she had been told by Ms McCormick of her pain score. I found her various explanations for not accessing BadgerNet as an unconvincing attempt to rationalise her failure to do so. Nevertheless, I am not persuaded that having regard to

direct, contradictory evidence, it is appropriate to make a significant finding of fact based on unchallenged affidavit evidence. Having regard to Conclusion 19, it is not necessary to make a finding in relation to whether Ms McCormick described her pain score at 10/10.

[246] **Conclusion 15**: Midwife Campbell did not access Ms McCormick's obstetric history on BadgerNet during the triage telephone call on 5 March 2019, was not aware that Ms McCormick was on the red pathway, nor that Ms McCormick had experienced previous episodes of bleeding and reduced fetal movements. Upon accessing BadgerNet after the telephone call to complete the communication record, midwife Campbell did not review Ms McCormick's records to consider whether she ought to be asked to attend triage for assessment.

The cause of death and the mechanism of damage

[247] The participants were agreed that induction at any time prior to labour commencing would likely have avoided Ellie's death. They were also agreed that if Ms McCormick had been advised to attend hospital during her call at 1629 hours on 4 March 2019 or at any time earlier that day it is likely Ellie would have survived.

[248] In order to understand why the parties were in agreement, and to inform the discussion below, it is necessary to set out the evidence in relation to the cause or sequences of causes which led to Ellie's death.

[249] Professor Stenson provided a report for the Inquiry and spoke to the contents of the report. The cause of Ellie's death was considered to be hypoxic ischaemic encephalopathy (a brain injury caused by a lack of oxygen to the brain) in association with intrapartum hypoxia (a deprivation of oxygen during labour). The pathologist noted no dysmorphic features or internal developmental malformation. There was no evidence of trauma, infection or

metabolic disease. Measurements indicated that Ellie was well grown. There was meconium staining of Ellie's nails and there was meconium in Ellie's trachea, bronchi and distal airspaces. The post-mortem examination showed that there was not well-established hypoxic injury to the brain or other organs likely to have preceded labour. The neuropathology report concluded there was global hypoxic brain injury; Professor Stenson explained this meant that all of the brain had been affected by hypoxic injury.

[250] He explained that on 4 March 2019 at around 1208 hours, when Ms McCormick had attended for a second membrane sweep, Ellie's heart rate had been measured and was normal. Later that day, when Ms McCormick attended hospital in established labour, there was a fetal heartbeat present, but monitoring demonstrated abnormal fetal heart rate patterns, with decelerations and then bradycardia (a slowing of the heart rate to less than 50 beats per minute). An emergency caesarean delivery was carried out promptly and at the time of birth there was no longer a fetal heartbeat.

[251] He explained that there was unequivocal evidence of severe intrapartum hypoxia as the cause of Ellie's condition at birth. He was clear that the hypoxic event had occurred during labour; the pathologist had not found signs of damage prior to labour. The birth weight and head circumference, the post-mortem findings, the prior scans, liquor volumes and doppler studies suggested that there was no long-standing fetal compromise to an extent likely to have been damaging before the onset of labour.

[252] The unequivocal evidence to which Professor Stenson referred was: an analysis of Ellie's heart rate and patterns; the results of blood sampling; the presence of meconium staining of Ellie's nails; and the meconium in Ellie's trachea, bronchi and distal airspaces. First, the short period of CTG monitoring during labour which demonstrated abnormal patterns with decelerations and reduced variability prior to bradycardia and cardiac arrest

implied that there was prolonged partial hypoxia during labour, ending in fetal circulatory collapse, rather than a sudden onset of total or near total hypoxia immediately before delivery (an opinion shared by Dr Hughes). Second, Professor Stenson explained that hypoxia causes increased acidity resulting from the build-up of lactic acid which is produced as a by product of anaerobic respiration in a fetus due to a lack of oxygen. Blood sampling from the umbilical cord after Ellie's birth gave a reading he described as exceptionally acidic and there was severe acidosis confirmed on a blood gas taken from Ellie after she had been resuscitated. He described the acidity measures as being at levels rarely seen. Third, Professor Stenson explained that under hypoxic stress, the fetus can pass meconium (the content of the fetal bowel) which is distributed into the amniotic fluid causing it to change colour. There was meconium staining of Ellie's nails and evidence of aspiration of meconium into Ellie's lungs which could be attributed to fetal gasping.

[253] Professor Stenson explained that it was not possible to determine what had caused the hypoxia. It could have been caused by rupture of the uterus, detachment of the uterus, by gradual impairment of the function of the placenta or the vigour of uterine contractions reducing the blood supply to the fetus.

[254] He further explained in his report:

> "Prolonged partial hypoxia in labour is not immediately damaging to the fetus. It is generally considered that it must be present for at least an hour and often many hours before it results in injury. Risk of death arises very late in the process. Prolonged partial hypoxia usually results in abnormalities of the fetal heart rate patterns that can be detected by continuous fetal monitoring, allowing delivery to be expedited before permanent harm has occurred. Prolonged partial hypoxia can occur when the placental function has become reduced and the reduction in placental perfusion during uterine contractions of labour is then sufficient to result in progressive hypoxia. It can be caused by intermittent umbilical cord occlusion during uterine contractions. It can result from excess uterine contractions. Any placental pathology in this case was not sufficient to cause severe growth restriction and was unlikely to have permanently harmed

> Ellie until the additional compromise caused by uterine contractions of labour began."

[255] In short, it was his opinion that Ellie had been coping up to and including when labour commenced. If Ms McCormick had been in hospital throughout her labour and if there had been a requirement for continuous electronic fetal monitoring, then it was likely on balance of probability that the prolonged partial hypoxia that developed during labour would have been identified before it became damaging. This would on balance of probability have enabled delivery to be expedited in time for Ellie to be born alive and free from permanent brain injury.

[256] When Ms McCormick contacted the maternity triage unit and spoke to midwife Campbell at 1629hrs on 4th March, she had been experiencing uterine contractions for around 2 hours. Ellie was delivered at 2058hrs, around 4 and a half hours later. Professor Stenson explained that it was unlikely that Ellie had already been fatally injured by 1629 hours, because she would probably not still have been alive in utero more than 4 hours later if this was the case. If Ms McCormick had attended hospital within an hour after the call at 1629hrs and continuous fetal monitoring had been commenced, or if her labour had been induced earlier, then on a balance of probabilities, Ellie would have survived in good health. In his oral evidence he described this as a "very, very strong probability". He explained that there had been a lot of time between 1629 hours and Ellie's birth to address the situation.

[257] Ms McCormick stated in her affidavit that had she been advised to attend for early induction of labour or after the triage call at 1629 hours on 4 March 2019, she would have done so.

[258] **Conclusion 16**: If Ms McCormick had been advised to attend hospital during her call at 1629 hours on 4 March 2019 or if she had been advised to attend for early induction of

labour following her review with Dr McLellan, she would have done so. Induction at any time prior to labour commencing would likely have avoided Ellie's death.

Precautions which might reasonably have been taken

[259] I accept Ms Gillespie's submissions, which were largely supported by Mr Deery on behalf of the McCormick family, that while Ms McCormick experienced complications during her pregnancy (more particularly, episodes of vaginal bleeding at 17 and 34 weeks gestation; reduced fetal movements at 26 and 36 weeks gestation; and concerns about Ellie's growth following an ultrasound scan at 36 weeks gestation), there was no evidence that these complications caused or contributed to Ellie's death. The post-mortem found that Ellie's biometric measurements were consistent with her gestational age, her birth weight was within the normal range and there was not well-established hypoxic injury to the brain or other organs likely to have preceded labour.

[260] In order to consider what precautions, if any could reasonably have been taken which might realistically have avoided Ellie's death and to consider whether any defects in any system of working contributed to her death, it is necessary to consider in detail, the care provided during key stages of Ms McCormick's pregnancy.

Was the antenatal care received by Ms McCormick prior to 13 February 2019 appropriate?

[261] Dr Hughes and Professor Humphry agreed that Ms McCormick had been correctly placed on the red pathway for maternity care on account of her raised BMI at her booking appointment. Maternal obesity is associated with adverse outcomes in pregnancy, including problems which arise during labour. Dr Hughes explained that labour can progress more slowly with a higher risk for the need for intervention in the form of caesarean section or

assisted vaginal delivery. There can be issues related to the placenta; it may not provide the level of oxygen or nutrients required leading to growth restriction. Dr Hughes explained that intrapartum hypoxia can be associated with placental insufficiency. A high BMI can also lead to complications such as: high blood pressure; pre-eclampsia; the development of diabetes; and an increase in the risk of stillbirth. Ms McCormick had no other significant risk factors and was otherwise healthy. It was appropriate that an obstetric review was booked for 16 and 36 weeks gestation.

[262] Professor Humphry considered that on 19 September 2018 at 17 +1 weeks gestation, when Ms McCormick reported vaginal bleeding, she ought to have been asked to attend triage for assessment. However, later that day at 2333 hours when she reported further bleeding, she was appropriately advised to attend for assessment and a speculum examination was performed. She was not asked to attend for assessment on 24 September 2018 at 17+5 weeks gestation when she again reported vaginal bleeding. I accepted Professor Humphry's evidence that the midwife ought to have invited Ms McCormick for assessment in light of the repeated episodes of bleeding, however, assessment at that stage would not have changed the outcome.

[263] Upon reporting reduced fetal movements on 23 November at 26+3 weeks gestation, a fetal assessment was appropriately offered and conducted. Upon reporting vaginal bleeding on 20 January 2019 at 34+5 weeks gestation, a speculum examination was appropriately performed. Dr Hughes commended the obstetrician for creating a thorough note of the examination and for noting a previous episode of vaginal bleeding upon review of Ms McCormick's records. Professor Humphry noted that it would have been appropriate to arrange an ultrasound scan as soon as possible in accordance with the RCOG Antepartum Haemorrhage Green-top Guideline No 63, November 2011. The obstetrician had not

considered that necessary as an ultrasound scan was already arranged for 36 weeks gestation. That was, in my judgment, a reasonable approach for the obstetrician to take.

[264] On 29 January 2019, Ms McCormick attended for her pre-planned fetal growth scan at 36 weeks and for an antenatal assessment and obstetric review on 30 January. Ellie was on the 10th centile for growth. Both Dr Hughes and Professor Humphry considered the plan for care made by the obstetrician was appropriate. Following the recommendations of the RCOG Investigation and Management of the Small for Gestational Age Foetus, Green-top Guideline No 31, January 2014, the obstetrician had planned regular scans to monitor Ellie's growth and to consider the need for intervention, such as early induction.

[265] On 3 February 2019 at 36+5 weeks gestation, both Professor Humphry and Dr Hughes considered Ms McCormick's care to have been appropriate; she had been correctly advised to attend for assessment upon reporting reduced fetal movements; a CTG had been performed and an ultrasound scan was arranged for the following day for growth and liquor volume (the RCOG Reduced Fetal Movements, Green-Top Guideline No 57, February 2011 recommends that if an ultrasound is deemed necessary, it should be performed when the service is next available, preferably within 24 hours). The midwife had reviewed Ms McCormick's notes and had been aware that this was the second episode of reduced fetal movements. The midwife had recognised the need for a consultant review. As there was a consultant review booked for 38+1 weeks gestation, 10 days later, she did not arrange a referral. The authors of the SAER were critical of this approach. They concluded that for a patient who had reported bleeding and presented with a second episode of reduced fetal movements an appointment with a consultant ought to have been made within 1 week. Dr Hughes considered the midwife to have acted in accordance with the local guideline for LHB ("The Management of Women Presenting with Reduced Fetal

Movements, Lanarkshire, November 2016"). It stipulated that if all assessments are normal, women with a history of reduced fetal movements at over 28 weeks gestation and with one or more risk factor should "have a medical review at their consultant antenatal clinic within 1 – 2 weeks". I have accepted Dr Hughes' interpretation of that guideline as plainly correct; the midwife acted in accordance with the local guidelines.

[266] Professor Humphry had concluded that the majority of Ms McCormick's care had been appropriate. While in some instances, the care could have been more comprehensive, that more comprehensive care before 39 weeks gestation would not have changed the outcome. Dr Hughes generally agreed with that assessment. Both experts raised concerns in relation to the information accessed and recorded in BadgerNet, which I deal with below.

[267] **Conclusion 17:** The care received by Ms McCormick up to and including 3 February was appropriate. On 24 September 2018, the midwife ought to have invited Ms McCormick for assessment in light of the repeated episodes of bleeding; however, assessment at that stage would not have changed the outcome.

Was the care provided to Ms McCormick on 13 February 2019 appropriate?

[268] Neither midwife Hand nor Dr McLellan were aware of Ms McCormick's prior episodes of bleeding or reduced fetal movements when they reviewed Ms McCormick on 13 February 2019 (see Conclusions 12 and 13). They ought to have been. Dr McLellan planned for Ms McCormick to receive midwifery led care, which effectively placed her on the green pathway of maternity care, unless further complications arose.

[269] The evidence supports the conclusion that the care Ms McCormick received on 13 February 2019 was not appropriate having regard to the history of her pregnancy.

That was the consensus among the expert witnesses which also accorded with the conclusions of the SAER team. The SAER review concluded:

> "…considering the patient's risk factors of PV spotting [bleeding] and episodes of RFM [reduced fetal movements], she should have remained under consultant led care with further growth scans ensuring the growth trajectory was maintained. The team also agreed that consultant review with induction of labour at term would have been justified and disagreed with the management to leave the patient until 42 weeks gestation prior to initiating induction of labour."

[270] Dr McLellan candidly accepted that the decisions she had taken on 13 February were not appropriate in light of the history of Ms McCormick's pregnancy. She did not await the outcome of the SAER review, or the commencement of this Inquiry, to express that view to Ms McCormick and Mr McDonald. She met with Ms McCormick shortly after Ellie's death and apologised for not offering earlier induction of labour. In a letter to Ms McCormick's GP, dated 17 May 2019, Dr McLellan noted:

> "Nicola had recurrent episodes of bleeding in pregnancy which increased her risks of uteroplacental insufficiency, placental abruption and fetomaternal haemorrhage. Such a history is often a trigger to offer induction of labour around 38 weeks gestation which did not happen. I have apologised for this."

[271] During her evidence, Dr McLellan stated that if she had been aware of the history of Ms McCormick's pregnancy, and she accepted that she could have done more to make herself aware, it would have changed her care plan "completely". She described an apology as "trite" and expressed the view that if she could turn back the clock now and act differently, she would do so. I considered Dr McLellan to be both genuine and sincere in her evidence and commend her for the empathy and honesty she conveyed when giving evidence.

[272] In particular, had she been aware that Ms McCormick had recurrent episodes of bleeding, she would have had a discussion with Ms McCormick about early induction of labour. It was her practice to offer induction of labour between 38 and 39 weeks for women

presenting with unexplained recurrent vaginal bleeding. In Ms McCormick's case, the history was suggestive of a cervical erosion as the bleeding was minimal and painless. At 34 weeks, Ms McCormick had been seen by a senior registrar who examined her cervix and who excluded cervical erosion and therefore the bleeding remained unexplained. She explained that there is a small increased risk of placental malfunction which can lead to the growth restriction of a baby, placental abruption (bleeding behind the placenta) and stillbirth associated with unexplained bleeding. In light of these risks, she would have discussed the pros and cons of induction of labour with Ms McCormick after undertaking a vaginal examination and cervical assessment to assess Ms McCormick's Bishop's Score (a scoring system used to predict the success of induction of labour). Had Ms McCormick declined induction, she would have recommended regular scans.

[273] Dr McLellan explained that if she had been aware of the episodes of reduced fetal movements, she would not have been overly concerned; one had occurred at 26 weeks and one almost three months later at 36 weeks. Two isolated incidents of reduced fetal movements 10 weeks apart did not, in her view, represent a significant history of recurrent reduced fetal movement and would not have changed her management plan particularly as two subsequent growth scans had shown a normal growth. Dr Hughes, however, took a different view. She explained that the episodes of reduced fetal movements could not be described as insignificant, particularly as Ms McCormick was at higher risk of stillbirth due to her raised BMI. This difference of opinion does not, in my view, require to be resolved; the episodes of reduced fetal movements were not a standalone factor and there was a consensus among the expert witnesses that a holistic view required to be taken of Ms McCormick's obstetric history; as submitted by Ms Gillespie KC, reduced fetal movements were part of an overall picture that included the underlying risk factor of

maternal obesity and the complication of recurrent vaginal bleeding. Professor Humphry summarised the position in her report; she described the review on 13 February 2019 as "an opportunity to discuss the accumulation of risks with [Ms McCormick] during her pregnancy, i.e. BMI, APH and reduced fetal movements and consider options for expectant management of the pregnancy or expediting the birth at term." I note that when Professor Humphry's view was put to Dr McLellan that there had been a failure to make a connection between the bleeding and reduced fetal movements, Dr McLellan did not disagree.

[274] Dr Hughes explained that early induction would have been appropriate also having regard to the suspicions of the consultant who reviewed Ms McCormick on 30 January 2019 that Ellie might possibly be growth restricted. In relation to the latter factor, however, Dr McLellan disagreed; two scans had showed normal growth. Dr McLellan's view was supported by the results of the post-mortem examination. Dr Hughes accepted that the post-mortem examination had found no evidence of growth restriction.

[275] **Conclusion 18**: On 13 February 2019, the advice provided to Ms McCormick was not appropriate. Having regard to the accumulation of risks in Ms McCormick's pregnancy, including her raised BMI, episodes of fetal movement and episodes of antepartum haemorrhage, she ought to have been offered induction of labour between 38 and 39 weeks gestation.

Was the advice provided to Ms McCormick at 1629 hours on 4 March 2019 appropriate?

[276] I have concluded that it was not.

[277] First, even without knowledge of past or present risk factors or that Ms McCormick was on the red pathway, midwife Campbell's usual practice ought to have caused her to invite Ms McCormick for assessment, rather than advise her to remain at home. I accept that

these are matters of professional clinical judgment and a number of factors are considered by a triaging midwife, including how a woman is presenting. However, during her evidence, midwife Campbell stated that if there were any concerning risk factors, if a patient required more pain relief, or if contractions were more frequent than 4 to 5 every 10 minutes lasting 1 minute, she would generally invite a patient in for assessment. In her communication note of the telephone call with Ms McCormick, she noted that Ms McCormick's contractions were occurring every 2 to 3 minutes and were lasting between 40 – 60 seconds; that equates to between 3 and 5 contractions every 10 minutes, with some lasting up to a minute. These contractions were reported to have lasted for around 2 hours before Ms McCormick contacted the maternity triage unit.

[278] During the Inquiry into Mira-Belle's death, Professor Humphry explained that whether to advise a patient to attend for assessment was a matter of professional or clinical judgment, which, when a patient is assessed as being in early labour, may be influenced by the midwife's perception that the patient is "coping". However, she explained that when a patient is meeting the objective thresholds for active labour, then she should be advised to attend for assessment. During that Inquiry, Professor Humphry also explained that while there was no hard and fast rule, active labour might be indicated by moderate/strong contractions lasting 40 seconds and occurring every 2 – 3 minutes. Professor Humphry explained that the classification of a contraction as moderate or strong is dictated by its length; between 20 and 40 seconds being a moderate contraction and above 40 seconds being strong. Dr Hughes was of the view that Ms McCormick was beyond the latent phase of early labour during her call with midwife Campbell. In her report, Professor Humphry had concluded that midwife Campbell's advice had been appropriate; however, during her evidence, she departed from that position. She agreed that, based on the midwife's own

notes of the telephone communication with Ms McCormick, she ought to have advised Ms McCormick to attend for assessment.

[279] Notwithstanding her description of the contractions as lasting between 40 and 60 seconds, midwife Campbell had noted the contractions as "moderate" and assessed Ms McCormick as being in early labour. She explained that she had not detected any contractions during their conversation, but also accepted that she had not asked Ms McCormick whether she had experienced any contractions during their call. In my judgment, on a balance of probabilities, it is likely that Ms McCormick had been in active labour during the triage call. Whether she was in fact in active or early labour would have been determined by a physical examination. She ought to have been invited for assessment.

[280] Second, when midwife Campbell logged on to BadgerNet after the telephone call to complete the communication note, she noted that Ms McCormick was on the red pathway, because of her high BMI. She stated that had she been aware of this information at the time of the call, it would not have changed her advice. I accept Professor Humphry's expert evidence on this matter; had midwife Campbell been aware that Ms McCormick was on the red pathway, her advice to remain at home was inappropriate; instead, a midwife ought to err on the side of caution and admit a women with a raised BMI, as such women are at greater risk of a need of interventions during birth and being in a hospital environment would allow monitoring of both the baby and the mother.

[281] Third, the expert witnesses were in agreement that, having regard to Ms McCormick's obstetric history, including the previous episodes of bleeding, the episodes of reduced fetal movements and her presentation during the second membrane sweep, midwife Campbell ought to have advised her to attend for assessment. Midwife Campbell accepted that had she had more information about Ms McCormick's obstetric history, she

would have advised her to attend for further risk assessment at the maternity triage unit. She could, and ought to have, availed herself of that history, having logged on to BadgerNet after the telephone call. She could, and ought to have, re-established contact with Ms McCormick and invited her in for assessment.

[282] **Conclusion 19**: The advice provided to Ms McCormick at 1629 hours on 4 March 2019 was not appropriate. Having regard to the accumulation of risks in Ms McCormick's pregnancy, including her raised BMI, episodes of fetal movement and episodes of antepartum haemorrhage, the fact that a second sweep had been performed earlier that day, and having regard to her descriptions of contractions and pain, she ought to have been advised to attend the maternity triage unit for assessment.

Was Ms McCormick's care after admission in labour appropriate?

[283] Doctor Hughes, Professors Humphry and Stenson were agreed that the care received by Ms McCormick after she was admitted in labour was excellent.

Should Ms McCormick have remained on obstetric led care?

[284] The participants invited the Inquiry to consider whether Ms McCormick should have remained on obstetric led care. There appeared to be a consensus in the submissions that she ought to have remained on obstetric led care.

[285] Dr Hughes explained that if following a review with a consultant, the risk had been stratified and no further reviews were necessary, a patient could remain on the red pathway and her pregnancy would remain consultant led. The care thereafter would be by midwives, but any further complications would be referred back to the consultant. That is clearly what Dr McLellan had intended. Dr McLellan accepted that her assessment of risk was incorrect and was based on incomplete information. Had she been aware of Ms

McCormick's obstetric history, she would not have referred Ms McCormick for midwifery led care; she would have advised early induction of labour.

[286] Dr McLellan explained (and her view appeared to be supported by Dr Hughes) that if she had offered induction, there may have been no further requirement for the involvement of an obstetrician. Had Ms McCormick refused early induction, she would have recommended regular scans and further reviews with a consultant obstetrician, presumably having noted the risk factors giving rise to the need for such reviews. It was clear from the evidence that had early induction been advised, Ms McCormick would have followed that advice. That being the case, I regard the issue of whether Ms McCormick ought to have remained on obstetric led care following her review with Dr McLellan to be of limited relevance to the issues before the Inquiry.

[287] It was submitted by Dr Deery that if induction had not been offered by Dr McLellan, and even if Dr McLellan had been unaware of Ms McCormick's obstetric history, it would have been a reasonable precaution not to discharge Ms McCormick to midwifery led care. That decision, he submitted, had led midwifery staff to consider Ms McCormick as now being at low risk and effectively on the green pathway for care, even if that had not been what Dr McLellan had intended. I understood Mr Deery to suggest that the decision to place Ms McCormick on midwifery led care amounted to a lost opportunity for a subsequent health professional to have acted upon the accumulation of risks in Ms McCormick's obstetric history.

[288] Professor Humphry considered Dr McLellan to have effectively placed Ms McCormick on the green pathway of care. She considered obstetric led care was more appropriate as this would have continued close surveillance of the pregnancy and presented an opportunity for a full discussion about risk factors and the early induction of labour.

Professor Humphry explained that she would not have expected midwife Hand to offer induction of labour rather than membrane sweeps on 25 February or 4 March 2019 as that is what the midwife would have understood the consultant to have recommended. Professor Humphry had not criticised the care provided by midwife Hand when she carried out the membrane sweeps because she considered the midwife had been entitled to be reassured by Dr McLellan's decision; the use of the words "MW care" in the medical records implied that existing risks had been stratified. That being the case, the midwife was unlikely to have conducted a detailed review of past records.

[289] In my judgment, it is not possible to conclude that a precaution which could reasonably have been taken and had it been taken, might realistically have avoided Ellie's death, would have been for Ms McCormick to have remained on obstetric led care. I accept that the decision to refer Ms McCormick to midwifery led care may have represented a lost opportunity for a subsequent health professional to have acted upon the accumulation of risks in Ms McCormick's pregnancy; however, that opportunity was not a realistic one. As submitted by Ms Gillespie KC, it was clear from the evidence that a number of healthcare professionals who had been involved in Ms McCormick's care had failed to note that accumulation of risks upon reviewing the BadgerNet records. I am not persuaded that it was likely that the absence of the words "MW care" in Dr McLellan's specialist review note would have caused a more thorough examination of those records by subsequent healthcare professionals, particularly in the absence of alerts appearing on the pregnancy home page (discussed at paragraphs [315] - [327] below).

[290] For completeness, I note that the SAER review recommended that "following risk assessment, all high-risk women due to obstetric complications remain on consultant led care with appropriate individualised plan for review and delivery". Dr Ferguson, a

consultant obstetrician who had been a member of the SAER team, provided two affidavits for the Inquiry. Dr Ferguson explained that following Ellie's death, in June 2021, a multi-disciplinary team at Wishaw General Hospital developed the Holistic Antenatal Pathway of Care designed to ensure that women receive the right care by the right professional. This new system acts as a prompt to ensure that required assessments are carried out at the right time. It guides midwives to make referrals for obstetric, fetomaternal specialist or anaesthetic review. If a woman has a temporary complication that resolves, the holistic pathway allows them to return to midwifery led care. Dr Ferguson explained that high risk women do not always remain on consultant led care for the duration of their pregnancy; it depends upon the nature of the complication and how persistent it is. Continual assessment allows a patient to move from red to green or from green to red, if the risk factor has resolved. Ms Smith KC described the Holistic Antenatal Pathway of Care as a more sophisticated system of documented risk management at every contact with a patient, which is better than a blanket policy. I note that under the new system described by Dr Ferguson, a patient assessed as high risk due to elevated BMI presenting at 36 weeks with no concerns regarding fetal growth, could potentially be referred for midwifery led care unless further complications arise. That is the situation Dr McLellan had erroneously found herself in.

[291] The Inquiry does not have sufficient information before it to conclude that those assessed at high risk and placed on the red pathway should not be removed from it, as recommended by the SAER report, nor that this measure would realistically have affected the outcome in Ms McCormick's pregnancy. Ms Smith KC was correct to caution that, as the SAER recommendation on this matter was not central to the issues before this Inquiry and the evidence on this issue was limited, recommendations or conclusions which may be resource intensive and lead to unnecessary obstetric reviews should be avoided.

[292] I was invited by Ms Gillespie KC to consider making two related recommendations: first, that if a woman was assessed as being at high risk, that should be carefully explained to her so that she is better informed of the risks and can share this information; and second, that a decision to remove a woman from consultant led care to midwifery led care should only be made after a risk assessment. I do not make either recommendation. In relation to the first, there was little evidence before the Inquiry that woman were not routinely advised that they had been assessed as high risk; Ms McCormick was aware she was on the red pathway of maternity care and while she expressed some lack of awareness of the reasons why, her evidence, which was before the court in affidavit form, was not a sound basis for such a recommendation. In relation to the second, Dr McLellan did not intend to remove Ms McCormick from the red pathway; that was not what she understood she had communicated with the use of the words "MW care", albeit that may have been the effect of her actions. Again, that is not a sound basis for a recommendation. There was no evidence before the Inquiry that woman were routinely removed from the red pathway of care without a risk assessment.

[293] **Conclusion 20**: It is not possible to conclude that a precaution which could reasonably have been taken and had it been taken, might realistically have avoided Ellie's death, would have been for Ms McCormick to have remained on obstetric led care.

An offer of early induction of labour at the consultation on 13 February 2019

[294] For the reasons I have explained above, having regard to the accumulation of risks in Ms McCormick's pregnancy, she ought to have been offered induction of labour between 38 and 39 weeks gestation (see Conclusion 18). It was clear from Ms McCormick's evidence that had she been offered early induction, she would have followed that advice. It was a

matter of agreement between the parties that induction at any time before labour would likely have avoided Ellie's death. The reasons for that agreement of evidence are explained at paragraphs [247] - [258] above.

[295] Induction of labour is offered regularly to expectant mothers in high risk pregnancies where circumstances merit it. There were clearly no resource implications or other constraints which might have prevented such advice. Indeed, Dr McLellan confirmed that had she been aware of the accumulation of risks, and in particular, the previous episode of bleeding, she would have offered Ms McCormick induction of labour at between 38 and 39 weeks gestation, in accordance with her usual practice.

[296] Professor Humphry stated that induction of labour does not prevent all perinatal losses. Professor Stenson explained that death from intrapartum hypoxia is an infrequent event. The majority of babies with hypoxic ischaemic encephalopathy survive; more than half survive to be healthy and slightly less than half either do not survive or have severe disabilities.

[297] The evidence before the Inquiry established that on 4 March 2019 at around 1208 hours (at 40+6 weeks gestation), when Ms McCormick had attended for a second membrane sweep, Ellie's heart rate had been measured and was normal. She had been coping up to and including when labour commenced. I accepted Professor Stenson's conclusion (which was unchallenged) that if delivery had been induced earlier, then even if the same prolonged partial hypoxia in labour had occurred, provided continual fetal monitoring was indicated, Ellie would have been delivered in good health.

[298] Intrapartum hypoxia is associated with an abnormal fetal heartrate, which can be detected by CGT monitoring during labour. Had Ms McCormick been induced, she would have undergone CGT monitoring during labour. Dr Hughes explained that Ms McCormick

would have remained in hospital throughout the induction process. CTG assessments would have taken place at the commencement of the induction with further CTG assessments every 4-6 hours and then continuous CTG monitoring once Ms McCormick was in active labour. If during such monitoring, an abnormal heart rate was detected, steps could be taken to expedite labour, such as a caesarean section or assisted vaginal delivery using instruments.

[299] On a balance of probabilities, had early induction been offered to Ms McCormick and had she accepted that advice, she would likely have been induced around 38 to 39 weeks gestation when Ellie was still in good health. Had the same prolonged partial hypoxia occurred in labour, it would have been detected by CTG monitoring allowing intervention to expedite delivery; Ellie would have survived in good health.

[300] On behalf of LHB, it was submitted that the failure to offer induction arose as a result of human error. It was submitted that both the midwife and the consultant had fallen short of their usual good practice during the assessment on 13 February 2019; an error in one case cannot be cured by a "precaution"; there was no evidence of poor practice or of systemic problems, such as a lack of training failures of a lack of knowledge. I accept that the evidence before the Inquiry indicated that both midwife Hand and Dr McLellan were dedicated and experienced professionals. I accept that the failure to offer induction was a human error, rather than a systemic issue. However, section 26(2)(e) of the Act requires the Inquiry to determine whether there were any precautions which might reasonably have been taken and which might realistically have avoided the death. Plainly, such precautions include alternative reasonable courses of actions which could have been taken, but for human error. Section 26(2)(e) is not concerned with systemic failings; it is simply concerned

with an action or a course of action which might reasonably have been taken in the particular circumstances.

[301] **Conclusion 21:** A precaution which could reasonably have been taken which might realistically have avoided Ellie's death would have been for the consultant who reviewed Ms McCormick on 13 February 2019 to have advised induction of labour at or before 40 weeks and for Ms McCormick to have acted upon that advice.

Advice on early induction of labour on 25 February or 4 March 2019

[302] In her report, Dr Hughes suggested that midwife Hand ought to have offered Ms McCormick an earlier induction than that planned by Dr McLellan, when Ms McCormick attended for membrane sweeps on 25 February and 4 March 2019. Dr Hughes explained that the midwife ought to have considered "the whole picture" and contacted Dr McLellan to discuss the possibility of offering an earlier induction. Professor Humphry disagreed. She explained that, in accordance with national and local guidelines, she would not have expected a midwife to instigate a discussion about earlier induction before 41 weeks gestation. During cross-examination, Professor Humphry accepted that midwife Hand could have reviewed Ms McCormick's obstetric history and noted the accumulating risks. She could have questioned this and asked how these risks were to be managed moving forward without further input from the named obstetrician. However, the consultant, who is expert at managing complications in pregnancies, having reviewed Ms McCormick, had deemed her suitable for midwife led care. That, in Professor Humphry's view, would have signalled to the midwife that the consultant had no concern regarding the pregnancy and led to the midwife assuming that the pregnancy would be straightforward. In performing membrane sweeps to stimulate labour, the

midwife had acted in accordance with Dr McLellan's instructions and in accordance with the Pathways for Maternity Care antenatal pathway minimum care schedule.

[303] I have preferred Professor Humphry's evidence on this matter. She is a very experienced midwife who gave expert evidence to the Inquiry on midwifery care. I accept that if midwife Hand was aware of the accumulation of risks when performing the membrane sweeps, it was reasonable for her to assume that those risks had been stratified by Dr McLellan.

[304] **Conclusion 22**: Offering Ms McCormick an earlier induction than that planned by Dr McLellan when she attended for membrane sweeps on 25 February and 4 March 2019 was not a precaution which could reasonably have been taken.

Advice to attend for assessment at 1629 hours on 4 March 2019

[305] For the reasons I have explained above at paragraphs [276] - [282] and Conclusion 19, having regard to the accumulation of risks in Ms McCormick's pregnancy and the symptoms she described during her telephone call with midwife Campbell, Ms McCormick ought to have been invited to attend the maternity triage unit for assessment.

[306] Ms McCormick's elevated BMI increased the risk that Ellie might experience intrapartum hypoxia. By 4 March 2019, Ms McCormick had also experienced episodes of bleeding and reduced fetal movements. These are matters which ought to have been known by midwife Campbell. The precaution of advising Ms McCormick to attend for assessment was entirely reasonable; it was the very purpose of the call to the triage unit. Midwife Campbell accepted that if she had been aware of Ms McCormick's obstetric history, she would have advised her to attend for triage in a hospital environment (not by way of a home

visit), notably, to allow CGT monitoring to be commenced. It is clear that Ms McCormick would have acted upon that advice.

[307] It was also clear that this precaution might realistically have avoided Ellie's death. Professor Stenson explained that it was unlikely that Ellie had already been fatally injured by 1629 hours because she would probably not still have been alive in utero more than 4 hours later if this was the case. If Ms McCormick had attended hospital within an hour after the call at 1629hrs and continuous fetal monitoring had been commenced then he considered that on a balance of probabilities, Ellie would have survived. He explained in his report that if Ellie's heart rate abnormalities had already started they would have resulted in prompt delivery more than 2 hours earlier than was the case. If they had not yet started, then they would have been recognised from their onset and been followed by prompt delivery. He explained that partial hypoxia required to be present for at least an hour and often many hours before it results in injury. As Ellie had been born in poor condition, it can be reasonably inferred that she had experienced hypoxia an hour or more before her birth at 2058 hours. There had therefore been an opportunity to detect her hypoxia by CTG monitoring before it became damaging.

[308] **Conclusion 23**: A precaution which could reasonably have been taken which might realistically have avoided Ellie's death would have been for the midwife who triaged Ms McCormick by telephone at 1629 hours on 4 March 2019, to have advised Ms McCormick to attend at Wishaw General Hospital for assessment.

Defects in any system of working

The absence of evidence based clinical guidelines for the management of bleeding during pregnancy

[309] In the joint note of disputed issues, the participants invited the Inquiry to consider whether the absence of evidence based guidelines for the management of bleeding during pregnancy impacted upon the assessment, treatment and management of Ms McCormick's pregnancy. The more relevant question is whether the absence of such a guideline contributed to Ellie's death. I am not persuaded that it did.

[310] The RCOG Antepartum Haemorrhage Green-top Guideline No 63, November 2011, notes that antepartum haemorrhage (APH) complicates 3-5% of pregnancies and is a leading cause of perinatal and maternal mortality worldwide. Fetal hypoxia is a recognised complication of APH. Pregnancies complicated by unexplained APH are also at increased risk of adverse maternal and perinatal outcomes. The RCOG Guideline recommends an examination to assess the amount and cause of the APH. Such an examination would include an abdominal palpation and a speculum examination. An ultrasound scan should be performed to confirm or exclude placental praevia if the placental site is not already known. The guidelines recommend that following APH from placental abruption or unexplained APH, the pregnancy should be reclassified as "high risk", antenatal care should be consultant-led and serial ultrasound scans for fetal growth should be performed.

[311] Professor Humphry explained that, in her view, a women should always be offered an assessment if she reports bleeding during pregnancy; bleeding is abnormal and is associated with poorer outcomes. Attending for an assessment would allow staff to obtain a better picture of the bleeding including how long it had lasted, how much blood was lost, vital signs would be checked, if necessary, a speculum examination would be performed and screening for infections could take place. An ultrasound scan could be arranged. The

nature of the assessment would depend upon the stage of the pregnancy. Different maternity services have guidelines specifying different actions at the various the stages of pregnancy. She recommended the development of a local guideline.

[312] Dr Hughes was of the view that all women with vaginal bleeding should be assessed, unless there was an obvious cause for the bleeding, such as a recent intervention which might be expected to cause bleeding (like a membrane sweep). She also recommended the development of a local guideline.

[313] This matter was addressed in the affidavits of Dr Ferguson and Ms Clark. In particular, Ms Clark explained that LHB are working to develop a new local guideline on the management of bleeding during pregnancy. At the time of the Inquiry, a new RCOG guideline was expected to be published. LHB intend to draft a local guideline once they have sight of that.

[314] While I note that the SAER team recommended the development of a local guideline and that view was supported by the expert witnesses, the issue for this Inquiry is whether the absence of such a guideline was a defect in a system of working which contributed to Ellie's death or whether any recommendation requires to be made. Ms McCormick experienced bleeding during her pregnancy at 17 and 34 weeks gestation, however, there was no evidence that these complications caused or contributed to Ellie's death. While there was some criticism of aspects of care there was no evidence that upon reports of bleeding, Ms McCormick was not appropriately managed. I accept Ms Gillespie KC's submission: the real issue was not the management of the episode of bleeding, but rather the failure to highlight these episodes in Ms McCormick's records. It was clear from Dr McLellan's evidence that had she been aware of the prior episodes of bleeding, she would have taken a different course of action; that different course of action was one the experts agreed on,

namely advice on induction of labour, remaining on obstetric led care (i.e. on the red pathway as a high risk pregnancy) and if Ms McCormick did not accept that advice, regular scans and assessments. Accordingly, I make no recommendation on the development of local guidelines. I note that LHB is in any event considering the development of such a guideline.

The absence of a system which adequately flagged or highlighted medical history and obstetric risk factors and the inconsistency of approach by healthcare professionals

[315] Professor Humphry identified the following defect in the system of working at LHB in her report:

> "lengthy electronic records that include comprehensive information, but it is not easy to source important information and relevant data quickly. Clinicians do not have time to read all the electronic records for each woman they see in a busy clinic (appointments typically 10 minutes). Electronic records should have a summary or "care on a page" so key information is accessible quickly and important information is flagged to clinicians about risk, complications and previous admissions that should be considered in decision making."

[316] Similarly, Dr Hughes noted "the lack of a 'red flag' system in the medical records alerting staff to risk factors may have contributed to the death". She also noted "the lack of 'red flags' made it much more difficult" for Dr McLellan to be aware of the risk factors affecting Ms McCormick's pregnancy.

[317] I am persuaded by Ms Gillespie and Mr Deery's submissions that the systems in place at the time of Ellie's death for communicating "red flags" were inadequate. It was clear from the evidence that:

(a) At 17 weeks gestation, the staff who assessed Ms McCormick upon reports of vaginal bleeding did not create an alert on BadgerNet or otherwise highlight the episode in her records;

(b) At 26 weeks gestation, the staff who assessed her upon reports of reduced fetal movements, did not create an alert on BadgerNet or otherwise highlight the episode in her notes;

(c) At 34 weeks gestation, the staff who assessed her upon reports of vaginal bleeding noted the previous episode at 17 weeks, but, again, did not create an alert or otherwise highlight the episode in her notes;

(d) At 36 weeks gestation, the staff who assessed her upon reports of reduced fetal movements noted that this was the second such episode, but, again did not create an alert or otherwise highlight the episode in her notes; she noted that there was a pre-arranged appointment with a consultant in 10 days; however, without any form of alert or communication, Dr McLellan was not aware of this additional need for a referral; and

(e) Dr McLellan had read the specialist reviews on BadgerNet. The doctor who wrote a specialist review and had instructed the growth scan on 30 January 2019 did not mention Ms McCormick's previous episodes of bleeding or reduced fetal movements; he noted "Good FM [fetal movements]" and "No PV [per vaginam]" losses.

[318] Ms Smith KC also accepted on behalf of LHB that the absence of the improvements made to BadgerNet since Ellie's death may have impacted upon the assessment, treatment and management of Ms McCormick's pregnancy and may have impacted the information upon which clinical decisions were made. However, she urged the Inquiry to bear in mind that earlier episodes of bleeding and reduced fetal movements were not of particular concern. The APH guideline did not consider bleeding at 17 weeks to be clinically significant. The introduction of electronic records was an immense practical, technical and cultural change and the transition was in its infancy at the time of Ellie's death. While

healthcare professionals may have been accustomed to identifying information quickly in paper records, they were still becoming familiar with how to access and digest electronic records. While risks may not have been highlighted on BadgerNet as well as they are now, detailed and comprehensive notes were available and could be accessed. A quick review of the notes in the pregnancy section of Ms McCormick's records ought to have revealed some of her prior history easily and quickly to both midwife Hand and Dr McLellan; both practitioners had good practice generally but they fell short of their usual practice on 13 February 2019. It was submitted that it was not possible to say with any certainty that if information had been highlighted on BadgerNet, it would have made a difference; the issue of human error within a busy clinic may still have been present.

[319] Ms Smith KC submitted that BadgerNet far surpasses the utility of the previous paper-based notes with its functionality and automatic processes, the numerous prompts for information and questions to minimise human error, and the ability to view and access information quickly. I agree that this submission is generally well founded. Having viewed the videos prepared for the Inquiry by Cheryl Clark and Moira Mooney, BadgerNet appeared to be an intuitive, interactive, sophisticated and user-friendly system. Ms Smith KC urged the Inquiry not to judge the system in 2019 according to a counsel of perfection which may impose unrealistic and unaffordable standards upon a public funded service. The fact that the system was capable of improvement does not equate to it not being adequate; it was plainly adequate as a system of working if used properly.

[320] Mr Deery reminded the Inquiry that the BadgerNet system had been in operation for a number of years before Ellie's death; it was introduced in LHB in 2016. The key midwifery and obstetric staff had been using it for a significant period of time; there had been sufficient

time for staff to be trained and for consistency to be achieved by the development of protocols, for example, in relation to the use of alerts.

[321] I do not regard it as requiring a counsel of perfection to suggest that there ought to have been a better and consistently applied means of highlighting the risks and complications in a pregnancy on BadgerNet at the time of Ellie's death. The evidence of several practitioners and expert witnesses was to the same effect; clinics are busy, time is limited, all records cannot be read and considered in advance. In the absence of allowing time to prepare for such clinics or appointments, or in the absence of extending the time afforded to each patient (both of which would involve inevitable pressures upon a stretched healthcare system), the content of the electronic notes, the information displayed on the pregnancy home screen and the use of alerts are measures which could and ought to have been considered more fully when designing and implementing the BadgerNet system. The importance of doing so was readily appreciable.

[322] Indeed it was appreciated by clinicians at the time. Dr McLellan explained that it was her practice to highlight in red at the foot of the BadgerNet records any notable risk factors (which could be seen when viewing any page). This alert would generate a comment box where a plan of care could be noted if required. She noted that the use of the alert was not consistent throughout the unit or nationally. That is borne out by the evidence; none of the clinicians involved in Ms McCormick's care had added any alerts for her prior episodes of bleeding or reduced fetal movements. Dr McLellan explained that she had been a clinical director for a number of years (around 2016 – 2019), prior to which she had been a "lead" for risk management. She explained that the inconsistent use of the alert function was discussed at many risk management meetings and at serious adverse event reviews prior to Ellie's death. While she could not provide exact dates, she considered these discussions had

taken place at face to face meetings a year or two prior to the pandemic. Despite the awareness of the issue, no agreement had been reached on how to resolve it. She had wanted to address the issue locally and to devise some consistent training on the use of alerts. Others had taken the view that matters required to be resolved on a national basis.

[323] As BadgerNet is a live system and the information displayed at the time of Ms McCormick's pregnancy was not captured at the time of Ellie's death, it is difficult to say with certainty what information was displayed and what features were available. From the evidence before the Inquiry, however, the following can be deduced:

(a) The SAER review found that the:

> "episode of the third trimester bleeding should have been added to the maternal alerts page on Badger. Ideally this should not be person-dependant and a recommendation from the review will be to request modification of the Badger system so that key antenatal events trigger automatic alerts highlighting concerns to all caregivers."

It also found that:

> "although information regarding PV bleeding and RFM were documented appropriately there were no alerts generated on the patient's summary page within BadgerNet which made it difficult for the clinical team to be aware of relevant information which would have affected decision making. The team agreed risks such as PV bleeding/RFM could be highlighted within the electronic record system more effectively and made a recommendation that following each episode of bleeding and RFM an alert is put onto Badger highlighting the area of concern to all other care providers."

It recommended that alerts are:

> "created within BadgerNet to highlight episodes of PV bleeding and reduced fetal movements as they occur during pregnancy. These alerts should be prominent and if possible should appear automatically".

It reported on 23 May 2019 having reviewed the electronic maternity records and case notes. It can reasonably be assumed that alerts could be created manually, but no

alerts for episodes of reduced fetal movements or bleeding were created automatically in the BadgerNet records prior to May 2019.

(b) Dr Ferguson explained in her affidavit that if, at the time of Ellie's death, a patient had attended on several occasions reporting vaginal bleeding, the user would not be aware of this, unless he or she read every relevant review/entry on BadgerNet. Now, an alert in red appears on the home pregnancy summary page. There is now a "create alert" option on BadgerNet. She described this as "not a huge change". She notes that this option may have been available at the time of Ellie's death, but that LHB had been aware of it. It can reasonably be inferred from this and from Dr McLellan's evidence that there was inconsistent knowledge of any functionality on BadgerNet to create manual alerts; and

(c) In her supplementary affidavit, Cheryl Clark explained that the "extended banner" showing alerts at the bottom of the screen and which is always visible, was introduced in December 2019. It can reasonably be assumed that alerts were not displayed in this form prior to December 2019 in LHB records.

[324] Ms Gillespie KC submitted that while the precise specification and functionality of BadgerNet varied across heath boards, it appeared that the facility to add critical alerts, and importantly, automatic critical alerts, had existed in GGCHB earlier than it was introduced in LHB. GGCHB's digital midwife, Gwen Barr, explained in her affidavit that users of the system in GGCHB had been able to add alerts, in addition to automatic alerts since March 2018.

[325] It was accepted on behalf of LHB that the system for highlighting risks on BadgerNet in February 2019 was not as comprehensive as it is now. It was accepted that there was

evidence that the system did allow risks to be highlighted, but that it was clear that it was not widely known, understood or used.

[326] A number of witnesses spoke to the pressures of busy clinics, the limited time for appointments and also explained that while they would wish to review medical records in advance, often the first opportunity to review medical records arose during the medical appointment itself. That was also reflected in testimony of the expert witnesses.

[327] In my judgment, the nature of the information displayed on BadgerNet plays a central role in the ability of a clinician to identify risks and complications quickly and accurately. It was clear from the evidence that a mechanism for the manual creation of alerts highlighting risks and complications, in particular, highlighting prior episodes of bleeding or reduced fetal movements was available during Ms McCormick's pregnancy. As Mr Deery submitted, the failure to use this mechanism was described as a defect in the system of working by both expert witnesses. In my judgment, it was clear that alerts were not consistently used by clinicians, or used at all, demonstrating either a lack of awareness, the lack of effective protocols or a lack of training. There was insufficient evidence to identify the root cause. Whatever the root cause, the system of working which ought to have involved the creation of alerts to highlight risks and complications in pregnancies was not effective. It was clear that the absence of such alerts had a significant impact upon the decisions made on 13 February 2019 in relation to Ms McCormick's pregnancy. The lack of an effective system contributed to Ellie's death.

[328] **Conclusion 24:** The lack of an effective means of flagging or highlighting risks and complications in Ms McCormick's pregnancy was a defect in the system of working which contributed to Ellie's death.

[329] LHB has worked with Clevermed on the BadgerNet system which has evolved and improved since 2019. Most notably: (a) a key events section has been added; (b) a triage summary section had been introduced providing an "at a glance" record of the contact with triage services; (c) a critical alerts banner which is pre-populated automatically with risk factors or can be added to manually always displays at the foot of the pregnancy summary page; and (d) a red star is now displayed on the records of high risk pregnancies.

[330] In addition, as Dr Ferguson explained in her supplementary affidavit, a multi-disciplinary team at Wishaw General Hospital developed and introduced a guide entitled "Holistic Antenatal Pathway of Care" in June 2021. It is designed to cover the whole term of a pregnancy, detailing what requires to be done at each stage and when specialist input is necessary. At every encounter with a healthcare professional, a risk assessment is performed to determine whether the patient should remain on the same pathway. Midwife Hand explained that previously, there had been one risk assessment at the first booking appointment and one at labour.

[331] The evidence indicated that LHB was aware of the need to continually improve BadgerNet, had committed resources to funding a digital midwife post, had a good relationship with the provider and had a system for training staff on changes, or otherwise raising awareness of changes. The evidence supported the conclusion that LHB had improved the available functionality and increased awareness among staff, following Ellie's death; the lessons had been learned. Dr McLellan stated that had she been aware of a prior history of bleeding and reduced fetal movements, she would have offered early induction of labour. Similarly, midwife Campbell stated that had she been so aware, she would have advised Ms McCormick to attend triage on 4 March 2019. It can reasonably be assumed that the new improved features in BadgerNet, if used consistently, would serve to highlight risk

and complications in future pregnancies. For those reasons, I make no recommendations for changes to the BadgerNet system arising from the Ellie's death.

Recommendations

[332] I accepted Mr Deery's submission that that there were various "lost opportunities" for significant obstetric risks to be highlighted or drawn to the attention of those who managed Ms McCormick's pregnancy or who were involved in her care. The recommendations below seek to address those lost opportunities.

A change to a named midwife

[333] Professor Humphry explained that the role of a named midwife was to provide continuity of care. That was particularly important for women on the red pathway of maternity care. That continuity allows the midwife to become familiar with the woman, midwifery assessments tend to be accurate and comprehensive, and the named midwife can detect improvements and deteriorations. She explained that the named midwife was responsible for providing care as directed by the obstetrician, for assisting the women to prepare for childbirth and parenthood and for making appropriate referrals. When the woman met with her consultant, Professor Humphry explained that the named midwife would have knowledge of the care, have contributed to the care up to that point and would provide that information to the consultant obstetrician. If that is not possible, a new midwife would be expected to review the notes and familiarise herself with the events of the pregnancy to date; in particular, she should look at any hospital admissions. She should ask the women whether anything else had occurred since the last appointment. While the obstetrician would be expected to carry out his or own review of the records, the midwife

would be expected to provide a synopsis of the pregnancy, highlighting any complications, matters of concern or interventions to the consultant.

[334] Until February 2019, Ms McCormick's named midwife was midwife Kirk. It can be assumed that she was familiar with Ms McCormick's obstetric history; she had placed Ms McCormick on the red pathway at the booking appointment and had met with her after her early episodes of vaginal bleeding and reduced fetal movements. As explained at paragraphs [203] - [205] as a consequence of the introduction of the "Best Start Programme", Ms McCormick's named midwife changed to midwife Hand.

[335] Midwife Hand did not receive any form of handover from midwife Kirk. Her evidence suggested that any such handover was an informal process. The reasons for this were not clear in the evidence. Midwife Hand explained that she had only 10 minutes to look through the notes prior to the appointment with Ms McCormick on 13 February 2019 and could not read all the relevant notes. She was operating in a busy clinic.

[336] As Professor Humphry noted, with the introduction of Best Start, that this was a planned handover. There ought to have been handover, whether in person or by telephone, explaining that Ms McCormick was a first time mother, on the red pathway with a raised BMI and had had complications in relation to reduced fetal movements and bleeding. There was no explanation offered by any witness to the Inquiry as to why no handover had taken place. The only explanation offered by midwife Hand was "we needed to start the Best Start pilot team…unfortunately that meant that midwives had to move to accommodate the initiative."

[337] The Best Start Programme was intended to improve maternity and neonatal services in Scotland. Regrettably, the manner in which it was implemented in Wishaw gave rise to an unexplained failure to provide a handover to the new named midwife. It disrupted the

continuity care provided to Ms McCormick. As a consequence, midwife Hand was not alerted to the pre-existing complications in Ms McCormick's pregnancy. She could have familiarised herself with the history of those complications; however, the absence of alerts on BadgerNet (which is discussed below), an unfamiliarity with the BadgerNet system in her new role as a new community midwife and the pressures of a busy clinic hampered her ability to do so. Had she received a handover, she would have been pre-warned or forearmed when she met with Ms McCormick on 13 February 2019.

[338] Mr Deery invited the Inquiry to recommend the introduction of a formal written procedure upon the change of a named midwife. On behalf of LHB it was submitted that changes in named midwives did not generally occur in LHB. Ms Smith KC accepted that the decision to change the lead practitioner was wrong and contributed negatively to management of Ms McCormick's pregnancy. LHB had a strong system at the time for continuity of the patient/midwife relationship; what happened on this occasion, represented an unfortunate and unusual deviation from normal practice; there had been an unusual set of circumstances with midwives being diverted from their caseload to take part in a new government programme. It was submitted that while it was unfortunate that a handover did not occur, in the context of a busy and complex NHS it must be expected that this will happen from time to time. While it was accepted that the handover on this occasion had been suboptimal, it was submitted that to find that there was a precaution that LHB could have put in place was to impose a counsel of excellence which was not realistic. I accept that the realities of running busy clinics require to be borne in mind, even when considering matters with the benefit of hindsight.

[339] As submitted on behalf of LHB, situations can arise, understandably, where a named midwife is unavailable (she may have left employment or be on sick leave, for example) and

cannot provide a handover; however, where a change is planned, as it was here, in my judgment, it is reasonable and necessary, particularly having regard to the recognised need for continuity in care, for a formal system to be introduced. I accept that there was no evidence before the Inquiry as to the resource or cost implications of such a system; however, it would appear that some form of informal system is already in operation and the creation of a more formal written note is unlikely to be an onerous or costly exercise.

[340] On one view, a failure to have in place a procedure for a handover, written or verbal from a named midwife to a new named midwife might be construed as a defect in the system of working which contributed to Ellie's death; however, while that failure may have played a role in the management of Ms McCormick's pregnancy, I am not persuaded that it contributed to Ellie's death. Those assessing Ms McCormick on 13 February 2019 required to familiarise themselves with Ms McCormick's obstetric history, regardless of whether a handover had taken place. Indeed, the absence of a handover ought to have caused the need for additional vigilance. For those reasons I have not made a finding in terms of section 26(2)(f). Instead, I make a recommendation that a formal written procedure is introduced to require an existing named midwife to create a handover note upon a planned change of named midwife. The handover note should be stored electronically on BadgerNet and should draw attention, in particular, to any prior complications or risk factors to ensure that these are not lost sight of when continuity of care is interrupted. The handover note should not be treated as a substitute for reading prior medical records; a new named midwife should nevertheless familiarise herself with the obstetric history of a patient.

[341] **Recommendation 3: All health boards in Scotland that provide maternity services should ensure they have a procedure which requires an existing named midwife to create a handover note upon a planned change of named midwife. The handover note should**

be stored electronically on BadgerNet, or similar electronic records, and should draw attention, in particular, to any prior complications or risk factors in a woman's pregnancy to ensure that these are not lost sight of if continuity of care is interrupted.

Pre-arranged obstetric review: a further subsequent cause for referral to a consultant

[342] At 38 weeks gestation, the midwife recognised the need for a referral to a consultant upon the second episode of reduced fetal movements, in accordance with the Management of Women Presenting with Reduced Fetal Movements Lanarkshire November 2016 guidelines. As a pre-arranged appointment was due to take place 10 days later, she did not make a separate referral. Nor did she draw attention to this secondary cause for referral. Dr Hughes explained that the consultant would not have required to look too far back in Ms McCormick's records to have noted that she had attended the maternity triage unit 10 days earlier reporting reduced fetal movements; however, she criticised the failure to highlight this further reason for the referral. Midwife Hand explained that a referral in such circumstances could be made by telephone or by email. Midwife Murphy had made referrals for a Doppler, Liquor Scan and ultrasound scan and had marked these as urgent, noting in the clinical summary for these referrals "this lady has second episode of reduced FM [fetal movement] Consultant Appt to be made". It did not appear that there was any established procedure for adding a further reason for a referral to a pre-booked appointment with an obstetrician. Midwife Murphy explained that there was no mechanism on BadgerNet to do so.

[343] **Recommendation 4: all health boards that provide maternity services should ensure they have a system a system to allow a note to be added to a patient's electronic**

records in order to highlight a further reason for a referral to a pre-existing appointment with a consultant.

Access to BadgerNet during triage calls

[344] Professor Humphry offered the view that ideally a midwife should have knowledge of the information contained in the BadgerNet notes when triaging a patient. For many years, prior to electronic notes, advice was provided without access to paper medical notes. Today, it is unusual for advice to be dispensed without access to the electronic notes. She considered it reasonable, however, to check medical notes and history after a triage call when creating a record of the call. It would also be reasonable for a midwife to call back, if having reviewed the notes, the advice had changed.

[345] I note that during the Inquiry into Leo's death, midwife McPhee gave evidence that it would be inappropriate, in her view, for a midwife to give advice by telephone without logging into the patient's BadgerNet records; she would not be able to provide suitable advice without accessing the records. She stated that tendering advice without being informed of a patient's history would be a departure from professional standards and could place a patient at risk.

[346] Ms Clark explained in her supplementary affidavit that record keeping is an essential part of midwifery practice and maternity care. All midwives should be familiar with the NMC guidance on record-keeping within the NMC Code of Practice; it is a core part of training in the pre-registration midwifery university programme and is reiterated throughout training programmes delivered in LHB. Midwifes are taught to have a clear understanding of their responsibilities for record keeping in line with local guidance and the

NMC code of conduct. They must document as contemporaneous as possible, and document in retrospect if this cannot happen for any reason.

[347] Ms Clark referred to the Royal College of Midwives Electronic Record Keeping Guidance and Audit Tool published in March 2021. It notes (at page 1):

> "Digital records not only form part of the women's medical records, but also facilitate sharing of information between health professionals and with the pregnant women. Clear, accurate and accessible maternity records support local safety procedures such as risk governance process by making important aspects of maternity care easily available for review."

[348] The guidance emphasises the importance of contemporaneous notes. It states:

> "…where unable to document contemporaneously midwives should ensure they adjust the entry and assessment time of their documentation…but clearly explain the reason for documenting retrospectively".

The guidance is primarily aimed at the process of record keeping, rather than clinical decision making; however, consideration should be given to whether the guidance should extend to reminding midwives who are retrospectively documenting and therefore have not accessed the electronic notes, to review the notes and ensure any advice dispensed reflects the maternity record.

[349] There was considerable force in the submissions for the Crown that it is difficult to understand how a midwife could exercise her clinical judgment in triaging a patient when she does not know the patient, is dealing with her remotely and without records. There is little point in the advantages of electronic or digital records, if they are not accessed by healthcare professionals; not because they cannot access them (e.g. they are out on call or without signal), but because they choose not to.

[350] There appeared to be an over-reliance upon a patient for a medical or obstetric history. Midwife Campbell appeared to suggest that she would ask a patient what pathway they were on and would rely on the patient to explain what happened during previous

appointments including consultant reviews. She appeared to suggest that the onus was upon the patient to disclose any prior complications in her pregnancy. She explained that there were no guidelines that she was aware of relating to the need to access electronic records during a triage call or to contact a patient, if having accessed the records, advice changed.

[351] Clearly, there may be occasions when a midwife triages a patient by telephone and is not able to access electronic notes. That might happen for example, if the midwife is attending appointments in the community while on call, or if the electronic system is down. It is not clear how widespread this issue may be: midwife Campbell gave the impression this was commonplace for those working as community midwives; midwife McPhee considered this to be inappropriate for those working on a ward. In my judgment, there should be clear guidance that ordinarily, calls should be triaged having accessed a patient's notes on BadgerNet. Where that has not been possible, midwifes should access BadgerNet as soon as possible, complete a note of the communication and review the obstetric history to ensure that the advice dispensed was correct. Healthcare professionals assessing or triaging patients should require to confirm and record on BadgerNet that that they have reviewed the obstetric history.

[352] **Recommendation 5: The Electronic Record Keeping Guidance and Audit Tool issued by the Royal College of Midwives should be reviewed to address situations in which midwives may not have access immediately to electronic notes. Guidance should be developed providing that ordinarily, calls from expectant mothers should always be triaged having accessed the patient's electronic notes. Where that has not been possible, the guidance should provide that midwives should access the notes as soon as possible, complete a note of the communication and review the obstetric history to ensure that the**

advice dispensed was correct. If the advice requires to change in light of the information contained in the electronic notes, the patient should be contacted with further advice as soon as possible. Healthcare professionals assessing or triaging patients should require to confirm and record on BadgerNet, or similar electronic system, that that they have reviewed and considered the obstetric history before providing advice.

CHAPTER 5: MIRA-BELLE BOSCH

SUMMARY

[353] The facts relating to Mira-Belle's death were largely undisputed. In this section, I set out a summary of the uncontroversial facts and the key chapters of evidence which informed the parties' submissions and my assessment of the issues arising.

[354] The court heard evidence from: Rozelle and Eckhardt Bosch; midwives Lesley Nicolson, Michelle Tannahill and Alison Stark; Dr Colin Malcolm, consultant obstetrician; Dr Surindra Maharaj, consultant obstetrician and gynaecologist; and paramedic, Paul Coyne. Expert evidence was provided by Dr Hughes, Professor Humphry, Professor Stenson and Mark Newton. On behalf of the Crown, a report by Angela Cunningham, a retired Head of Midwifery, was lodged. It was not the subject of a joint minute of agreement and was not spoken to by any witness. I have not had regard to its contents. Affidavits were provided in relation to the evidence of student midwife Carla Buchanan; paramedic Jane Donaldson; Stephanie Jones, General Manager for the Integrated Clinical Hub; and Dr James Ward, Medical Director of the Scottish Ambulance Service ("SAS"). Each of the midwives and Mr Coyne sought to assist the Inquiry candidly, to the best of their recollection and in a transparent manner. Dr Maharaj was an impressive witness who spoke with authority and clarity about the relevant applicable guidelines at LHB. Mr and Mrs Bosch were equally

impressive, eloquent witnesses who gave evidence with dignity and to the best of their recollection. I accepted the evidence of the witnesses to this chapter of the Inquiry as credible and reliable.

[355] Submissions were made primarily on behalf of the Crown, LHB, Scottish Ambulance Services and midwife Tannahill. Mr Bosch also made submissions. Again, I do not set out the submissions in full; instead, I address the submissions where appropriate. I set out below a summary of the agreed or uncontroversial facts.

Relevant agreed/uncontroversial facts

Events prior to Mira-Belle's birth

[356] Rozelle Bosch and Eckhardt Bosch are Mira-Belle's parents. Mrs Bosch was a registered patient of Burnbrae Medical Practice, Shotts Health Centre, Shotts.

[357] On 17 November 2020, Mrs Bosch contacted the midwifery team at Wishaw General Hospital. Mrs Bosch was 31 years old at the time. This was her first pregnancy.

[358] Mrs Bosch attended a consultation on 9 December 2020 with her named midwife, Lesley Nicholson. Mrs Bosch accepted most options for screening and vaccinations. There were no antenatal risk factors and Mrs Bosch was allocated to the 'green pathway'. The plan for birth was that it would take place at the maternity unit at Wishaw General Hospital and that Mrs Bosch would receive midwifery-led care.

[359] An ultrasound examination was undertaken on 6 January 2021, at approximately 13 weeks gestation. It provided an expected date of delivery of 13 July 2021. The scan confirmed a singleton pregnancy.

[360] A telephone consultation took place on 28 January 2021 with named midwife Lesley Nicholson. Mrs Bosch was 16 weeks gestation. It was recorded that Mrs Bosch had no concerns regarding her pregnancy.

[361] On 26 February 2021, at approximately 20 weeks gestation, a second ultrasound scan was undertaken. This was a detailed fetal anomaly scan. No abnormalities were detected.

[362] Mrs Bosch attended at a planned antenatal appointment at 22 weeks gestation with her named midwife on 11 March 2021. All her physical markers were within normal limits, her pregnancy seemed to be progressing well, and no concerns were raised.

[363] A further planned antenatal appointment took place on 22 April 2021 with her named midwife. Mrs Bosch was approximately 27 weeks gestation. No concerns were raised at this time and her assessment findings were reassuring. Abdominal palpation was performed. It was recorded that the fetus was in cephalic presentation (head down). At this appointment it was also recorded that the fundal height (used to measure growth of the fetus) was measuring slightly higher than expected at 29cm.

[364] On 13 May 2021, at approximately 31 weeks gestation, Mrs Bosch attended at a planned antenatal appointment with her named midwife. Abdominal palpation was again performed and it was recorded that the fetus was in cephalic presentation (head down). A further measurement of fundal height was taken which again was measuring higher than expected at 32cm. As this was the second fundal height measurement above the 97th centile Mrs Bosch was referred for a fetal growth scan. All other physical markers on assessment were within normal limits and fetal movements were reported as non-concerning.

[365] A third ultrasound scan was undertaken on 14 May 2021, within 24 hours of referral. A 'complete breech' was noted. The sonographer also recorded that the fetus was in a 'very difficult position' to measure growth and recorded that the measurements were 'fair

measurements only'. The growth was recorded to be within normal limits based on these measurements.

[366] Mrs Bosch attended for a further antenatal appointment on 3 June 2021 at approximately 34 weeks gestation with her named midwife. The antenatal assessment was carried out by a student midwife. No concerns were raised regarding fetal movements. An abdominal palpation was performed and the fetus was recorded to be in cephalic presentation.

[367] On 23 June 2021, at approximately 37 weeks gestation, a further planned antenatal appointment was held with Mrs Bosch's midwife. No concerns were noted and all maternal and fetal measurements were within normal limits. Abdominal palpation was again performed and the presentation was recorded as cephalic and 'not engaged'; meaning that the head was not engaged in the pelvis.

Events of 30 June 2021

[368] At 2052 hours on 30 June 2021, Mrs Bosch contacted maternity triage at Wishaw General Hospital. Mrs Bosch was 38+1 weeks gestation. She spoke to midwife Tannahill and reported spontaneous rupture of membranes (her waters had broken). It was recorded that Mrs Bosch had reported this occurring at around 1600 hours, and that contractions had commenced at around 1700 hours same day. The midwife, noting that the head had not engaged at the last antenatal check, advised Mrs Bosch to attend for assessment.

[369] Mrs Bosch arrived at Wishaw General Hospital at approximately 2139 hours on 30 June 2021 and was assessed at around 2145 hours by midwife Tannahill. It was recorded that Mrs Bosch reported that she had been draining 'clear liquor' since around 1600 hours and was experiencing some mild irregular tightening. The pregnancy was recorded to have

been 'low risk' to date. As spontaneous rupture of membranes was confirmed there was no indication to perform a speculum examination. On abdominal palpation it was recorded that the fetus was in cephalic presentation and that 4/5ths of the head was palpable (not engaged). Mrs Bosch was discharged home at around 2235 hours on 30 June 2021. She was provided with advice to observe 'colour of liquor, fetal movement and signs of infection' and to call the maternity triage unit if she had any concerns. Mrs Bosch was also booked in for augmentation (induction of labour) at 0900 hours on 2 July 2021 if labour had not yet established.

Events of 1 and 2 July 2021

[370] At around 1429 hours on 1 July 2021 Mrs Bosch contacted the maternity triage unit at Wishaw General Hospital. She spoke to midwife Stark. It was recorded that Mrs Bosch had reported experiencing contractions every 4 – 5 minutes since 1215 hours, lasting around 60 seconds, and that she was coping and feeling well. It was also recorded that Mrs Bosch reported that she felt comfortable at home and had no concerns regarding fetal movements. She was advised to remain at home, with further advice given to call back if there was 'any change in colour of liquor, any concerns re movements, or when not coping with contractions.'

[371] Mrs Bosch contacted her named midwife Nicholson by text at around 1507 hours on 1 July 2021. She reported having spoken to staff at the maternity triage unit at Wishaw General Hospital and it being suggested that she should only attend at hospital when she could no longer bear the process. Mrs Bosch asked for a 'more specific guideline' regarding how she would know she had reached that threshold. Lesley Nicholson contacted Mrs Bosch by telephone. In the note of the call, midwife Nicolson recorded that she provided

advice regarding how to determine when active labour is established, and that 3 – 4 contractions in a 10 minute period when the contraction is 'taking her breath away' usually indicates active labour. She recorded that Mrs Bosch was happy with this advice.

[372] At 2248 hours on 1 July 2021 a call was placed to Scottish Ambulance Service by Mr Bosch. Mr Bosch initially advised that Mrs Bosch was in labour and the baby's head was coming out; however, later in the call it was confirmed that the baby was breech and that the feet were presenting. An out of area paramedic crew were allocated to attend. Paramedics Donaldson and Coyle arrived at around 2259 hours. Due to difficulty in locating the address, Mr Bosch met the crew on the street a short distance from the address.

[373] The paramedics attended at an upstairs bedroom within the property. Mrs Bosch was bent over the bed with her knees on the floor and her arms on the bed. Mira-Belle was delivered up to the knees. The paramedics noted that she was a good pink colour. Contractions were noted to be less than 1 minute apart. Shortly after arrival of the crew, and following three or four contractions, Mira-Belle had delivered up to the torso. The paramedics noted that her abdomen was facing the ceiling, i.e. the opposite direction to Mrs Bosch's abdomen.

[374] Approximately 20 minutes after their arrival, two calls were made by the paramedics. They called their control room requesting assistance from a doctor, a midwife, or more advanced practitioners. The paramedics were told by their control room that all they could do was send a further ambulance crew. A call was then placed to the Accident and Emergency department at St John's Hospital, Livingston, by paramedic Donaldson at around 2322 hours. This call lasted approximately 8 minutes. It was recorded that this was ultimately a three-way conversation between paramedic Donaldson, A&E Doctor Bjarnie Eyvindsson, and, later in the call, a member of the obstetrics team at St John's Hospital.

Advice was given regarding different procedures in order to aid delivery. These were attempted by both paramedics; however, they were unsuccessful.

[375] A second paramedic crew arrived at the address at around 2330 hours.

[376] The first crew made attempts to contact maternity triage unit at Wishaw General Hospital. Five attempts were made to contact the unit before their call was answered at around 2335 or 2340 hours on 1 July 2021. Paramedic Donaldson spoke to midwife Isabel Kirk. Paramedic Donaldson explained that they had attended at a breech delivery but that the arms and head had not delivered. She explained that the baby's body had been delivered around 15 or 20 minutes earlier, the body was blue, and was not moving. Midwife Kirk provided advice in order to aid delivery of the arms, advising the paramedics to insert their fingers up into the cervix to bring the arms down across the body whilst Mrs Bosch was actively pushing.

[377] Midwife Kirk then requested assistance from Dr Colin Malcolm, Consultant in obstetrics, who was on shift at that time within Wishaw General Hospital. Dr Malcolm spoke with paramedic Donaldson between 2350 and 2355 hours. By this time the arms and shoulders had been successfully delivered; however, the baby's head remained undelivered. The call was placed on speaker phone to allow the members of the crew to hear the advice. Dr Malcolm established that the baby's back was 'towards the floor' and provided instructions to the ambulance crews to rotate the baby in order that the baby's back was pointing 'towards the ceiling'. The baby was successfully turned. Dr Malcolm then instructed the crew to carry out the MSV (Mauriceau-Smellie-Veit) manoeuvre. This manoeuvre involves the index and middle fingers of the right hand underneath the baby's body, inserted into the vagina, and placed on the baby's cheek bones, with the left hand inserted anteriorly over the back of the baby's head, to promote flexion and delivery. This

was attempted; however, Mrs Bosch was unable to withstand the pain. Throughout, Mrs Bosch remained in a position where she was leaning over the bed with her knees on the floor and her arms resting on the bed.

[378] Dr Malcolm provided further instructions to assist in the delivery of the baby; however, when attempts remained unsuccessful, Dr Malcolm instructed that the ambulance crews should transport Mrs Bosch immediately to hospital. He explained that this was an emergency situation which required experienced and trained personnel and specialist equipment, such as forceps. At this time, Mrs Bosch remained within an upstairs bedroom whilst the baby was delivered up to the neck. Dr Malcolm confirmed, when asked by the crew who were concerned regarding the safe movement of both Mrs Bosch and the baby, that he was unable to attend at the address to assist personally, and there was no other staff who would be able to attend.

[379] The ambulance crew were advised by Dr Malcolm that, despite the difficulties, Mrs Bosch and the baby required to be transported to hospital urgently. Following instruction from Dr Malcolm that the phone should be taken off loudspeaker, Dr Malcolm advised that there was very little chance of survival for the baby, given the time that had now passed since the body had been delivered.

[380] With difficulty, Mrs Bosch managed to walk down the stairs and onto a trolley with assistance from the crew. The baby was supported with a blanket. The crew departed at around 0006 hours on 2 July 2021.

[381] The ambulance arrived at Wishaw General Hospital at around 0020 hours on 2 July 2021 and was met by staff from the maternity unit, a senior obstetrician, anaesthetist, and neonatal team. Mrs Bosch was transferred to a room on the labour ward at around 0025 hours. At 0027 hours she had been moved onto the bed and her legs were in the lithotomy

position (on stirrups). At 0028 hours Mrs Bosch was examined by Dr Malcolm. It was noted that the baby's back was in the posterior position. It was rotated to the anterior position. At 0029 hours the head was delivered by Dr Malcolm, using the MRSV manoeuvre, and the cord clamped and cut. Mira-Belle was recorded to be showing no signs of life at the time of delivery and was passed to neonatal staff and transferred immediately to a resuscitaire (a type of incubator).

[382] Whilst under the care of neonatal staff, including advanced neonatal practitioners Mira-Belle was noted to be white, floppy, and with no audible heart rate. Mira-Belle was intubated. A consultant neonatologist attended at around 0048 hours on 2 July 2021. Mira-Belle was then passed to Mrs Bosch to hold for several minutes, at around 0056 hours, before being transferred by way of travel incubator to the neonatal unit. At no time did Mira-Belle show any signs of respiratory effort, movement, gasping, or crying, and did not open her eyes. She did not respond to any stimuli.

[383] Mira-Belle was admitted to the neonatal unit at around 0110 hours on 2 July 2021.

[384] The consultant neonatologist provided an update to Mrs and Mr Bosch at around 0200 hours on 2 July 2021. At this time Mira-Belle was ventilated and being closely monitored but was 'critically ill'; it was unclear whether she would survive. Mira-Belle underwent a scan at around 0330 hours.

[385] At around 0900 hours on 2 July 2021, a second consultant neonatologist took over care of Mira-Belle. At the time of handover, Mira-Belle was described as having severe hypoxic ischaemic encephalopathy (a brain injury due to lack of oxygen). There was evidence of multi-organ dysfunction affecting Mira-Belle's heart and other organs. The prognosis was poor. Mira-Belle's condition was discussed with Mrs and Mr Bosch and it was agreed that active life support should be withdrawn. Mira-Belle's breathing tube was

removed at around 1215 hours and the ventilator switched off whilst she was held by Mrs Bosch.

[386] Life was pronounced extinct at 1230 hours on 2 July 2021. Mira-Belle was 12 hours and 1 minute old at the time of her death within Wishaw General Hospital.

Post-mortem examination

[387] A post-mortem examination was conducted on 7 July 2021 at the Queen Elizabeth University Hospital, Glasgow, by Consultant Paediatric and Perinatal Pathologist, Dr Dawn Penman, and the cause of death was recorded as:

> 1a. Hypoxic ischaemic encephalopathy due to
>
> 1b. Breech home delivery with fetal head entrapment (triage advice delayed hospital transfer)

[388] The final post-mortem report concluded:

> "Post-mortem neuropathology has shown evolving global hypoxic ischaemic injury…
>
> Overall, the appearances are those of a fetus with an apparently normal development in utero with evidence at post-mortem of an acute stress response which would be entirely in keeping with the provided scenario. The placenta shows poorer than expected maturation, which may have reduced the ability of the placenta to provide nutrients and oxygen to Mirabelle during labour. However, given the scenario, it is considered likely that a normal placenta would have been incapable of sustaining Mirabelle during the protracted second stage of labour…
>
> The post-mortem has not identified any significant pre-existing compromise to Mirabelle and as such it follows that the hypoxic ischaemic encephalopathy has occurred as a result of head entrapment during breech delivery.
>
> . . . . there is no significant pre-existing or additional pathology that has substantially altered the outcome in this case and it is, therefore, my view that the death has been the result of prolonged second stage at home with failure to deliver the head for a protracted period on the background of a fetus who had been well up until that point."

Events following Mira-Belle's death

[389] A Significant Adverse Event Review (SAER) was undertaken following the death of Mira-Belle Bosch by Lanarkshire Health Board. This review was undertaken by a team who had no prior involvement in the care of Mira-Belle or Mrs Bosch and was made up of staff from obstetrics, midwifery and neonatology. The relevant findings are discussed below.

[390] A Significant Adverse Event Review (SAER) was also undertaken separately by Scottish Ambulance Service following the death of Mira-Belle. This review was undertaken by a team who had no prior involvement in the care of Mira-Belle or Mrs Bosch. The relevant findings are discussed below.

DISCUSSION AND CONCLUSIONS

[391] In this section, I set out my assessment and conclusions on the key chapters of evidence, including any disputed evidence. Thereafter, I set out my conclusions on whether there were precautions which might reasonably have been taken and which might realistically have avoided Mira-Belle's death, and on any defects in any system of working which contributed to her death.

Key Chapters of Evidence

The cause of death and mechanism of damage

[392] Professor Stenson provided a report which was unchallenged and admitted into evidence without the need to be spoken to.

[393] He described the extensive attempts by a team of clinicians to resuscitate Mira-Belle upon delivery at hospital. Professor Stenson described the care provided to Mira-Belle upon

Mrs Bosch's admission to hospital on 2 July 2021 and following Mira-Belle's birth as of "a good standard". He regarded the assessment of the brain injury and the discussion regarding withdrawal of life sustaining treatment as appropriate. Mrs Bosch described the midwives who supported her during this period as "incredible" and I note that during the SAER process, Mr and Mrs Bosch commented that the care of the consultants, midwives and neonatal doctors was excellent. The SAER team described the neonatal care provided to Mira-Belle as "of high standard and carried out in a prompt and timely fashion".

[394] Professor Stenson noted that there was no evidence from the post-mortem examination that Mira-Belle suffered from life limiting physical injuries before delivery or transport to hospital that contributed to her death. It was his opinion that she died as a result of severe hypoxic ischaemic injury to her brain and other vital organs. This arose in labour at the family home, as a consequence of a breech birth which became obstructed.

[395] Professor Stenson concluded that Mira-Belle's death was solely attributable to intrapartum asphyxia. He described the mechanism of damage. Umbilical cord blood gas results represented Mira-Belle's condition at the point that her umbilical cord became completely obstructed. Mira-Belle's condition would have deteriorated progressively after that point, but with no further blood flow into the umbilical cord, the umbilical cord gases reflected Mira-Belle's condition prior to complete occlusion of the cord. The relatively normal umbilical venous specimen indicated that there had not been damaging prolonged partial asphyxia earlier in labour, prior to the onset of umbilical cord obstruction; all damaging asphyxia occurred after the cord became obstructed. In his view, that was likely to have occurred sometime between 2303 hours (the time of arrival of the first ambulance crew at the family home) and delivery at 0029 hours.

[396] Professor Stenson explained that the umbilical cord cannot have been completely obstructed for all of this time, because it would not have been possible to resuscitate Mira-Belle after almost 90 minutes of total asphyxia. In his view, there must have been at least some ongoing umbilical cord blood flow for a period of time.

[397] He concluded:

> "The journey time from home to hospital and the time from hospital arrival to delivery were unavoidable, as were a period of initial assessment and planning at the home after the first ambulance arrived and some time for the move of Mrs Bosch downstairs to the ambulance and settling into the ambulance before departure. It is likely that at least 45 minutes of the 86 minutes of time from first arrival of the ambulance team to delivery could not have been avoided. It is possible that, with different arrangements for communication and different management protocols, some of the remaining time might have been avoided. . . . A 45 minute period between delivery of the breech and completion of delivery would still be a very serious delay, even without the additional time. It is likely that, whatever decisions had been taken, this 45 minute period would have meant that Mirabelle would still have suffered significant intrapartum asphyxia, sufficient on balance of probability to result in the development of hypoxic ischaemic encephalopathy, with risk of permanent brain injury and death.
> If it were determined that a large amount of the remaining time could and should have been saved then the duration of the episode of hypoxia would have been less and the risk of death would have been lower. It is possible but not probable that Mirabelle's death may have been avoided. It is unlikely that encephalopathy would have been avoided altogether. It is possible that the extent of any permanent brain injury in the event of survival would have been less."

[398] **Conclusion 25:** Mira-Belle's death was attributable solely to intrapartum asphyxia explained by the development of umbilical cord obstruction during delivery. This was likely to have occurred sometime between 2303 hours (the time of arrival of the first ambulance crew at the family home) and delivery at 0029 hours the following day. At least 45 minutes of this period of time was unavoidable delay. If a large amount of the remaining time could have been saved, it is possible, but not probable, that Mira-Belle's death may have been avoided; on a balance of probabilities, had the remaining time been saved, Mira-Belle's death was unlikely to have been avoided.

The categorisation of Mrs Bosch's pregnancy as low risk

[399] Mrs Bosch was assessed as being at low risk of obstetric complications during pregnancy and childbirth. She was placed on the green pathway of care, which involved midwifery led care. Professor Humphry described the assessment of her previous medical, obstetric and social history as comprehensive and complete and her biophysical assessment and measurements as all being within normal ranges. Professor Humphry concluded that Mrs Bosch's immediate planned midwifery management was appropriate. The members of the SAER team agreed that the green pathway of care was appropriate for Mrs Bosch's pregnancy.

[400] Thereafter, Mrs Bosch was under the care of a named midwife, Lesley Nicolson, who remained her named midwife throughout the pregnancy. Mrs Bosch explained that she had a good relationship with her named midwife and trusted her.

[401] Mrs Bosch had her first trimester ultrasound scan on 6 January 2021. No abnormalities were detected. She had a detailed anomaly ultrasound scan, as part of routine care, on 26 February 2021. Again, no abnormalities were detected. When she attended for a routine assessment on 22 April 2021 at 27 weeks gestation, midwife Nicolson noted that her fundal height was measuring slightly higher than expected at 29cm. Professor Humphry explained that in isolation, that was not significant; however, the midwife had appropriately planned for further measurements to be taken at a subsequent assessment to review whether there were indications of a baby which was large for its gestational age.

[402] At a further routine assessment with midwife Nicolson on 13 May 2021 at 31 weeks gestation, the fundal height was noted as measuring 32cm. As this was the second fundal height measurement above the 97th centile, a fetal growth scan was requested. It was arranged for within 24 hours. Professor Humphry described the midwifery care as

appropriate. The SAER review team also noted that the midwife had acted in accordance with LHB local guidance by requesting a scan within 24 hours.

[403] Mrs Bosch explained that she did not fall ill, did not have any infections, and suffered no serious side effects of her pregnancy, to the extent that she felt able to continue working and was working when her waters broke.

[404] **Conclusion 26**: Mrs Bosch was correctly identified as having a low risk pregnancy and placed on the green pathway of care. Her care up to and including at 31 weeks gestation was appropriate.

The clinical significance of the breech presentation at 31 weeks

[405] At the third ultrasound scan on 14 May 2021, a complete breech was noted.

[406] Professor Humphry explained that there are several types of breech positions. A 'complete breech' presentation is one in which the buttocks of the fetus are presenting and lie longitudinal with the bottom at the pelvic brim, with the legs folded in front of the breech; the legs are flexed at the hips and knees with the feet and buttocks presenting above the cervix. A 'frank breech' presentation involves the buttocks of the fetus situated at the pelvic rim but its legs and feet are longitudinal, with its feet in front of its head. A 'footling breech' involves the feet pointing downwards in front of the buttocks.

[407] Professor Humphry described the finding of a complete breech presentation as "incidental". She explained that babies are mobile up to 34 – 36 weeks gestation; as the fetus is smaller and there is adequate liquor surrounding the fetus, the position can change quite frequently. A scan could show a breech position and an hour later, the position may have changed. She estimated that around one in ten pregnancies might present as breech at 31 weeks gestation. Such babies will normally move to a cephalic (head down) presentation by

term. It was unknown what proportion of those that are breech before term will persistently present that way throughout the pregnancy until term. She considered a finding that a baby remained in a breech position at 36 weeks or after to be clinically significant. She explained that in her practice, she would not normally expect to see the presentation of a fetus to be documented in notes before 34 weeks gestation, as findings are not clinically relevant before that stage; that underscored the 'incidental' nature of the finding at 31 weeks. The SAER team also noted that usually, if there is a breech identified at under 34 weeks gestation, there is a high chance that the baby will rotate to a cephalic position.

[408] The practice at Wishaw General Hospital reflected Professor Humphry's view that a breech presentation at 31 weeks gestation was not clinically significant. Midwife Nicolson explained in her evidence that until the baby's head was fixed in the maternal pelvis, the fetus could continue to move position. She explained that women were referred for a scan where a breech presentation was suspected at 36 weeks gestation or after.

[409] "Ready Steady Baby!"(version 3, 2022) is a publication produced by Public Health Scotland. It provides parents with most of the information that they will require before, during and after pregnancy. It is provided in electronic form to those women who opt to use a maternity app (BadgerNotes) and is also available in hard copy. I note that page 155 of this publication states that "at 30 weeks of pregnancy, around 20 in 100 babies are in the breech position, but by the end of pregnancy only about 3 in 100 are breech."

[410] I accept the submissions made on behalf of the Crown: the evidence supports the conclusion that a breech presentation at 31 weeks gestation would not have justified reclassifying Mrs Bosch's pregnancy as high risk.

[411] **Conclusion 27:** The finding that Mira-Belle was in a complete breech position at 31 weeks was not clinically significant. It would not have justified a reclassification of Mrs Bosch's pregnancy as high risk.

Was it likely that Mira-Belle remained in a breech position following the scan at 31 weeks?

[412] Professor Humphry explained that it could reasonably be assumed that Mira-Belle remained in a breech presentation following the scan on 14 May 2021. She explained that the type of breech presentation may have changed, but as the presenting part never engaged in the pelvis, it was likely that Mira-Belle remained in a breech position.

[413] Dr Hughes agreed. She explained that Mira-Belle was in a breech presentation at 31 weeks gestation and again at birth. For her to have been in a cephalic position during assessments at 34 and 37 weeks would have involved her turning, and then turning back again which Dr Hughes considered to be very unlikely. She explained that it was even more unlikely in a first pregnancy as the abdominal muscles are still firm and tend to hold the baby in position. She was asked if a baby could change position after spontaneous rupture of membranes. She explained that was "exceedingly unlikely"; she had never seen that happen, nor heard of it or read reports of a baby at term turning after rupture of membranes. She explained that even clinical staff would find it difficult to manoeuvre externally to change the position of a baby at that stage.

[414] **Conclusion 28:** The expert evidence supports the conclusion that, on a balance of probabilities, Mira-Belle remained in a breech presentation following the scan at 31 weeks gestation.

The sensitivity of abdominal palpations to detect a breech presentation

[415] Professor Humphry explained that it is unknown what proportion of those babies that are breech before term, will persistently present that way until term.

[416] The RCOG, External Cephalic Version and Reducing the Incidence of Term Breech Presentation, Green-Top Guideline, March 2017 sets out guidance for external cephalic version or ECV which is the manipulation of the fetus, through the maternal abdomen, to a cephalic position. The Guideline notes:

> "Breech presentation complicates 3 – 4% of term deliveries and is more common in nulliparous [first pregnancy] women and in preterm deliveries. Following the publication of the Term Breech Trial there was a significant decrease in the number of women undergoing vaginal breech birth. In many countries, including the UK, planned vaginal breech birth remains rare and attempts to prevent breech presentation at delivery remains important".
> "The greatest impediment to the use of ECV is the non-identification of breech presentation. The proportion of undetected breech presentation at term has been reported as high as 20.0 – 32.5% of all breech presentations and these have worse outcomes. The possibility of breech presentation should always be considered at clinical examination although abdominal palpation has a sensitivity of only 70%. In the absence of routine third trimester ultrasound, particular care should be taken with high-risk groups, e.g. where a previous baby has been breech."

[417] Professor Humphry agreed that the sensitivity of abdominal palpations to detect a breech presentation was around 70 – 80%. Dr Hughes explained that it was well recognised that clinical examination is not perfect when trying to determine fetal presentation, with a sensitivity of around 70%. She described it as an inexact science. It follows then that in up to 30% of breech presentations, the presentation will be wrongly categorised.

[418] Dr Hughes explained that midwives and obstetricians perform abdominal palpations in order to determine the number of fetuses, the lie, presentation and position of the fetus, the estimated size of the fetus, the descent of the presenting part (head or breech) and to estimate the volume of amniotic fluid present. It can also be used to help diagnose labour and other causes of abdominal pain and bleeding.

[419] Professor Humphry explained that abdominal palpations are performed routinely at antenatal appointments to assess fetal growth and, after 36 weeks gestation, to assess fetal presentation. The palpation has three components: observation (i.e. a visual examination of the abdomen); palpation, which involves feeling the abdomen and applying pressure to feel for movement, size, lie and presentation of the fetus; and auscultation, which involves listening to the fetal heartbeat. The 'lie' of the fetus is the relationship between the long axis of the fetus to the long axis of the uterus. Most commonly, the lie of the fetus is longitudinal, where the long axis of the fetus is vertical within the long axis of the uterus. The location of the fetal heart for auscultation will depend upon the gestation of the pregnancy, the lie and presentation of the fetus. In a cephalic presentation, the heartbeat can be located nearer to the pelvic rim; in a breech presentation is it usually higher in the abdomen. When asked whether the location of the heartbeat was a useful guide as to the presentation of the fetus, the Professor explained that it was an indicator, but not a reliable one; sometimes, a heartbeat can be auscultated across a large area of the mother's abdomen.

[420] She explained that it is difficult to detect a breech baby by palpation. If the legs of the fetus are parallel to the body and the feet are close to the head, it can be difficult to tell the difference between the buttocks and the head. While normally, the head is narrower and harder to move and the buttocks are soft, that is not always the case and might depend upon the amount of fluid around the fetus or fat around the maternal abdomen. Dr Hughes expressed the view that it can be easier to diagnose a breech presentation following rupture of membranes, as there is less fluid around the fetus.

[421] **Conclusion 29:** A breech presentation complicates 3 – 4% of term deliveries. The sensitivity of abdominal palpations to detect a breech presentation is around 70%. While

abdominal palpations are used routinely to determine presentation, diagnosis can be difficult and in up to 30% of breech births, a breech presentation is undiagnosed before term.

The assessment on 3 June 2021 at 34 weeks gestation

[422] Midwife Nicolson and student midwife Buchanan were present at Mrs Bosch's assessment on 3 June 2021.

[423] The note entered onto Mrs Bosch's Badgernet records stated that the student midwife had performed the antenatal assessment. It is recorded that, upon abdominal palpation, a cephalic presentation was noted with the presenting part (the head) not engaged. The note does not state who carried out the palpation. Professor Humphry expressed the view that the abdominal palpation ought to have been performed by the named midwife who had provided continuity of care; her expertise and experience should have been utilised to determine the fetal presentation as it had been in breech at ultrasound scan a few weeks earlier.

[424] The SAER report stated that the abdominal palpation was carried out by both midwives. During her evidence, Midwife Nicolson explained that she would have coached the student midwife, allowed her to palpate Mrs Bosch's abdomen and then performed an abdominal palpation herself. Student midwife Buchanan confirmed in her affidavit, that was the usual practice. While neither of these witnesses, nor Mrs Bosch, had a clear memory of whether midwife Nicolson, as the named midwife, performed the palpation, I am satisfied that there no reason to conclude that midwife Nicolson departed from her usual practice. Both she and student midwife Buchanan performed an abdominal palpation and concluded that Mira-Belle was in a cephalic position.

[425] There was no evidence to suggest that the abdominal palpations had been performed incorrectly. Midwife Nicolson qualified as a midwife in 2016. She explained that she has carried out thousands of palpations; on average she carries out around 20 palpations a week. She was experienced in doing so. She accepted that it was possible that her assessment that Mira-Belle had been in a cephalic presentation could nevertheless have been wrong.

[426] Midwife Nicolson found the presenting part was not engaged (i.e. fixed in the pelvis). Professor Humphry explained that for a first pregnancy, you would expect the presenting part to be engaged at around 37 weeks gestation; however, at the assessment of 34 weeks gestation, because delivery might be anticipated at any time, it is important to record whether the presenting part is engaged or not. Midwife Nicolson had done so.

[427] Midwife Nicolson explained that she had been aware of the findings of the scan and had reviewed them prior to the assessment on 3 June 2021. Mrs Bosch explained that she had not been aware that the scan had found a complete breech presentation. Neither she, nor midwife Nicolson, could recall whether any discussion had taken place about Mira-Belle having changed position.

[428] Midwife Nicolson did not make any note of a change of position or of the finding of a breech presentation at scan, in the record on Badgernet. She did not consider that to be necessary as she had subsequently assessed Mira-Belle to be in a cephalic position. That was her clinical assessment. She was asked whether she had noted that the stenographer had recorded that Mira-Belle had been in a "very difficult position to measure growth". She could not recall whether she had read that entry, but noted that it would not have changed her management if she had. A further scan would only have been necessary if there continued to be concerns in relation to fetal growth. The SAER team also concluded that, as

the fetal growth measurements were in keeping with a normal growth trajectory, a further ultrasound scan was not justified.

[429] Midwife Nicolson added that she would not have referred Mrs Bosch for a scan, even if she had found Mira-Belle to be in a breech presentation; such a referral would be made at 36 weeks gestation.

[430] **Conclusion 30:** Both midwife Nicolson and student midwife Buchanan performed an abdominal palpation at the assessment on 3 June 2021. They concluded that Mira-Belle was in a cephalic presentation. It is likely that Mira-Belle was in fact in a breech position and that her presentation had been undetected (see Conclusions 28 and 29). It is not possible to conclude why. Midwife Nicolson was aware of the scan results, but did not note that the scan at 31 weeks had found a breech presentation. Having regard to Conclusion 27, that finding was not clinically significant.

The assessment on 23 June 2021 at 37 weeks gestation

[431] This was the last occasion on which Mrs Bosch was seen by her named midwife. Midwife Nicolson found all maternal and fetal measurement to be within normal limits. She again performed an abdominal palpation and found the lie was longitudinal and the presentation cephalic. She found that the head was not engaged. She explained that her principal concern had been that in the event of a rupture of membranes, if the head was not engaged, there was a risk of cord prolapse; that was why it was important to note whether the head was engaged. She assessed the head as not engaged.

[432] She accepted that it was possible that her assessment may have been wrong. If she had considered Mira-Belle to be in a breech position at this stage, she would have referred Mrs Bosch to a consultant obstetrician who would have discussed options with her. Those

would have included attempting to turn the baby (external cephalic version) or an elective caesarean.

[433] Professor Humphry noted in her report that at the routine assessment on 23 June 2021:

> "The head was not engaged in the pelvis. An unengaged presenting part at term in a primigravida is uncommon and should alert the midwife to consider i) cephalopelvic disproportion, ii) malpresentation or iii) malposition. . . . it would have been reasonable, based on her earlier scan for suspected large for dates fetal growth that reported a frank breech presentation, to have ordered a repeat ultrasound scan for presentation and growth."

[434] During her evidence, she explained that cephalopelvic disproportion referred to the fetus being too large for the maternal pelvis; malpresentation referred to a presentation other than cephalic; and malposition referred to an abnormal positioning of the head in the pelvis. At 37 weeks, she would have expected the head to be engaged; an unengaged head presents a risk at labour of cord prolapse after rupture of membranes. At 37 weeks, she considered a finding that the fetus was in a cephalic presentation, but without the head engaged to be very unusual; such a finding would have alerted her to be curious. She considered that any midwife, regardless of her seniority or experience, would appreciate that this is uncommon and would want to investigate further. It was likely that the reasons the head was not found to be engaged is that Mira-Belle was in a breech position. She considered that it would have been reasonable to offer a repeat scan. However, upon further discussion, the Professor accepted that if midwife Nicolson had been reassured that the presentation was cephalic and that there was no malposition, it was reasonable for her to have acted as she did.

[435] Dr Hughes made no criticism of the antenatal care provided to Mrs Bosch and described it as "generally of a very good standard".

[436] **Conclusion 31:** Midwife Nicolson concluded that Mira-Belle was in a cephalic presentation at 37 weeks gestation. She exercised her clinical judgment in doing so. There was no evidence to suggest that she had performed the abdominal palpation incorrectly or inadequately. It is likely that Mira-Belle was in fact in a breech position and that her presentation was undetected (see Conclusions 28 and 29). It is not possible to conclude why.

The call and attendance at maternity triage at 2052 hours on 30 June 2021 (38+1 weeks gestation)

[437] Mrs Bosch explained that her waters broke around 1615 hours on 30 June 2021. She waited until her contractions commenced and then called the maternity triage unit.

[438] Midwife Tannahill was working in the triage unit at Wishaw General Hospital on 30 June 2021. She attended the telephone call from Mrs Bosch at 2052 hours. According to the note of the call recorded on BadgerNet, Mrs Bosch explained that her waters had broken at around 1600 hours, the colour of the liquor was clear, her contractions had commenced at around 1700 hours and they were mild and irregular. Midwife Tannahill explained that she reviewed Mrs Bosch's pregnancy notes on Badgernet. She was concerned in particular about the risk of cord prolapse if Mira-Belle's head was not engaged. She read the notes of the last assessment on 23 June 2021 and noted that Mira-Belle's head was not engaged at that stage. She explained that she instructed Mrs Bosch to attend without delay. Mrs Bosch confirmed in her evidence that she too understood that she had been asked to attend to allow the midwife to assess whether Mira-Belle's head was engaged. That is also recorded as the reason for the advice on the notes made by midwife Tannahill on BadgerNet.

[439] Midwife Tannahill explained that if the assessment on 23 June had recorded that Mira-Belle's head was engaged, she would not have invited Mrs Bosch to attend, instead

suggesting that she remain at home as long as she was comfortable, until her labour progressed.

[440] Professor Humphry described the telephone call between Mrs Bosch and midwife Tannahill as a thorough assessment. She explained that appropriate advice was tendered that Mrs Bosch attend for assessment due to the presenting part not being engaged. She agreed that at the forefront of the midwife's mind appeared to be the question of whether the presenting part was engaged or not.

[441] Midwife Tannahill stated that she could not recollect whether she was aware at the time that Mira-Belle had been found to be in a breech presentation at 31 weeks gestation. She stated that she would not have looked at scan results when triaging Mrs Bosch; she would only do so if there were any concerns regarding weight or growth or reduced fetal movements, or if a patient had advised of a previous breech presentation at scan. Had she looked at the scan at 31 weeks, she would not have considered the breech presentation at that stage to be clinically significant; it would not have changed her management of Mrs Bosch. For the reasons I have explained above (Conclusion 27) I consider her assessment of the significance of the presentation at 31 weeks to be a reasonable one, supported by the expert evidence.

[442] Upon her attendance at Wishaw General Hospital at around 2139 hours, midwife Tannahill assessed Mrs Bosch. She asked Mrs Bosch if she could encourage any amniotic fluid to pass. Mrs Bosch attempted to do so. Mr Bosch explained that his wife found that uncomfortable and difficult. I do not doubt that was so; however, I am satisfied that midwife Tannahill had a sound clinical reason for requesting this. She explained that if she were not assured that there had been a spontaneous rupture of membranes, she would require to perform a speculum examination which might introduce an infection. In

addition, she wished to check for signs of meconium in the liquor. As the Inquiry heard in the evidence relating to the Inquiry into Ellie's death, signs of meconium can suggest a fetus in distress. Mr Bosch also wished the Inquiry to consider whether a vaginal examination ought to have been performed. The expert evidence (and the findings of the SAER review) supported midwife Tannahill's judgment; a vaginal examination was not warranted, as Mrs Bosch was not considered to be in labour at this stage and to perform such an examination after rupture of membranes carried with it a risk of infection.

[443] In her affidavit, midwife Tannahill explained her usual practice of abdominal palpation. She explained that she had been a midwife for 4 years, had probably carried out thousands of abdominal palpations in that time and on average performed around 18 per week. She explained that palpation is a systemic process commencing with fundal height and includes fundal, lateral and pelvic palpation; she started at the top of the abdomen and when palpating, she sought to determine whether what she felt was a head, bottom or other body part; thereafter, she placed her hands on either side at the top of the uterus and palpated down each side of the abdomen, gently applying pressure with one hand and steadying the abdomen with the other. She explained that she was feeling for what side felt firmer and fuller which would suggest the fetal back and which side felt like limbs. Finally, she would palpate the lower uterus to determine the presenting part. Upon palpating Mrs Bosch's abdomen, she assessed that the head was the presenting part, because it felt firm and round, like a skull, as opposed to soft and not round. During her oral evidence, she described feeling something bony, rather than soft buttocks.

[444] She then sought to determine how much of what she considered to be the head, was engaged. She assessed that she could feel 4/5ths of the head. She found the head was not ballotable (could not be moved). She concluded that the head was engaged. She explained

that in terms of her training, and the practice within the maternity triage unit, a head which is 4/5ths palpable and not ballotable, is considered engaged. She explained that if she had found the presenting part to be ballotable, she would not have considered it to be engaged. She described the assessment of fifths palpable as subjective and the assessment of ballotability as "more determinative", or "more important". The evidence before the Inquiry supports the conclusion that ballotability is a more significant, perhaps the most significant, indicator of whether the presenting part is engaged in the pelvic brim (see paragraphs [549] - [561]). While there is no mention of the ballotability of the presenting part in the note of the assessment completed by midwife Tannahill on BadgerNet, I am satisfied on a balance of probabilities that midwife Tannahill was aware of the importance of assessing ballotability and that she assessed the presenting part, which she believed to be the head, as not ballotable. There was no basis in the evidence before the Inquiry to conclude that her evidence lacked credibility or reliability in this regard.

[445] She was asked whether she had noted that during Mrs Bosch's previous assessment, Mira-Belle was found to be a cephalic position. Midwife Tannahill confirmed that she would have read the notes of that assessment, but would not have been influenced by it; she would have made her own assessment of presentation.

[446] Finally, she explained that she located Mira-Belle's heartbeat where she expected to find it if Mira-Belle had been in a cephalic position, and noted a heartbeat of 140 beats per minute. Professor Humphry agreed that the location of the heartbeat would not have alerted midwife Tannahill to the breech presentation; what the midwife perceived to be the head was quite high in the abdomen.

[447] I accept the submissions made by Mrs Gillespie KC, Mrs Smith KC and Mr Rodger; there was no evidence to suggest that the abdominal palpation and the assessment carried

out by midwife Tannahill fell short of what would be expected of a midwife triaging a woman reporting spontaneous rupture of membranes. I note that Dr Hughes did not find the situation faced by midwife Tannahill unusual; a primigravida at term, following spontaneous rupture of membranes with a fetus assessed as being in the cephalic position with the head 4/5ths palpable and not ballotable. She explained that where membranes ruptured prior to the onset of labour, it was common for the fetal head to be high.

[448] Nevertheless, it is clear, and it was accepted by Ms Gillespie KC, Ms Smith KC and Mr Rodgers, that midwife Tannahill was almost certainly mistaken in her assessment that Mira-Belle was in a cephalic position. The expert evidence on this matter was definitive: Professor Humphry considered it was very unlikely that Mira-Belle would have moved into breech position after midwife Tannahill's assessment; Dr Hughes described it as "very, very unlikely" that Mira-Belle had been in a cephalic position at 38 weeks gestation following spontaneous rupture of membranes.

[449] Midwife Tannahill did not perform a speculum examination, as she was satisfied that the liquor was clear and that Mrs Bosch's membranes had ruptured. Professor Humphry agreed that it was not necessary for a speculum examination to be performed as the history provided by Mrs Bosch was clearly that of a spontaneous rupture of membranes. I note that the NICE Guideline "Intrapartum Care for Healthy Women and Babies" published in 2014 and updated in 2017 at paragraph 1.11.1 also advises against a speculum examination if it is certain that the membranes have ruptured.

[450] Midwife Tannahill checked Mrs Bosch's blood pressure, temperature and pulse. She noted that Mrs Bosch's urine analysis showed a small amount of blood but did not consider that usual at this stage of labour. She noted that Mrs Bosch had no concerns regarding fetal movements. The assessment lasted around 50 minutes.

[451] In her report, Professor Humphry explained that a primigravda with an unengaged presenting part is unusual at term, particularly in the presence of ruptured membranes, which is more usual with an engaged presenting part due to pressure and the absence of forewaters aids decent into the pelvis. She explained that, as that situation was unusual, it would be appropriate to question a finding of cephalic presentation; had a more senior midwifery or obstetric opinion been sought, the breech presentation may have been diagnosed by someone palpating or performing an ultrasound scan which may have resulted in Mrs Bosch being advised to remain in hospital to await labour.

[452] As Ms Smith KC, Ms Gillespie KC and Mr Calderwood submitted, Professor Humphry's opinion on this matter was predicated upon an assumption that upon assessment, a primigravida is found to have an unengaged presenting part. That was not the case here. Midwife Tannahill found that the presenting part, which she believed to be Mira-Belle's head, was engaged. In that event, I did not understand Professor Humphry to be critical of the care provided by midwife Tannahill; she accepted that a breech presenting part can become engaged. Dr Hughes stated that she would not have expected the midwife to seek a second opinion, unless she considered the baby was breech. In her view, there was nothing to indicate the need for an obstetrician.

[453] Dr Hughes offered the opinion that had midwife Tannahill considered the scan report and noted the complete breech at 31 weeks gestation, that might have caused her to reconsider her diagnosis of Mira-Belle's presentation as cephalic. She agreed, however, with Professor Humphry that if at term, it was determined upon palpation that the head was engaged, the results of a scan indicating an earlier breech position was clinically irrelevant. Professor Humphry noted that had the head not been engaged, she might have expected the midwife to look back at previous scans. She accepted, however, that if the

conclusion upon palpation was that the head was engaged, there was no need to be curious and look back at earlier scans. Both Professor Humphry and Dr Hughes agreed that while palpating an abdomen after the rupture of membranes might be easier as there is less amniotic fluid around the fetus, there was still room for error and such palpations are not entirely accurate.

[454] Dr Hughes described the antenatal care provided to Mrs Bosch as generally of a very good standard. She explained that it was unfortunate that the fetal presentation was incorrectly believed to be cephalic after Ms Bosch experienced a spontaneous rupture of membranes. She stated in her report "it is extremely unlikely that the presentation was cephalic at that point. It is also probable, in my view, that the presentation was breech at the antenatal appointments at 34 and 37 weeks." She further explained that "it is exceedingly unlikely that Mira-Belle turned after Mrs Bosch's waters broke. I have never known, or heard, or read reports, of a term (>37 weeks gestation) baby doing this. In the hypothetical situation of this happening, the mother would almost certainly be aware of excessive and very unusual fetal movements."

[455] Understandably, Mr and Mrs Bosch considered that the midwives, and in particular, midwife Tannahill had failed to see "the whole picture". Mr Bosch explained that he felt he and his wife had been provided with a wrong sense of security and wished to know whether the antenatal assessments were "really up to standard". Mr and Mrs Bosch saw each assessment after the scan at 31 weeks as a missed opportunity to detect a breech presentation prior to Mira-Belle's birth. They are correct; each assessment was indeed a missed opportunity to detect a breech presentation. However, at each assessment Mira-Belle was noted upon abdominal palpation to be in a cephalic position. There was no evidence that any of the midwives who carried out those assessments had fallen short of what would

have been expected of them; there was no evidence from which to conclude that they had performed the abdominal palpations incorrectly or inadequately. Why it had been difficult to correctly assess Mira-Belle's presentation is unknown. That, I accept, is an unsatisfactory conclusion; however, it accords with the expert evidence and the available statistics; up to 30% of breech presentations are undetected at term.

[456] **Conclusion 32:** The evidence supports the conclusion that midwife Tannahill recognised that it was important to determine whether, following spontaneous rupture of membranes, the head of a baby is engaged. Midwife Tannahill concluded that Mira-Belle was in a cephalic presentation, the presenting part (which she considered to be the head) was not ballotable and was thus engaged in the maternal pelvis. She exercised her clinical judgment in doing so. There was no evidence to suggest that she had performed the abdominal palpation incorrectly or inadequately. Having concluded that the presenting part (believed in error to be the head) was engaged in the pelvis, she had been justified in taking the view that Mrs Bosch could be discharged. It is likely that Mira-Belle was in fact in a breech position and that her presentation was undetected (see Conclusions 28 and 29). It is not possible to conclude why.

The advice provided by midwife Tannahill

[457] Midwife Tannahill contacted the unit co-ordinator and booked Mrs Bosch in for induction of labour on 2 July 2021 at 9am, in accordance with the NHS Lanarkshire Pre-Labour Rupture of Membranes at Term Guideline (202). She stated that she explained the induction process to Mrs Bosch. She explained to Mrs Bosch to look for signs of regular, rhythmic contractions, lasting 1 minute and occurring every 2 to 3 minutes; to observe the colour of liquor and to note if it were yellow, brown or blood stained; to look for signs of

infections such as a temperature, feeling cold, shivery, foul smell below. Should any of these occur, should she feel uncomfortable or unable to cope, or should she experience a reduction of fetal movements, she should call triage. She provided a post it note to Mrs Bosch with the words:

> "Friday 2 July @ 9am
> Ward 23
> Colour of liquor
> Fetal Movement
> Signs of Infection"

[458] Mr Bosch described this as generic advice which was wrong in the circumstances. He explained that he was unable to understand what was meant by the words on the note and was left confused as to when he should contact the hospital for further advice. Mrs Bosch explained that she did not view the note as advice; she explained that this information had been reiterated a number of times before.

[459] The SAER team considered the advice to have been appropriate. Mr Calderwood pointed out in his submissions that Professor Humphry explained that the advice dispensed to Mrs Bosch should have included the need to be aware of the signs of infection such as a temperature or feeling unwell and to be aware of any vaginal discharge, foul smelling liquor or a change in colour of liquor or fetal movements. Mr Calderwood submitted that the Inquiry should find that the Post-it note was a summary of the advice provided by midwife Tannahill, not the totality of it.

[460] I understand why Mr and Mrs Bosch considered the advice to be inadequate. They considered the advice failed to deal with the particular situation they faced. They considered it did not help them to assess when they should attend the maternity triage unit. Considered in isolation and with the benefit of an understanding that Mira-Belle had in fact

been in a breech position, it is not surprising that Mr and Mrs Bosch felt this way. However, it is important, in my judgment, to bear in mind that midwife Tannahill had assessed Mira-Belle to be in a cephalic position. She was aware of the risks of spontaneous rupture of membranes and had assessed the head to be engaged. That being the case, she talked Mr and Mrs Bosch through the additional issues they required to be aware of – a change in the colour of the liquor, reduced fetal movements and signs of infection. Her note was provided as an "aide memoire" of the warning signs which might prompt attendance at hospital, even in the absence of regular and painful contractions, prior to the scheduled induction. While the Inquiry did not have before it the particular information provided to Mrs Bosch during her pregnancy, the evidence suggested that she had an awareness of the signs of labour which had been reiterated to her; she explained that she had been told repeatedly to look for 3 – 4 contractions in 10 minutes. She carefully noted the intensity and frequency of the contractions; however, while intense, her contractions were irregular. She explained that had she been aware that Mira-Belle had been in a breech position, she would been more proactive. I note that had midwife Tannahill been aware that Mira-Belle was in a breech position, she too would have acted differently, by consulting with an obstetrician. That lack of awareness arose from a misunderstanding that Mira-Belle was in a cephalic position. Faced with that presentation, the advice was appropriate.

[461] **Conclusion 33:** There was no evidence before the Inquiry that, faced with a presentation which she believed to be cephalic, and having booked Mrs Bosch for an induction in accordance with the timeframe stipulated by the LHB guidelines, midwife Tannahill should have provided further or different advice. What has been done/can be done to support and reiterate the advice provided in similar circumstances is considered below.

The call to triage at 1429 hours on 1 July 2021

[462] In the joint note of disputed issues, the parties asked the Inquiry to consider whether Mrs Bosch should have been advised to attend at hospital immediately following the telephone contact at approximately 1429 hours on 1 July 2021 (approximately 22.5 hours after spontaneous rupture of membranes).

[463] During her evidence, Mrs Bosch explained that she required to wait 10 minutes before she was able to speak with a midwife when she called maternity triage at Wishaw General Hospital. Midwife Stark explained that ideally there would be three midwives and a clinical support worker on each shift within the maternity triage unit; however, that was not always possible. She explained that, at the time, the midwives in triage assessed, treated and considered plans for care for patients within the triage unit and any of them would also be responsible for answering calls. That might have explained the delay in dealing with Mrs Bosch's call. Midwife Stark explained that following Mira-Belle's death, a specific member of the triage team is always allocated to answer calls.

[464] Midwife Stark explained that she noted the reason for Mrs Bosch's call was her concerns relating to contractions. She had accessed Mrs Bosch's notes on BadgerNet, noted that she had been booked for an induction following the rupture of membranes and read the note created by midwife Tannahill. She noted that Mira-Belle's head was recorded as being engaged. She noted that Mrs Bosch reported contractions as having commenced at around 1215 hours, occurring every 4 – 5 minutes and lasting for around 60 seconds. The midwife assessed the contractions as moderate. She noted that Mrs Bosch expressed no concerns regarding fetal movements, was coping and feeling well and that her liquor remained clear. She recalled that Mrs Bosch explained that she was not planning to take pain relief during

birth and that she was comfortable at home. Midwife Stark explained that while each contraction was lasting 60 seconds, they were 5 minutes apart. She did not assess Mrs Bosch to be in active labour. She explained that exercising her clinical judgment, based on the information provided and upon her own assessment of Mrs Bosch, who did not sound distressed or uncomfortable, she advised Mrs Bosch to remain at home and call back or attend if there was a change in the colour of the liquor, a reduction in fetal movements, or if she felt she was not coping with contractions. Midwife Stark could not recall whether she had given advice to Mrs Bosch as to how she would recognise if she were in active labour.

[465] Mrs Bosch explained that she had taken notes on the frequency of her contractions and relayed these to the midwife. She recalled being advised that when she could not cope with the pain anymore and needed medication, she should attend at triage. She also recalled being advised to wait until she was experiencing 4 contractions in 10 minutes. As she was dissatisfied with the advice and left confused, she contacted her named midwife by text for further assistance. Midwife Nicolson advised that she should look for 3 – 4 contractions every 10 minutes. Mrs Bosch explained that she frantically went through all of the information she had been provided with, searching for answers as to what stage of labour she was experiencing. She described herself as experiencing extreme pain, but coping, her contractions were irregular and she remained unsure of whether she was in active labour and should contact triage again. It was clear from her evidence that Mrs Bosch was a highly engaged patient who had been keen to comply with medical advice.

[466] Professor Humphry expressed the view that if Ms Bosch described contractions every 4 – 5 minutes and moderate in nature, then it was fair to conclude she was not in established labour. I note that the terms "active" and "established" were used synonymously. Professor Humphry considered that Mrs Bosch was likely to be in the early

or latent phase of labour. That view was similar to the view of the SAER team, who concluded that, as Mrs Bosch was thought to be in the latent phase of labour (early labour), the advice given by midwife Stark was appropriate. Professor Humphry, Dr Hughes and Dr Maharaj each spoke to the advantages of a patient in early labour remaining at home where she is in comfortable surroundings. Professor Humphry and Dr Hughes explained that earlier admission can increase the chances of unnecessary interventions including the use of epidural, assisted vaginal birth and caesarean section. Professor Humphry explained that it is not possible to predict how long active (or established) labour will last; it can be anything between 12 – 24 hours for first-time mothers. She explained that if she had taken the call and was under the impression that the liquor was clear, fetal movements were felt and the fetal head was engaged, she too would have advised that Ms Bosch remain at home and call back if contractions became more frequent or if she required care; while the spontaneous rupture of membranes is a sign of imminent labour, it is only a sign of active (or established) labour if there are other signs present, like regular contractions. Once a women is in active labour, then, assuming she intends to give birth in hospital, she should be advised to attend to allow her to be assessed and to ensure access to any necessary interventions.

[467] **Conclusion 34:** Having reviewed Mrs Bosch's notes, midwife Stark believed Mira-Belle to be in a cephalic position. The advice to remain at home and not attend immediately had been reasonable in light of that knowledge. Had Mrs Bosch been advised to attend and had the breech presentation been detected, or had Mrs Bosch delivered Mira-Belle in hospital, it is likely that Mira-Belle would have survived.

The signs of established or active labour

[468] Professor Humphry considered the advice to stay at home, based on the assessment was appropriate, but noted that Mrs Bosch should have been told the signs of established labour.

[469] There appeared to be a variety of ways in which several witnesses described the signs of active or established labour: Dr Hughes suggested regular contractions no more than 5 minutes apart with at least 2 in every 10 minute period, each contraction lasting at least 30 seconds; Professor Humphry suggested moderate to strong contractions, every 2 – 3 minutes or 3 in a 10 minute period and each lasting 40 seconds or more; midwife Nicolson described 3 – 4 in a 10 minute period, occurring every 10 minutes with each lasting 40 seconds or more; midwife Tannahill described contractions every 2 – 3 minutes lasting 60 seconds; midwife Stark described a contraction every 2 – 3 or 3 – 4 minutes, each lasting around 60 seconds and persisting for a couple of hours; the SAER review team considered midwife Stark to have correctly informed Mrs Bosch that she would know she was in active labour when uterine activity was 3 – 4 in a 10 minute period and when the contraction was 'taking her breath away'.

[470] Dr Hughes and Professor Humphry explained that there were no "no hard and fast rules" and that clinical judgment was required to determine whether labour had progressed sufficiently to advise a woman to attend hospital. Whether the woman was comfortable at home, was coping with the pain, was able to breathe through, or talk through her contractions and any existing complications in her pregnancy were all factors referred to by various witnesses as being relevant to that judgment.

[471] The Inquiry explored whether written material could be provided to women to assist them to recognise the signs of active labour. There is no such specific information

leaflet in LHB. None of the expert witnesses advocated for one. Ms Smith KC submitted that such advice requires to be tailored to each particular woman and her circumstances. Several witnesses spoke to verbal explanations, which can be more effective, particularly as information is repeated, a patient is able to ask questions, or a "teach back" method to ensure understanding can be used. By providing too much information in writing, women may be discouraged from seeking assistance from midwives. Various practitioners explained the signs of active labour differently; Ms Smith KC suggested that explaining active labour in different ways caters for all people.

[472] It was clear from the evidence of several practitioners that routinely, women were advised to call back if they are "not coping". That might appear to be too generic. I accept Ms Smith's submission, however, that such advice required to be considered in context. The midwives made it clear that this was intended as a "safety valve" for women who may be in a great deal of pain, but had not reached regular contractions; it was not a threshold to be reached. Professor Humphry agreed that the "not coping" advice was part of a broader range of advice provided. The Ready Steady Baby resource (see paragraph [476], page 63 of the hardcopy version) explains that "there is no such thing as a typical labour and birth – they're all different. Labour can start very quickly or it can seem like it takes ages. Sometimes it can start without you realising it." I note that this publication too, does not give specific advice on contractions at the differing stages of labour, noting "every women's experience of contractions is different, as the intensity can vary a lot. At the start of the first stage, contractions may last about 40 – 50 seconds and you may get one every 10 minutes. By the end, each is likely to last over a minute and there will probably be less than a minute between them" (page 164).

[473] I am satisfied that, based on the evidence of several midwives in respect of each chapter of this Inquiry, the approach to triaging patients was not to discourage attendance at hospital. To the contrary, women were encouraged to call back and seek further advice, particularly if they were worried or distressed.

[474] I understand Mr and Mrs Bosch's desire for clarity during the call on 30 June. Their anxiety was palpable. Mrs Bosch described how she frantically searched through the written information previously provided to her to ascertain what stage of labour she was experiencing. It might have helped had she been signposted to the particular sections in Ready Steady Baby (assuming that publication was made available to her) or other written information previously provided to Mrs Bosch during her pregnancy.

[475] **Conclusion 35:** While the advice was not provided in written form, it was clear from the evidence of midwives Stark, Nicolson, Tannahill and from Mrs Bosch that advice on the frequency and intensity of contractions which might indicate established or active labour was provided to Mrs Bosch.

[476] Ms Smith KC submitted that while the Inquiry did not have the exact information provided to Mrs Bosch, a representative selection of the material which is now available to pregnant women in Lanarkshire was provided to the Inquiry. NHS Lanarkshire lodged a "Patient Information Sharing Tool" dated January 2023 which guides healthcare professionals to resources available to support and improve maternal and child health across NHS Lanarkshire. Those resources include "Ready, Steady, Baby!" a publication by Public Health Scotland (version 3. 2022) which provides comprehensive information on all stages of pregnancy and is offered to all pregnant women either in hard copy form or via a maternity app (BadgerNotes). A variety of leaflets are made available for specific issues. In addition, in January 2023, NHS Lanarkshire produced "About Induction of Labour", a leaflet for patients

which explains the process of induction of labour and why it might be offered. That leaflet contains a section dealing with induction of labour following prelabour rupture of membranes after 37+0 weeks gestation and provides:

> "Sometimes, the first sign that your baby is coming is when your waters break. This is when the fluid or liquor that normally surrounds your baby in the womb starts to leak… you should contact maternity triage for advice and they will usually ask you to come in for review.
>
> If the fluid is green or blood-stained, you need to come to hospital straight away. Most women will go on to have contractions and go into labour within 24 hours of waters breaking, but sometimes, induction of labour will be recommended.
>
> When you come to the hospital, we will assess you and confirm whether your waters have broken. If it is a false alarm, you will be allowed home again. If your waters have broken and all is well with you and your baby, the maternity team will discuss options with you. If you are not in active labour, you will be offered the choice of going home, with an appointment to return in 24 hours for admission and induction of labour.
>
> However, if you do not want to go home to await events, you could remain in the hospital and the induction process commenced when possible…"

[477] It would appear that further more detailed information is now available to those women who might find themselves in a situation similar to Mrs Bosch.

The attendance of the ambulance crew

[478] Mr Bosch explained that his wife's contractions were irregular and they were uncertain as to when to attend hospital. He described the disbelief and shock they experienced when they realised that Mira-Belle's feet had been delivered first.

[479] Paramedics Paul Coyne and Jane Muir were the first to arrive at the scene. They were both experienced paramedics. Paramedic Coyle had been made aware that they were attending a possible breech birth. He had no prior experience of a breech delivery. Ambulance Technicians and Ambulance Paramedics within SAS use the guidelines created

by the JRCALC (the Joint Royal College Ambulance Liaison Committee). Paramedic Coyle accessed the JRCALC 2019 Supplementary Guidelines-Maternity Care Section 5, which stated that where a breech birth is imminent: a request should be made for a midwife, if available; the women should be positioned on the edge of the bed or trolley on all fours; and thereafter, the paramedics should take a "hands off" approach by allowing the breech to descend spontaneously with maternal pushing; the guidance counselled against touching the baby or handling the umbilical cord. If a delay occurred during the delivery, the following guidance was provided:

IF DELAY OCCURS DURING THE BIRTH:

LEGS: apply gentle pressure behind the baby's knee
ARMS: gently rotate the baby's pelvis 90 degrees to aid birth of the first arm – rotate the baby's body in the opposite direction if required to birth the second arm – allow the baby's body to hang unassisted
HEAD: support the baby with one arm and use the other hand to aid flexion of the back of the baby's head while delivering baby

DO NOT PULL ON THE BABY
DO NOT CLAMP AND CUT THE UMBILICAL CORD DURING THE BIRTH

[480] They found Mrs Bosch in an "all fours" position with Mira-Belle delivered to the knees. As the baby was presenting and the delivery was progressing, they determined the best course of action was to allow the baby to be delivered naturally. The delivery then stopped progressing. Paramedic Donaldson contacted the Scottish Ambulance Service Control Room and asked for the number of an on-call midwife or emergency obstetrician and asked whether a midwife could attend. The control room advised that there was no such service and explained they could only assist by sending another ambulance crew. Paramedic Donaldson explained that during the Covid-19 pandemic, emergency numbers for local hospitals had been provided to ambulance crews. Paramedics Coyle and Donaldson were based in Livingston; their local hospital was St John's, Livingston.

Paramedic Donaldson was aware that if she contacted St John's she would be connected to an accident and emergency consultant for a fast and direct service. To avoid the delay of locating the number of a hospital local to the scene, she contacted St John's. The accident and emergency consultant and a colleague from obstetrics attended a three way call with the paramedics. They instructed certain procedures be performed to aid delivery; the paramedics did so unsuccessfully. Paramedic Donaldson then searched Mrs Bosch's maternity notes and found a number for the maternity triage unit at Wishaw General Hospital. The call was answered after five attempts to make contact. Upon making contact with a midwife and following her advice, Mira-Belle's arms and shoulders were delivered.

[481] The paramedics then spoke with Dr Colin Malcolm, consultant obstetrician. Paragraphs [377] - [379] of the summary of the facts sets out what then occurred. Dr Malcolm was experienced in vaginal breech deliveries. He instructed that Mira-Belle be rotated so that her back was facing the ceiling. During his evidence, he candidly accepted and expressed his regret that he had not taken account of Mrs Bosch's position and had assumed she was on her back; he had been unaware that she was "on all fours" which he described as a sub-optimal position for delivery. Had he been aware, he would have asked the paramedics to change Mrs Bosch's position before attempting the Mauriceau-Smellie-Veit manoeuvre, rather than rotate Mira-Belle. The paramedics attempted unsuccessfully to carry out the Mauriceau-Smellie-Veit manoeuvre. Mrs Bosch was unable to tolerate the ongoing pain. Dr Malcolm was aware that the situation had been ongoing for some time. He had no prior experience of providing a paramedic with instructions on an unplanned vaginal delivery. Throughout the discussion, he repeatedly advised that Mrs Bosch required to be transported to hospital as soon as possible. He then spoke privately to paramedic Donaldson and explained that the only chance of survival for Mira-Belle was for her to be

delivered in hospital. Paramedic Donaldson explained the challenges of moving Mrs Bosch; however, Dr Malcolm insisted they do so.

[482] Understandably, Mr and Mrs Bosch were critical of the actions of the paramedics. Mr Bosch described what he considered to be indecision, a lack of creative thinking and an unwarranted adherence to a "hands off approach".

[483] A number of issues arise in relation to this chapter of evidence. However, the evidence requires to be assessed in light of the views expressed by Professor Stenson (see paragraphs [392] - [398]: Mira-Belle's death was attributable solely to intrapartum asphyxia, explained by the development of umbilical cord obstruction during delivery. This was likely to have occurred sometime between 2303 hours (the time of arrival of the first ambulance crew at the family home) and delivery at 0029 hours. At least 45 minutes of this period of time was unavoidable delay. If a large amount of the remaining time could have been saved, it is possible, but not probable, that Mira-Belle's death may have been avoided; on a balance of probabilities, had the remaining time been saved, Mira-Belle's death was unlikely to have been avoided. Ms Gillespie KC submitted that while it was reasonable to conclude that some of the time spent by the paramedics in the Bosch home might have been avoided, by for example, access to immediate obstetric advice, it could not be concluded that the period of unavoidable delay would have increased the prospects of survival. I accept that her submission is well-founded.

[484] Mark Newton is a consultant paramedic and head of service urgent care for the North West Ambulance Service NHS Trust. He provided an expert report which was admitted into evidence without the necessity of being spoken to. Dr Hughes and Professor Humphry, while not experts in paramedic care, also provided their views which largely

accorded with those expressed by Mr Newton. Having considered this chapter of evidence, I make the following conclusions.

[485] First, the evidence supports the conclusion that it was highly unlikely that a paramedic would have prior experience of, or the skills to manage, a vaginal delivery of a baby in a breech position. Dr Hughes explained that vaginal breech deliveries are very unusual, even in hospitals, and are carried out by experienced and appropriately trained obstetricians; paramedics could not be expected to be experts in the manoeuvres that might be required. Professor Humphry agreed that these would be "rare situations" for paramedics to manage. Mr Newton explained that whilst ambulance clinicians are called upon to transport mothers in normal labour on a frequent basis, their experience of actual delivery without the support of a midwife is quite rare. As a result, many paramedics will either not have been involved in delivery of a baby or will have very limited experience of managing delivery, particularly delivery complications. He expressed the opinion that it is highly unlikely that a paramedic will attend an out of hospital birth with significant complications, with only a 1.3% probability of being exposed to breech delivery. He explained:

> "It is unlikely, on the balance of probabilities, that any of the Scottish Ambulance Service clinicians will have had a level of training, or practical experience of managing breech birth. Indeed, evidence suggests that the prevalence of breech birth in the community without the presence of a midwife, is so low that many paramedics may not be faced with this type of emergency in their career."

[486] Second, the evidence supports the conclusion that the paramedics acted reasonably in seeking to deliver Mira-Belle without transporting Mrs Bosch to hospital. When they arrived, Mira-Belle had been delivered up to her knees. The delivery progressed to her torso. The paramedics reasonably assumed that Mira-Belle would be delivered without intervention. They chose not to transport Mrs Bosch while she was delivering Mira-Belle

and explained the risks of doing so, which included the possibility of delivery en route to the ambulance while Mrs Bosch made her way down stairs. Mr Newton concluded "it is my opinion that [the paramedics'] decision to stay on scene was reasonable in the context of a patient who was in active labour, with an incomplete delivery, and with difficult egress from the building to the ambulance".

[487] Third, the paramedics acted reasonably in following the guidelines for the assessment and management of a breech birth provided by the Joint Royal College Ambulance Liaison Committee (JRCALC) (2019 Supplementary Guidelines-Maternity Care Sect 5). Mr Newton described the actions of the paramedics as "compliant" with the guidance. He explained that the guidelines recognised that a breech birth should be managed by transfer to the nearest obstetric unit (if the birth is not in progress). If the birth is in progress, a midwife should be requested immediately. If a midwife is not present for a breech delivery, paramedics are encouraged to 'allow the breech to descend spontaneously with maternal pushing and maintain a "hands off' position during the birth.' Mr Newton suggested that the guidance on additional manoeuvres if delays occurred during the birth were for ambulance technicians trained in the management of breech delivery. He considered the paramedics to have acted correctly when it became clear that they required assistance; the paramedics contacted their control room, St John's Hospital and finally, the maternity triage unit at Wishaw General Hospital.

[488] Fourth, the paramedics followed the guidance which required Mrs Bosch to be in an "all fours" position for the delivery of a breech birth. Dr Malcolm assumed that Mrs Bosch was in a semi-incumbent position. The paramedics, who had no previous training or experience of breech deliveries and were following the JRCALC guidance, could not

reasonably have been expected to be aware that Mrs Bosch's position might have affected the advice provided by Dr Malcolm.

[489] Fifth, the evidence supports the conclusion there had been no reasonable alternative method for transporting Mrs Bosch quickly to the ambulance. Understandably, Mr and Mrs Bosch were critical of the manner in which Mrs Bosch was moved to the ambulance. Undoubtedly, it was undignified, distressing, painful and deeply traumatic; however, it is also the case, as paramedic Coyle explained, that he and his colleagues had required to improvise. Paramedic Coyle explained the various methods which were considered and quickly discounted in light of the urgency of the situation: a stretcher would have been too heavy, may have required more personnel and would have created risks for Mrs Bosch and Mira-Belle when it was lifted over banisters; Mrs Bosch could not be seated in any form of chair, because of Mira-Belle's position. They decided to use a blanket as a sling to protect Mira-Belle and to walk Mrs Bosch, flanked by four ambulance crew members, to the bottom of the stairs and thereafter place her on a trolley.

[490] As explained by Mr Newton:

> " . . stairs needed to be negotiated by the patient and the crew with a neonate that was fully externalised other than the head…with regards to egress from the property, the ambulance crew had several options available to them. In the absence of a lift, a trolley could not be brought to the location of the patient. It is not really possible for a carry chair to be used due to the incomplete delivery and partial externalisation of the baby. It is also risky for a carry chair to be used if a mother is actively contracting…whilst an extremely difficult manoeuvre, it was necessary to walk the patient to the ambulance providing support for the baby, to the best of their ability".

[491] I note that following Mira-Belle's death, SAS established a working group to consider the safe moving and handling of patients in active labour. The events involving Mrs Bosch were re-enacted with various items of equipment to assess whether another method of transporting Mrs Bosch had been available and to consider how such patients could be

moved in the future. It concluded that walking a patient down to an ambulance was the "only sensible solution".

[492] **Conclusion 36:** The evidence supports the conclusions that: it is highly unlikely that a paramedic would have prior experience of, or the skills to manage a vaginal delivery of a baby in a breech position; the paramedics acted reasonably in seeking to deliver Mira-Belle without transporting Mrs Bosch to hospital; the paramedics acted reasonably in following the guidelines for the assessment and management of a breech birth provided by the Joint Royal College Ambulance Liaison Committee (JRCALC) (2019 Supplementary Guidelines-Maternity Care Sect 5), including in relation to positioning Mrs Bosch in the "all fours" position; and there had been no reasonable alternative method to walking Mrs Bosch out of her home and down stairs before transporting her to hospital.

Precautions which could reasonably have been taken

Scheduling earlier induction of labour

[493] Ms Gillespie KC submitted that a precaution that might realistically have avoided Mira-Belle's death was for Mrs Bosch to have been admitted to Wishaw General Hospital for augmentation of her labour around 24 hours after the spontaneous rupture of membranes. In the joint note of disputed issues, the parties also invited the Inquiry to consider this matter.

[494] Mrs Bosch reported experiencing spontaneous rupture of membranes at 1600 hours on 30 June 2021. She was assessed by midwife Tannahill at around 2145 hours on 30 June 2021. She was discharged home on 30 June 2021 with an appointment to attend for induction of labour on 2 July 2021 at 0900 hours, 41 hours after the rupture of her membranes.

[495] Midwife Tannahill did not consider that she had any other option but to follow the LHB guidelines by booking an induction appointment through a co-ordinator. Mrs Bosch explained that she was provided with a date for induction and told to call triage if things changed; there were no other options provided to her.

[496] At the time, the NHS Lanarkshire Guideline for the management of Pre-Labour Rupture of the Membranes at Term, (published in September 2020, effective in December 2020) ("the Lanarkshire Guideline"), instructed midwives to confirm the diagnosis of rupture of membranes and to perform abdominal palpation to exclude a breech presentation. The guideline specified that routine ultrasound scans should not be ordered as these too are unreliable. The guideline advised staff to:

"1. Wait for at least 24 hours after prelabour rupture of the membranes has occurred…
2. The woman can stay at home to await the spontaneous onset of labour, or for her date and time of induction of labour.

3. After at least 24 hours have elapsed from the time of rupture of the membranes **augmentation of labour** should be performed.

4. Timing of augmentation of labour
This is the same for primiparae and miltiparae.
(a) Count 24 hours from the time of prelabour rupture of the membranes (NEW NICE)
(b) Arrange augmentation of labour for 0900 on the morning after the 24 hours have elapsed."

[497] The reference to (NEW NICE) is a reference to the National Institute for Clinical Excellence Guideline "Intrapartum Care for Healthy Women and Babies" published in 2014 and updated in 2017 ("the NICE 2014 Guideline"). It recommends that healthcare professionals should:

"1.11.3 Advise women presenting with prelabour rupture of membranes at term that:
- the risk of serious neonatal infection is 1%, rather than 0.5% for women with intact membranes

- 60% of women with prelabour rupture of the membranes will go into labour within 24 hours
- Induction of labour is appropriate approximately 24 hours after rupture of the membranes"

[498] The NICE 2014 Guideline further recommends that healthcare professionals should:

> "1.11.5 Assess fetal movement and heart rate at initial contact and then every 24 hours after rupture of the membranes while the woman is not in labour, and advise the woman to report immediately any decrease in fetal movements.
> 1.11.6 If labour has not started 24 hours after rupture of the membranes, advise the woman to give birth where there is access to neonatal services and to stay in hospital for at least 12 hours after the birth."

[499] In her report, Dr Hughes noted that LHB had interpreted the NICE 2014 Guideline as "meaning that induction should always be offered at 9am, after at least 24 hours have passed since rupture of membranes. This means that the interval (if for example rupture of membranes occurs at 10am) could be as much as 47 hours". In her opinion:

> "If induction had been offered to Ms Bosch 24 hours after rupture of membranes she would have been admitted to hospital at around 4pm on 1 July approximately 7 hours before the baby's legs were in fact delivered. The breech presentation might have been detected in labour. If it had not been detected before the delivery of the legs, staff skilled in vaginal breech delivery would have been immediately available to deliver the baby. This would almost certainly have resulted in the survival of the baby."

[500] During her evidence, Dr Hughes explained that after admission, had Mrs Bosch's labour commenced naturally before the scheduled induction, there would have been an opportunity to detect Mira-Belle's breech presentation upon a vaginal examination to assess the progress of labour. At that stage, options for safe delivery, including a caesarean section or a vaginal delivery with obstetricians on hand would have been discussed. Had the breech presentation not be detected prior to delivery, when Mira-Belle's presentation became clear during delivery (whether upon induced labour or spontaneous labour), Mrs Bosch would have been in the right place for immediate skilled intervention.

[501] Dr Hughes explained that pre-labour spontaneous rupture of membranes occurs in approximately 1 in 10 pregnancies. The membrane acts as a barrier to infections from the vagina. Once ruptured, there exists a risk of infection. That risk of infection for the mother and the baby increases with the passage of time, because after spontaneous rupture of membranes, in most cases, labour tends to commence naturally without intervention within 24 hours. The NICE 2014 Guidelines recommend waiting 24 hours before induction. After 24 hours, the benefits of induction outweigh the risks in light of the diminishing prospect of spontaneous labour. She also suggested that waiting longer than 24 hours might allow "unexpected things to happen".

[502] Dr Maharaj is the chair of the Maternity Clinical Effectiveness Group for LHB. The Group has several remits including the development and updating of maternity guidelines for LHB. Its membership is multi-disciplinary and includes consultants and senior midwives. Dr Maharaj explained that guidelines produced by the group are reviewed every three years, but can be reviewed sooner, if there is a clinical need. Such a need might arise by the publication of national guidelines or as a result of learning from an adverse event. Dr Maharaj was the author of the Lanarkshire Guideline for the management of Pre-Labour Rupture of the Membranes at Term. He explained that local guidelines reflected local situations and took account of factors such as staffing and safety to consider what was a deliverable level of service; different local health boards have different expertise and levels of staff.

[503] Dr Maharaj explained that there was a balance to be struck; it was not uncommon for membranes to rupture spontaneously before labour. Some risk factors might indicate a need for immediate delivery; however, where the risks are lower and no medical intervention is necessary, it is generally preferable to allow the labour to progress naturally (an expectant

philosophy or management). He agreed with Dr Hughes that the majority of women will go into labour within 24 hours of spontaneous rupture of membranes. A policy of inducing labour for all women who experience spontaneous rupture of membranes would, therefore, involve the introduction of unnecessary medical interventions for most women. The Lanarkshire Guideline notes "with an expectant philosophy 86% of women will go into spontaneous labour within 24 hours, 91% within 48 hours and 94% within 96 hours."

[504] When drafting the Lanarkshire Guideline, Dr Maharaj and the Maternity Clinical Effectiveness Group had regard to the NICE 2014 Guideline. It recommended induction of labour "approximately 24 hours" after rupture of membranes. The use of the word "approximately" allowed local health boards to adapt the NICE 2014 Guideline to fit local staffing, resources and circumstances. Dr Maharaj explained that the Lanarkshire Guideline instructed staff to arrange augmentation of labour for 0900 hours on the morning after 24 hours have elapsed to reflect staffing and resources; if a woman was admitted at 1 or 2am, for example, the maternity unit would be staffed for emergencies and not elective induction of labour. By 9am, the unit would be staffed adequately for elective inductions to be performed safely. The induction process required one to one care. It was not reasonable to require a woman to be admitted earlier if the induction could not be managed by appropriate staff. Professor Humphry noted that a practice of arranging induction of labour at 9am was not unusual for maternity services in the UK. She explained that this was to the benefit of patients and the service; services could be planned and the woman would be well rested to commence augmentation, if necessary. She accepted that in that event, a women might require to wait for longer than 24 hours – potentially up to 47 hours; however, she considered in that event, the woman should be reviewed after 24 hours for signs of infection and labour. She referred to the NICE 2014 Guideline which envisaged a discussion with the

woman about options for care. The options are to await spontaneous labour with either self-monitoring or if beyond 24 hours after the rupture of membranes, clinical monitoring or induced or augmented labour. She explained that the NICE 2014 Guidelines recommended a review in 24 hours if labour had not commenced. Dr Maharaj did not consider a review to be useful if nothing has changed. No such review was offered or discussed with Mrs Bosch. Midwife Tannahill considered the only option available to her had been to book an appointment for induction of labour.

[505] Dr Hughes accepted that there were benefits in avoiding admitting women late at night or early in the morning. She explained, however, that other maternity units chose to interpret the NICE 2014 Guidelines differently; in Lothian Health Board (where she worked), women were admitted in the afternoon and evening. She suggested that the LHB 2020 Guideline could have allowed admissions between 8am and 9pm, 24 hours after rupture of membranes rather than introducing a delay of up to 47 hours.

[506] In my judgment, had Mrs Bosch been advised to attend for induction in accordance with the recommendations of the NICE 2014 Guideline, she would have attended during the working day at around 1600 hours on 1 July 2021; the concerns expressed by Dr Maharaj and reflected in the Lanarkshire Guideline relating to resourcing and staffing issues are unlikely to have been relevant in the circumstances of this case.

[507] During his evidence, Dr Maharaj explained that the LHB 2020 Guidelines catered for the majority of cases, but were not "set in stone"; thus for example, if a woman reported spontaneous rupture of membranes at 10am, she would be asked to return the following day at 10am. I understood from his evidence that the guidelines were not prescriptive and that staff could apply their own judgment by booking an induction earlier than 9am on the morning after 24 hours had elapsed following the spontaneous rupture of membranes. I

note however, that the language of the guideline is capable of being construed as prescriptive and there was no evidence before the Inquiry to suggest that staff considered there to be any room for discretion on their part. Indeed, midwife Tannahill did not consider that she had any option other than to offer Mrs Bosch an appointment to return for induction at 9am on 2 July 2021. Mrs Bosch described herself as having "little or no agency" and explained that there was little consideration of her anxieties and wishes.

[508] On behalf of LHB, Ms Smith KC submitted that the Lanarkshire Guideline was not capable of criticism; the expert evidence broadly supported the need to consider local needs and resources when applying the NICE 2014 Guideline. The NICE 2014 Guideline was not binding. The interpretation of the Lanarkshire Guideline had led to a terrible outcome in this case, but it did not necessarily follow that the guideline was inappropriate; it was guidance only and clinical judgement is always necessary to assess when a patient is induced. I accept that the NICE Guideline is not binding, however LHB had chosen to draft its Guideline by reference to the NICE Guideline and had accepted the approach recommended by it. I accepted the evidence of Professor Humphry, Dr Hughes and Dr Maharaj that the NICE 2014 Guidelines recognised the need for flexibility in local arrangements; however, the interpretation of the NICE 2020 Guidelines by LHB had created a situation whereby a woman presenting with spontaneous rupture of membranes could wait up to 47 hours for induction of labour with no further review, no apparent option to remain in hospital and no apparent option of attending earlier than 9am on the morning after 24 hours from rupture of membranes had elapsed. I was not satisfied that the guideline appropriately catered for the period after 24 hours but before 9am when staffing might in fact be available during normal working hours. That might not have been the intention of the drafters; Dr Maharaj explained that the guideline was not prescriptive.

However, it was capable of being interpreted as prescriptive. Midwife Tannahill interpreted it as such and was not challenged on her understanding. There was no evidence before the Inquiry that she had been incorrect to do so. Indeed, I note that the SAER review team did not criticise the decision to offer an appointment at 9am on 2 July 2021 nor suggest that staff might have used a discretion or their clinical judgment to book an earlier appointment. The SAER report states that the review team considered the management plan made for Mrs Bosch on 30 June and found "that it was appropriate and in line with local guidelines". It can reasonably be inferred that the members of the review team also considered that midwife Tannahill (or the booking team who provided the details of the appointment) had correctly interpreted and applied the guideline. Mrs Bosch accepted the appointment provided. I am satisfied that, had Mrs Bosch been provided with an earlier appointment, she would have attended; she presented as an engaged patient who was keen to seek out and comply with medical advice.

[509] **Conclusion 37:** A precaution which could reasonably have been taken and had it been taken, might realistically have resulted in Mira-Belle's death being avoided, was for Mrs Bosch to have been advised to attend Wishaw General Hospital for induction of labour approximately 24 hours after spontaneous rupture of membranes, namely on 1 July 2021 at anytime after 4pm, or for her to have been offered the option of admission on 30 June 2021 and for her to have acted upon that advice or accepted that offer. In a hospital environment, Mira-Belle's breech presentation is likely to have been detected prior to, or during, delivery and Mrs Bosch would have received immediate access to skilled clinicians.

[510] Since Mira-Belle's death, the guidelines have changed. Dr Maharaj explained that one of the reasons for issuing updated guidelines had been the learning outcomes from Mira-Belle's death. The new guidelines no longer stipulate that women should be admitted

at 9am on the morning after 24 hours from the rupture of membranes have elapsed. I note that the guidelines also instruct midwives to be aware of "a high head" upon abdominal palpation. The "NHS Lanarkshire Guideline for the management of Pre-Labour Rupture of the Membranes at Term" (the new Lanarkshire Guideline") issued in September 2022 now states:

> "1. Offer women with confirmed prelabour rupture of membranes >37 weeks the following choice:
> a. Expectant management for up to 24 hours. The women can stay at home during this time, to await spontaneous labour, or her date and time of induction of labour.
> b. Induction of labour as soon as possible. If the women chooses this option, she should be admitted to the antenatal ward.
> c. Expectant management >24 hours. Discuss options for monitoring and birth with the women and respect her decision.
> . . . . .
> 5. If the women chooses expectant management for up to 24 hours, arrange admission to antenatal ward for 24 hours after the membranes ruptured."

[511] The new guideline also reflects the content of a further guideline issued by NICE. The NICE Inducing Labour Guideline was published in November 2021. It also recommends that women with pre-labour rupture of membranes at term should be offered a choice of expectant management for up to 24 hours or induction as soon as possible. It directs that healthcare professionals should discuss the benefits and risks of these options with the women and take account of her individual circumstances and preferences. If she chooses to wait for spontaneous labour over 24 hours after rupture of membranes, her decision should be respected.

[512] The SAER team recommended that LHB review its communications with patients "about SROM [spontaneous rupture of membranes], the risks and benefits if [sic] intervention and to signpost parents to latent phase of labour guidance in 'Ready, Steady, Baby' and national information". Ms Clark explained in her supplementary affidavit that a

short life working group was commissioned to produce a patient leaflet for pre-labour rupture of membranes and latent phase of labour. They decided not to place the leaflet on BadgerNet (which I take to be a reference to the app version, BadgerNotes, available to all expectant mothers who choose to access their maternity notes), as it would not be able to take account of clinical variables and complications and might have the unintended consequence of providing generic advice that was not appropriate in complicated pregnancies. Instead, the leaflet is available in hard copy form and given to those who fit the criteria.

[513] The leaflet produced by the working group was made available to the Inquiry. It is entitled "NHS Lanarkshire, About Induction of Labour" and was published in January 2023. Of relevance to this Inquiry, page 4 of the leaflet contains the following information:

> "When you come to hospital, we will assess you and confirm whether your waters have broken. If it is a false alarm, you will be allowed home again. If your waters have broken and all is well with you and your baby, the maternity team will discuss options with you. If you are not in active labour, you will be offered the choice of going home, with an appointment to return in 24 hours for admission and induction of labour.
> However, if you do not wish to go home to await events, you could remain in the hospital and the induction process commenced when possible. The maternity team will discuss your individualised plan of care with you for your agreement on what happens next."

[514] It is commendable that LHB have not awaited the outcome of this Inquiry to learn from Mira-Belle's death and to make changes both to their guidelines and to how they communicate with women who report spontaneous rupture of membranes at term. Having regard to the changes now introduced, I make no further recommendations on these matters.

Advise to remain in hospital following attendance at approximately 2139 hours on 30 June 2021

[515] In terms of the joint note of disputed issues, the Inquiry was invited to consider whether a precaution which could reasonably have been taken and which might realistically have prevented Mira-Belle's death would have been for midwife Tannahill to have advised Mrs Bosch to remain in hospital after her attendance at the maternity triage unit on 30 June 2021.

[516] I am satisfied that midwife Tannahill had correctly concluded, following her assessment, that Mrs Bosch could be discharged. Ms Smith KC submitted that midwife Tannahill had applied: her clinical knowledge in taking into account that women are often more comfortable at home when awaiting for either spontaneous labour or augmentation; her knowledge that the hospital is not well staffed at night; and her clinical findings regarding the stage of labour that Mrs Bosch was at, including assessment of the risk of cord prolapse.

[517] I make two observations in relation to this submissions. First, the evidence in relation to staffing at night related to staffing for the purposes of performing an induction or augmentation of labour; not for expectant management nor for awaiting an induction as soon as it could be arranged. There was no indication that offering a woman the option of admission while she awaited induction or augmentation of labour gave rise to significant resourcing issues. Second, there was no evidence that midwife Tannahill had considered Mrs Bosch's individual circumstances and whether she was more comfortable at home; she had not offered her an option to remain, because she did not understand that she was in a position to offer an option to remain.

[518] While the matter was not explored in detail in the evidence before the Inquiry, I note that the SAER team offered an apology to Mrs Bosch for making an assumption that she wished to return home after confirmation of rupture of membranes on 30 June 2021. That

accords with the evidence of midwife Tannahill and Mrs Bosch that "no other option" was available or discussed; an appointment for induction was booked in terms of the Lanarkshire Guidelines.

[519] The revised guidelines make it clear that such an option to remain and for induction to commence when possible, should be offered and discussed in such circumstances. As Ms Smith KC submitted, the new guideline puts the mother at the centre of the decision; LHB is seeking to account better for patient choice within the new guidelines. In my judgment, there was no reasonable justification for the apparent exclusion of such patient choice in the drafting of the Lanarkshire Guidelines or the manner in which they were interpreted by midwife Tannahill.

[520] I do not conclude that Mrs Bosch should have been advised to remain in hospital. She ought to have been offered the option of doing so.

[521] **Conclusion 38**: A precaution which could reasonably have been taken and had it been taken, might realistically have resulted in Mira-Belle's death being avoided, was for Mrs Bosch to have been given the option of remaining in hospital following the spontaneous rupture of membranes to await induction when possible, and for her to have exercised that option.

Advice to attend at 1429 hours on 1 July 2021

[522] Having regard to Conclusion 34, as Mira-Belle was believed by midwife Stark to have been in a cephalic position and the advice to remain at home was reasonable in those circumstances, advice to attend hospital was not a precaution which could reasonably have been taken.

The attendance of a midwife, obstetrician or other clinicians to assist with Mira-Belle's delivery

[523] Dr Malcolm explained that the paramedics asked repeatedly whether a team could be dispatched from the nearest hospital to aid Mira-Belle's delivery. Dr Malcolm explained that this was neither feasible nor desirable as it would have caused further delay. Professor Humphry and Dr Hughes agreed. First, a team of clinicians would have been required: an obstetrician to deliver the baby; a neo-natal team to care for a severely hypoxic newborn; and a midwife to care for Mrs Bosch would have been required. Second, it would have taken considerable time to assemble all the necessary drugs and equipment. Third, those attending would have required to arrange transport and locate the property. Fourth, removing staff from the hospital would have risked compromising the care of other patients; when he took the call, Dr Malcolm had been the only on-call consultant obstetrician at Wishaw General Hospital. Dr Hughes agreed that Dr Malcolm had been correct to advise urgent hospital transfer.

[524] **Conclusion 39:** I am satisfied on a balance of probabilities that the attendance of a team of clinicians at the Bosch home was not a precaution which could reasonably have been taken, nor that had it been taken, it might realistically have prevented Mira-Belle's death. Having regard to Professor Stenson's opinion on the cause and mechanism of Mira-Belle's death, it is likely that by the time any clinical team had arrived, the prospects for Mira-Belle would have been very poor indeed.

The delay attributable to attempts to obtain advice

[525] The JRCALC Guidelines envisaged that paramedics would have access to midwifery advice; however, neither the SAS Control Centre nor the paramedics had access to contact details for midwifery or obstetric assistance or advice. There appeared to be no clear, formal lines of communication for such emergencies. The paramedics had contacted Accident and

Emergency at their own local hospital, St John's Hospital, as they had access to those contact details. The contact details for the maternity triage unit at Wishaw General Hospital were eventually obtained from Mrs Bosch's maternity notes, but it took five attempts before the paramedics call was answered. This, as Mr Newton pointed out, gave rise to additional unnecessary delay. That delay, however, is unlikely to have affected the outcome in Mira-Belle's case.

[526] Mr Newton offered the opinion that had the paramedics had access to midwifery advice and assuming that the advice had been to transfer Mrs Bosch immediately to hospital, the decision to transport Mrs Bosch could have been made around 2330 hours. The first ambulance crew arrived at 2259 hours. They required to assess the situation and then acted reasonably in allowing the delivery to progress naturally. Around 20 minutes after their arrival, they considered they required assistance and made their first phone call. Allowing some time for Mrs Bosch to be taken to the ambulance, Mr Newton suggested that the crew could have left the scene around 20 minutes earlier.

[527] Mr Bosch placed a call to Scottish Ambulance Service at 2248 hours on 1 July 2021 to seek assistance as Mira-Belle's feet had been delivered. Delivery was completed at Wishaw General Hospital at 0029 hours on 2 July, 101 minutes later. Having regard to Conclusion 25, the ability to leave the scene 20 minutes later (had contact been made immediately with a midwife or obstetrician), would not have affected the outcome.

[528] **Conclusion 40:** Having access to specialist advice on a dedicated phone line was is a precaution which might reasonably have been taken. However, the test in section 26(2)(e) is not met. Such a precaution is not one which might realistically have prevented Mira-Belle's death.

The advice to perform the Mauriceau-Smellie-Veit manoeuvre

[529] Dr Malcolm candidly accepted that he ought to have ascertained Mrs Bosch's position before giving advice. It was reasonable of him, however, to seek to assist the paramedics to deliver Mira-Belle in the first instance.

[530] Professor Humphry explained in her report:

> "It would be usual to advise the ambulance crew attending a woman in labour experiencing breech birth to transfer to a hospital for urgent access to expert and trained obstetric, anaesthetic, neonatal and midwifery care. However, given the significant time that had passed from the breech being visible to the time of the telephone call (estimated to be around 1 hour), the chances of having a live birth were extremely low and diminishing, it was appropriate, despite the lack of training and experience, to attempt to deliver the breech by instructing the ambulance crew about appropriate manoeuvres."

[531] Dr Hughes agreed that Dr Malcolm had been correct to give advice to the paramedics to aid delivery, but he should have ascertained Mrs Bosch's position before doing so. If Mrs Bosch had been in the more favourable position for delivery, it was her view that it was possible, but not probable, that the paramedics might have successfully delivered Mira-Belle; however, she considered there to be a strong chance that Mira-Belle would not have survived. Professor Stenson considered it possible, but not probable, that Mira-Belle's death might have been avoided. By the time Dr Malcolm was called upon to assist, it was already over half an hour after delivery had commenced. As Dr Hughes explained, by that stage, "it was very possible that the baby would have died even if delivered at home."

[532] **Conclusion 41:** Ascertaining Mrs Bosch's position prior to advising the paramedics to perform the Mauriceau-Smellie-Veit manoeuvre is a precaution which might reasonably have been taken. However, the test in section 26(2)(e) is not met. Such a precaution is not one which might realistically have prevented Mira-Belle's death.

Defects in any system of working

The absence of guidelines in relation to a non-engaged fetal presenting part at term

[533] The joint note of disputed issues invited the Inquiry to consider whether the absence of guidelines in relation to a non-engaged fetal presenting part at term, particularly where there is a history of breech presentation, impacted upon the management of Mira-Belle's birth. Professor Humphry had suggested that the Inquiry might consider whether local guidelines should recommend an ultrasound scan in such circumstances. Having considered the evidence presented during the Inquiry, I am satisfied that this issue is not relevant to the facts and circumstances of Mira-Belle's death (see paragraphs [433] - [434]).

[534] Similarly, Professor Humphry suggested that the absence of local guidelines which provided for an obstetrician to review a woman who presented with spontaneous rupture of membranes with an unengaged presenting part, was a defect in a system of working which contributed to Mira-Belle's death. Again, I am satisfied that the absence of such a guideline is not relevant to the facts and circumstance of Mrs Bosch's pregnancy; Mira-Belle was assessed (albeit incorrectly) as being in a cephalic position with her head engaged in the maternal pelvis. That being the case, there would have been no recourse to a local guideline of the type described by Professor Humphry. In any event, the midwives and the obstetricians explained that in such circumstances, faced with an unengaged presenting part, the advice of an obstetrician would always be sought.

The Lanarkshire Guidelines

[535] For the reasons set out in paragraphs [495] - [510], the manner in which LHB interpreted the NICE 2014 Guideline and the manner in which the healthcare professionals approached or applied the Lanarkshire Guideline, was a defect in a system of working

which contributed to Mira-Belle's death. While the drafters might have intended the exercise of some discretion or the application of clinical judgment by healthcare professionals to consider booking an induction of labour earlier than stipulated in the guideline, or to offer an option for admission for expectant management, there was no evidence that was in fact happening in practice.

[536] **Conclusion 42:** LHB's interpretation and application of the NICE 2014 Guidelines and specifically the recommendation in the Lanarkshire Guideline to wait up to 47 hours after spontaneous rupture of membranes before induction of labour was a defect in a system of working which contributed to Mira-Belle's death.

The failure to provide access to specialist advice on a dedicated telephone line

[537] A failure to provide access to specialist advice on a dedicated telephone line was a defect is a system of working. However, the test in section 26(2)(f) is not met; the defect is not one which contributed to Mira-Belle's death.

Other facts which are relevant to the circumstances of the death

The JRCALC Guidelines

[538] The SAS Serious Adverse Event Review noted a number of shortcomings in the JRCALC 2019 Supplementary Guidelines-Maternity Care Section 5. It recognised that the instruction in the guidelines to seek the attendance of a midwife was not helpful; such a service did not exist in Scotland and it would not have been appropriate for a midwife to attend to deal with a breech birth. There were contradictory messages in relation to a "hands off" approach and instructions to carry out manoeuvres to try to help the progress of delivery. It recommended that the guidelines be reviewed.

[539] Again, while there may have been shortcomings in the JRCALC guidelines, these did not constitute a defect in a system of working which contributed to Mira-Belle's death. There was no evidence before the Inquiry to support that conclusion. For completeness, however, I set out below the steps taken to address the shortcomings in the JRCALC guidance.

[540] Dr James Ward is Medical Director of the SAS. He has responsibility for clinical guidelines, governance and the standard of clinical care provided by the SAS clinicians. He explained the JRCALC is a group of clinicians from a wide range of clinical specialities, including ambulance services, who provide UK wide clinical guidance for all UK ambulance services. The SAS, alongside all UK Ambulance Services, use these guidelines. He explained that following Mira-Belle's death, he issued a National Clinical Bulletin (022/2022-23) in February 2023. It noted that the instruction to request midwife support was liable to cause confusion in an already difficult situation and the need for clarity on when a breech birth might be considered imminent. The bulletin suggested changes to the guidance in the interim pending a review by JRCALC of its guidance. SAS engaged on a national basis with the other UK Ambulance Services and its learning from the incident was beneficial on a UK-wide basis leading to a review and discussions on updated guidelines on the management of breech deliveries. National updated guidance was issued by JRCALC on 6 September 2023.

Training of paramedics for breech births

[541] None of the paramedics who attended to assist Mrs Bosch had any training in the delivery of breech births.

[542] The SAER team recommended that NHS Lanarkshire should assist any SAS training and invite local crews to obstetric emergency training sessions to support their training. Dr

Hughes agreed with the SAER recommendations that SAS staff should receive training in the management of obstetric emergencies, including breech births.

[543] Mr Newton, however, noted that while he supported the SAER recommendation, the likelihood of ambulance crews being able to put their training into practice would be limited due to "the extremely low number of breech deliveries managed in a pre-hospital environment." The SAER completed by SAS noted that obstetric incidents in SAS are relatively rare and made up just 0.5% of the total workload in 2019 and 2020.

[544] The evidence supported the conclusion that the assisted vaginal breech births are complex and only skilled and trained clinicians normally perform these. I note the intention to provide training to paramedics in LHB. Having regard to the reservations expressed by Mr Newton and the very low incidence of breech births outwith a healthcare environment, I make no further finding or recommendation.

Recommendations

Routine third trimester ultrasound scans

[545] The RCOG, External Cephalic Version and Reducing the Incidence of Term Breech Presentation, Green-Top Guideline, March 2017 recognises the absence of routine third trimester ultrasound scans. There were no guidelines placed before the Inquiry which recommended routine scans at this stage of a pregnancy. Neither Dr Hughes nor Professor Humphry advocated introducing these, noting that a third trimester scan is currently advised if there is a clinical need. Dr Hughes explained that a scan would be offered, for example, if there were concerns in relation to the presentation of a fetus upon abdominal palpation. She explained that around 30% of women are offered a scan at present in the third trimester, because of concerns about fetal growth. Scans are not routinely offered,

because they are unnecessary in most cases. Dr Hughes commented that one would require to scan a lot of women to detect the small minority of undiagnosed breech presentations. I accept that the expert evidence indicated that routine third trimester scans to detect undiagnosed breech presentations are a disproportionate or unreasonable use of limited resources.

[546] However, following Mira-Belle's death, LHB has introduced hand held scanners. Cheryl Clerk explained that these are to be utilised where there is to be induction of labour or where a woman presents after spontaneous rupture of membranes in the maternity triage unit. The purpose of the scanners is to detect the presentation of the baby in utero. She described it as a cautious, but useful measure. She explained that LHB is the first health board in Scotland to introduce these.

[547] Should these hand held scanners be capable of being used by midwifes in triage to accurately identify breech presentations upon the assessment of women reporting a spontaneous rupture of membranes, they have the potential to avoid neonatal deaths in similar circumstances to those faced by Mrs Bosch.

[548] **Recommendation 6: All health boards that provide maternity services should consider acquiring hand held ultrasound scanners to detect the presentation of the fetus when a women reports spontaneous rupture of membranes or attends for induction or augmentation of labour.**

The engagement of the presenting part

[549] Midwives Tannahill, Nicolson and Stark gave evidence that, if upon abdominal palpation, a fetal head was 4/5ths palpable, and not ballotable (not moveable), it could be described as "engaged". Midwives Tannahill and Nicolson had received training to that

effect and they understood this to be the practice at Wishaw General Hospital. Midwife Tannahill had spoken to various colleagues and senior management since Mira-Belle's death who agreed that a fetal head which was 4/5th palpable and not ballotable could be considered engaged.

[550] However, there appeared to be a divergence of opinion between the midwives, the obstetrician and the expert witnesses, as to whether a fetal head which was 4/5ths palpable (1/5th in the pelvis) could be described as not ballotable and thus "engaged".

[551] Professor Humphry explained that engagement occurs when the presenting part is fixed and immobile (not ballotable) in the brim of the pelvis; there is no movement when it is palpated. Both cephalic and breech presentations can be engaged in the brim of the pelvis.

[552] Dr Hughes explained that during palpation, the fetal head is assessed by feeling it and dividing it into nominal fifths. If a head is 5/5ths palpable the whole head can be felt in the abdomen, the head will be mobile (ballotable) and can be moved between the examining hands. A 4/5ths palpable head has 1/5th below the level of the pelvic inlet and so only 4/5th of the head can be felt in the abdomen. It may move slightly but is not freely moveable between the examining hands. A 3/5ths palpable head is further down so that only 3/5ths can be felt and so on until the head is 0/5ths palpable and the head cannot be felt on abdominal palpation. In her view, the fetal head is "engaged" when no more than 2/5ths can be felt on abdominal palpation (so 3/5ths are below the pelvic rim). She explained that the "textbook" definition of an "engaged head" is one which is 3/5ths below the pelvic brim. If the head is engaged, it is a good indication that labour will be spontaneous and if there is a spontaneous rupture of membranes, the risk of a cord prolapse is reduced.

[553] Professor Humphry explained that she considered a presenting part to be engaged if at least 50% was embedded in the pelvis. Engagement of the presenting part is determined

when only 2/5ths or 3/5ths of the presenting part are felt above the brim of the maternal pelvis. She explained that the range of 2/5ths or 3/5ths allows for a degree of subjectivity; the variables included the different sizes of fetal heads and the size of the hands of the clinician performing the palpation as the "fifths" are measured in terms of her fingers. In the professor's opinion, a head which is assessed as being 4/5ths palpable is not classified as being engaged and remains mobile at the brim of the pelvis. It was put to Professor Humphry that there was evidence before the court that some midwives had been trained to understand that if the fetal head was 4/5ths palpable and not ballotable, that is considered engaged. The professor explained that did not align with her understanding or experience. She explained that 4/5ths palpable meant that only a small component is in the brim of the maternal pelvis. The widest part of the head is at around 3/5ths and that part would not yet be in the pelvis. The measurement of fifths is not reliable nor exact. She considered the unreliability of the measurement to be borne out by what transpired in Mira-Belle's case. For those reasons, she considered that the proportion of the presenting part in the pelvis should be 2/5ths or more; in her opinion, an assessment that the presenting part is 4/5ths palpable and not ballotable is a contradictory finding, or as she described it, "it does not fit well" and was "unusual", but she conceded that it was possible.

[554] Dr Hughes also explained that the assessment of how much of the fetal head can be felt upon palpation is "not an exact science". It was a subjective assessment influenced by the size of the fetal head, the size of the hands of the clinician and by other factors such as how difficult it might be to feel for the fetal head depending upon how full the maternal bladder might be. She noted that different observers may disagree on the level of the engagement of the fetal head. She considered that a head which was 4/5ths palpable may move slightly, but would not be considered ballotable. She drew a distinction between a

fetal head being engaged and it being fixed. She would not describe such a head which was 4/5ths palpable and not ballotable as "engaged", but rather as "fixed".

[555] Dr Maharaj, a consultant obstetrician at Wishaw General Hospital, considered an assesement that a fetal head was 4/5ths palpable and not ballotable as "difficult to reconcile". He explained that it would usually be possible to move, or ballot, a head which was 4/5ths palpable, as the majority of the head is not within the pelvis and should be capable of being moved between the palpating hands. He considered that a fetal head was engaged when it was fixed in the pelvis; in his experience this occurred when it was 3/5ths palpable.

[556] Each of the expert witnesses and Dr Maharaj spoke to the subjectivity and the inherent difficulties with identifying fifths of the fetal head. Taking the measure of how much of the fetal head could be felt upon palpation in isolation, they each expressed the view that a fetal head which was 4/5ths palpable would not be described as engaged.

[557] However, each attached greater significance to the question of whether a fetal head is ballotable, rather than to the proportion of the head which is palpable. Professor Humphry explained that there was limited purpose in identifying how many parts of the presenting parts were palpable; ballotability was a more accurate assessment of engagement. Dr Maharaj explained that the measurement of fifths of the fetal head was used primarily to determine the progress of labour, rather than the question of engagement of the presenting part. The more relevant consideration for an assessment of engagement was whether the fetal head was fixed in the pelvic brim and would not move. He also considered that ballotability was an objective assessment: either the fetal head could move between the palpating hands or it could not. He considered it to be easier to assess ballotability more accurately than the proportion of the fetal head above the pelvic rim.

[558] Ms Gillespie KC submitted that there were legitimate differences of opinion about when a presenting part should be considered engaged and no purpose would be served by the Inquiry preferring one formulation over the other. That was particularly so as the assessment appeared to have a number of aims: to determine the risk of cord prolapse, to check presentation and to consider how labour was progressing. Ms Smith KC also submitted that the issue of when the fetal head can be considered "engaged" was not of central relevance to the Inquiry; the question for the Inquiry was whether midwife Tannahill had made any error in considering engagement when she examined Mrs Bosch on 30 June 2021. Ms Smith KC submitted that ballotability was the more important clinical indicator of engagement, the assessment of fifths was unreliable, subjective and prone to error; it was one clinical finding to be placed with others when considering engagement. The number of fifths palpable was not a key factor when assessing engagement and no rules or guidelines were necessary. Mr Calderwood submitted that it was clear Ms Tannahill had considered the question of ballotability.

[559] I am satisfied that midwife Tannahill had not considered the proportion of the fetal head which she assessed as palpable in isolation, but had considered and attached significance to the question of ballotability (see paragraph [444]). Exercising her clinical judgment, she had found the fetal head not ballotable.

[560] I accept that this Inquiry does not require to resolve the differences of opinion expressed by the witnesses in relation to how many fifths of the fetal head should be palpable for it to be properly described as "engaged". It was questionable whether a head which was 4/5ths palpable could be described as "engaged". The assessment of fifths is "not an exact science"; it is subjective, unreliable and inaccurate. The assessment may have greater clinical significance as an indicator of the progress of labour. The evidence before the

Inquiry clearly established that the more significant indicator of engagement of the presenting part was ballotability.

[561] The relevant entry for recording the findings of an abdominal palpation on BadgerNet contains the following prompts (the extract below is taken from the entry created by midwife Tannahill on 30 June 2021):

Fetus 1	
Presentation:	Cephalic
Lie:	Longitudinal
Engagement:	4/5
Fetal Heart Activity Checked Method:	Doppler
Fetal Heart Rate:	Heart Rate: 140

The user is not prompted to enter any details of his or her assessment of the ballotability of the presenting part. In contrast, the user *is* prompted to record the number of fifths found to be palpable from a drop down menu ranging from 0/5ths to 5/5ths. Ms Smith KC suggested that a finding on ballotability could be entered into the free text section of the entry on BadgerNet, however, there was no evidence to suggest that users of BadgerNet were routinely doing so; midwife Tannahill did not do so. In my judgment, requiring users to record their findings on the issue of ballotability is likely to be useful to others reading the entry. It would demonstrate that the clinician had considered the most significant indicator of engagement of the presenting part, and would prompt the clinician to consider that indicator carefully and separately to the question of the number of palpable fifths. Professor Humphry expressed the opinion that midwives should be directed to record such findings.

[562] **Recommendation 7: System C Healthcare Ltd and all health boards that use BadgerNet should consider how the engagement of the presenting part can be better recorded on BadgerNet and specifically, whether an assessment of ballotability should be recorded.**

A mandatory second opinion to determine presentation upon spontaneous rupture of membranes

[563] Mr Calderwood submitted that, in light of the acceptance that abdominal palpation will not detect all breech presentations, consideration may be given to whether an assessment by a single midwife upon spontaneous rupture of membranes was a defect in a system of work which contributed to Mira-Belle's death. He submitted that consideration might be given to the introduction of other safeguards, such as a mandatory second opinion, to determine the presentation of a fetus upon abdominal palpation following spontaneous rupture of membranes.

[564] None of the expert witnesses were asked for their views upon, nor did they suggest the introduction of such a measure; they did not suggest that the absence of such a measure was a defect in a system of working. Indeed, the evidence before the Inquiry would indicate that the introduction of such a measure is unlikely to assist; Mira-Belle's presentation was undiagnosed on three occasions, twice by midwife Nicolson and once by midwife Tannahill, each of whom were experienced midwives. There was no evidence to suggest that the palpations had been carried out incorrectly or inadequately or that a second opinion might have assisted. Accordingly, I make no finding in this regard.

Red Phone and Numbers

[565] The difficulties experienced by the paramedics in obtaining midwifery or obstetric advice has been discussed above (see paragraph [480]).

[566] The SAS conducted a Significant Adverse Event Review. It noted that communication with hospitals was challenging and "causes anxiety to both pre-hospital clinicians and hospital clinicians alike". It suggested that enabling rapid, direct lines of

communication with all obstetric units nationally should be explored, including a dedicated 24 hour SAS emergency phone in each individual unit.

[567] Similarly, the LHB SAER review team recommended that LHB improve communication between maternity services and SAS crews and consider implementation of a telephone line within maternity triage for sole use by SAS crews in emergency situations, giving them direct access to maternity services at University Hospital Wishaw.

[568] A dedicated 24 hour emergency telephone solely for the use of SAS crews ("a red phone") has been introduced in Wishaw General Hospital. Telephones have been made available in some, but not all, health boards across Scotland; Mr Khurana KC explained the progress which had been made by SAS to date in conjunction with health boards. I was invited by Ms Gillespie KC to make a recommendation for the introduction of such telephones across all health boards. I am persuaded that access to specialist advice during complicated deliveries might realistically prevent deaths in circumstances similar to Mira-Belle's, in the future. Mr McConnell KC submitted that not all maternity units, particularly those in rural areas would require a "red phone". The recommendation I make is limited to those maternity units which receive emergency admissions.

[569] **Recommendation 8: Each maternity unit which receives emergency admissions in Scotland should introduce a telephone line for sole use by Scottish Ambulance Service crews giving them direct access to maternity units ("a red phone"). Ambulance crews should be provided with a simple means of identifying the correct telephone number for each red phone in each maternity unit in Scotland.**

Video Call Facility

[570] There was some discussion with witnesses regarding whether the facility to share video images between a paramedic and an obstetrician might have helped; it might have alerted Dr Malcolm to Mrs Bosch and Mira-Belle's positions.

[571] Stephanie Jones, General Manager for the Integrated Clinical Hub of the SAS, explained that the only equipment that ambulance crew carry which would be used for video calls is their mobile telephone; that ambulance crews could not unilaterally start a video call; that the receiving hospital would require to have the equipment to receive a call and an obstetrician available to receive such a call.

[572] Mr Khurana KC submitted that if the Inquiry were minded to make any recommendation in relation this matter, it ought not to be directed at the SAS. The provision of hardware and the accompanying trained personnel to give advice when required was not something the SAS can provide or had any control over. Mr McConnell KC pointed out in his submissions that issues of costs, confidentiality and perhaps data protection might arise. He submitted that GGCHB was committed to the use of technology in breaking down barriers to human communication and more generally, that the use of video in resuscitation or emergency management is an environment which they are exploring.

[573] Dr Malcolm accepted that an awareness of Mrs Bosch and Mira-Belle's position would have affected his advice. Paramedic Coyle and Dr Hughes agreed that video facilities would aid communication. The use of video facilities might realistically prevent deaths in similar circumstances in future. I accept that evidence of costs, benefits and matters relating to practicalities and resourcing were not fully explored in the evidence. For that reason, the

recommendation I make is not that such facilities should be introduced, but rather that this issue should be explored further.

[574] **Recommendation 9: consideration should be given to the introduction of video facilities to aid communication between paramedics and midwives or obstetricians in emergency situations.**

CHAPTER 6: A HOLISTIC VIEW

[575] The advantage of a conjoined Inquiry into the deaths of Leo, Ellie and Mira-Belle is that it provided an opportunity to consider matters holistically; to identify common themes, if any, and to make further recommendations, both in relation to those particular common themes and in relation to the conduct of future inquiries. Having reviewed all of the evidence in each of the inquiries, I make the following further recommendations.

Obtaining a history from an expectant mother

[576] Professor Humphry explained that women were generally a very reliable source of information in relation to complications or concerns arising during their pregnancies but have to be asked the right questions. The questions posed required to be well considered and clearly designed to elicit the information sought. As demonstrated by the evidence led in each of these inquiries, there was scope for misunderstanding and miscommunication between the healthcare professionals and patients which arose as a result of the questions asked. There was almost universal agreement among the healthcare professionals who gave evidence to the Inquiry that if a woman was asked whether "she had any concerns", or whether "she had had any bleeding", she may interpret that question as being directed to present concerns; she may not consider the question to be directed at past concerns for

which she had receive reassuring medical advice or intervention and may assume that the healthcare professional was aware of her obstetric history. The question "do you have any concerns" appeared to have been asked by a number of healthcare professional involved in these inquiries. Similarly, asking "how are your fetal movements?" or "have you had any bleeding?" were apt to elicit questions about the present, but not necessarily about the past. As Ms Gillespie KC submitted, where a patient has received reassurance by staff when prior complications have been reported, it is unrealistic to expect her to volunteer information about previous complications about which she has been reassured. Questions of this nature appeared to be pre-populated on a number of records on BadgerNet. Ms Gillespie KC submitted that the Inquiry should make a recommendation requiring such questions to be clearly directed towards the present and the past, if that was the information the question was designed to elicit. Mr Deery sought a recommendation to similar effect. Asking such questions might have alerted Dr McLellan and midwife Hand to Ms McCormick's previous episodes of bleeding.

[577] **Recommendation 10: Questions posed by healthcare professionals designed to elicit from a patient both a medical or obstetric history and information on current presentation, should make it clear that information related to the present and the past is sought. Health Boards should review pre-populated questions on BadgerNet (or similar systems) to ensure that if they are deigned to elicit information relating to present and past concerns that is clearly stated.**

Advice on the use of analgesia

[578] It was clear from the evidence in relation to advice provided to Ms Rooney, Ms McCormick and Mrs Bosch that advice to take analgesia when experiencing pain

associated with the early stages of labour is commonplace. What also appeared to be commonplace was the absence of any advice as to how long a woman should wait to see whether analgesia is having the desired effect. The Inquiry heard evidence that midwife McPhee did not advise Ms Rooney to call back within any particular timeframe if her symptoms did not improve having taken painkillers or applied heat therapy. The same appeared to be true in relation to the advice provided by midwife Campbell to Ms McCormick. It is reasonable in my judgment, for such advice to be provided to ensure that women are provided with an indication of what might be a reasonable time in which to contact triage again, if symptoms do not improve, to prevent delays in women seeking assistance (as appears to have occurred in Leo's case). Professor Humphry agreed that such advice would be appropriate and helpful.

[579] **Recommendation 11: If "worsening advice" is provided by triaging midwives which includes advice to take analgesia and to call back if symptoms do not improve, women should be provided with an approximate timeframe in which to do so.**

Training and auditing of BadgerNet records

[580] Both Ms Gillespie KC and Mr Deery invited the Inquiry to recommend that health boards should remind their staff that all records created on BadgerNet must be accurate, comprehensive and contemporaneous and that records should be audited. Mr Deery suggested the use of a staff handbook and training. In my judgment, it requires to be borne in mind that, at the time of the deaths, BadgerNet was a relatively new system. It is likely that training, knowledge and experience of the system has evolved. There was force in Ms Smith KC's submission that when the system was new to practitioners, it simply would not have been possible to offer training that would allow optimal use of a revolutionary change

in record keeping. The digital midwives explained the systems in place for training and for updating staff on changes to BadgerNet. The Royal College of Midwives have produced an Electronic Record Keeping Guidance and Audit Tool. I am satisfied that, generally, the need for training, audit and accuracy is well understood. A general recommendation of the nature sought is also unlikely to give rise to any meaningful specific improvements, if such improvements are necessary. Accordingly, I make no such recommendation.

[581] For similar reasons, I make no general recommendations requiring health boards to review their practices to ensure that they have a system to highlight risk factors and obstetric complications on BadgerNet. The system has clearly evolved, particularly since Leo and Ellie's death. A general recommendation of this nature is unlikely to give rise to any meaningful specific improvements.

[582] Ms Gillespie KC invited the Inquiry to recommend that at every maternity unit, on every shift, there should be a midwife whose only job is to triage calls; that midwife should be logged on to BadgerNet while triaging calls. She submitted that a dedicated triage midwife had been introduced at Wishaw General Hospital. While midwife Stark referred to the dedicated midwife, I did not understand her to mean that the only job such a midwife would undertake is to triage calls. The Inquiry does not have sufficient evidence before it to make such a recommendation, which might have significant resource implications for some health boards. Accordingly, I make no such recommendation. In relation to the need to have access to BadgerNet when triaging calls, that matter is addressed at paragraphs [344] - [351].

OBSERVATIONS

[583] Recommendations under section 26 of the Act are directed towards steps which might be taken, precautions or improvements in systems or the introduction of systems, which might prevent other deaths in similar circumstances. The following measures would not prevent other deaths in similar circumstances, but would be of considerable assistance in future inquiries involving newborn babies. As the terms of section 26 of the Act do not permit such measures to be described as statutory recommendations, I instead make the following observations:

Capturing information on BadgerNet for future inquiries

[584] As BadgerNet is a live system which is in constant use by healthcare professionals and is subject to frequent changes, it is difficult to know with certainty how the system presented or what information it held as the time of each death. I am grateful to those representing LHB for the steps taken to provide a video demonstration of the system as it appeared at the time of the Inquiry and to ascertain what information was displayed at the time of each death. Those attempts were not without difficulty; they hampered the progress of the Inquiry, caused delay and required staff at LHB in particular to spend considerable time reviewing updates and system changes. As explained by Ms Clark, there have been in the region of 700 changes to the system since 2019. Every two months or so, the system is updated. Those updates are initiated by System C, or in response to requests from health boards. In light of this process of continual updates and improvements, it is not possible to know with certainty how BadgerNet appeared as at the time of each death.

[585] In the interest of expediency, to avoid subsequent substantial additional work (and cost) for those employed by health boards and, most importantly, to ensure that accurate

information in available to future inquires, it would be highly desirable for staff to capture the information displayed and held in BadgerNet shortly after the death of a child in circumstances giving rise to a report to the Crown and Procurator Fiscal's Office.

[586] **Observation 1**: In the event of a neonatal death in circumstances giving rise to a report to the Scottish Fatalities Investigation Unit of the Crown and Procurator Fiscals Service, as soon as possible thereafter, the reporting health board should retain a copy of the mother's BadgerNet or electronic records, by way of screenshots of all relevant pages or a video of the information displayed.

Recording of triage calls

[587] It is important to seek to minimise the trauma and anxiety caused to parents and medical professionals who are required to give evidence to inquiries following the death of a child. In relation to the deaths of Leo, Ellie and Mira-Belle, evidence of what was said during triage calls was important. That involved testing the memories of the parents and the medical professionals many years after the telephone calls had taken place and thereafter making an assessment of credibility and reliability. While counsel and agents minimised cross-examination where possible and dealt with matters sensitively, nevertheless, those involved in the triage calls required to re-live painful events.

[588] In my judgment, that pain could be relieved somewhat by the recording of triage calls, the content of which could be agreed by parties and played to the court. This matter was not raised during the Inquiry; there was accordingly no evidence in relation to the resource implications of making and storing such recordings (albeit that recordings would only require to be stored for a time limited period and could be deleted upon closure of the pregnancy record on BadgerNet following birth). It is, however, within judicial knowledge

that calls to emergency services (such as 999 calls) are routinely recorded and stored. Such recordings may also be of benefit to the multi-disciplinary teams conducting serious adverse event reviews and may lead to a greater understanding of the issues.

[589] **Observation 2:** all health boards that provide maternity services should consider the feasibility of making and storing recordings of triage calls to be made available to serious adverse event reviews and fatal accident inquiries.

CONCLUDING REMARKS

[590] It was clear that LHB, GGCHB and SAS each have robust and comprehensive systems in place to learn from the outcomes of serious adverse events; each had already taken steps to address the issues identified. I hope that the parents of Leo, Ellie and Mira-Belle have been able to take some solace from that. Similarly, this Inquiry has sought to understand what happened and what might be done in future to prevent deaths in circumstances similar to those faced by the parents of Leo, Ellie and Mira-Belle. I again express my gratitude to all participants and their representatives, witnesses and expert witness, who assisted the Inquiry in discharging its function.

Appendix 1

Parties, Representatives and Preliminary Hearings

[1] The following participants were represented by the following advocates/solicitors:

Participant	**Representation**
Crown	Ms Gillespie KC Amanda Allan, Procurator Fiscal Depute
Lanarkshire Health Board (LHB)	Ms Smith KC Ms Russell, advocate
Greater Glasgow and Clyde Health Board (GGCHB)	Mr McConnell KC Mr Clair, Advocate
Ms Rooney and Mr Lamont	Ms Faheem, solicitor, Drummond Miller LLP
Ms McCormick	Mr Deery, solicitor, Drummond Miller LLP
Mr and Mrs Bosch	Self-represented
Scottish Ambulance Service	Mr Khurana KC
Midwife McPhee	Mr Rodgers, solicitor, Thompson solicitors
Midwife Tannahill	Mr Calderwood, solicitor, Thompson solicitors

[2] The first preliminary hearings took place on 5 September 2022. It was clear that parties required time to prepare for the Inquiry. Following this hearing, the parties were ordered to meet and discuss the scope for the joint instruction of experts for each of the three inquiries, the evidence which may be capable of being agreed and the disputed issues that the Inquiry would be invited to resolve.

[3] Further preliminary hearings took place on 7 December 2022 and 23 March 2023 following the joint meeting of parties. On 23 March, midwife McPhee joined as a participant. Orders were made for the exchange of draft affidavits, a combined list of witnesses, the lodging of expert reports and the drafting of a glossary of medical terms. It was clear that an understanding of the BadgerNet system would be important. A number of witness would be invited to consider electronic records. LHB were tasked with considering how the BadgerNet system (which is a live system) could be viewed in court.

[4] At a continued preliminary hearing on 11 May 2023, the Inquiry was transferred to Glasgow Sheriff Court from Hamilton Sheriff Court. Orders were made for the lodging of final affidavits and expert reports, a final combined list of witness, final joint minutes of agreement and notes of disputed issues, a continued preliminary hearing was assigned for 25 July 2023 with dates for the Inquiry fixed for 15 August to 8 September 2023.

[5] On 25 July 2023, Mr and Mrs Bosch advised the court that they had been unable to secure legal aid and withdrew from the Inquiry. The complications of viewing a live electronic medical record keeping system had not been resolved. Dr Hughes had been

instructed to lodge a supplementary report; that was not yet available. The dates assigned for the Inquiry required to be discharged. Further dates were identified, and the Inquiry was assigned to dates in January and February 2024.

[6] At a continued preliminary hearing on 31 August 2023, a further witness was added to the list of witnesses and GGCHB wished to consider the need for a further witness to give evidence in light of Dr Hughes's supplementary report.

[7] On 2 October 2023, the issues arising in the supplementary expert report were resolved and a joint minute was ordered to be lodged. A video illustrating the use of and information stored on BadgerNet was ordered to be produced in lieu of a live demonstration.

[8] On 15 December 2023, midwife Tannahill joined as a participant.

[9] The Inquiry commenced on 9 January 2024. Evidence was heard over 15 days between 9 January 2024 and 15 March 2024. The use of affidavits significantly reduced the length of the Inquiry. Submissions were presented on 8 and 9 May 2024.

Appendix 2

List of Witnesses

1. Nicola McCormick
2. Nadine Rooney
3. Anthony Lamont
4. Suzanne Stewart
5. Rozelle Bosch
6. Eckhardt Bosch
7. Catherine Murphy (Midwife)
8. Catriona Hand (Midwife)
9. Caroline Campbell (Midwife)
10. Dina McLellan (Consultant Obstetrician)
11. Evelyn Ferguson (Consultant Obstetrician)
12. Cheryl Clark (Chief Midwife)
13. Moira Mooney (Midwife)
14. Shona MacPhee (Midwife)
15. Phillipa Gentleman (Healthcare Support Worker)
16. Mairi McDermid (Associate Chief Midwife)
17. Lesley Nicholson (Midwife)
18. Michelle Tannahill (Midwife)
19. Alison Stark (Midwife)
20. Carla Buchanan (Student Midwife)
21. Gwen Barr (Midwife)
22. Colin Malcolm (Consultant Obstetrician)
23. Surindra Maharaj (Consultant Obstetrician)
24. Jane Donaldson (Scottish Ambulance Service)
25. Paul Coyle (Scottish Ambulance Service)
26. Euan McCourtney (Scottish Ambulance Service)
27. Angela Easdon (Scottish Ambulance Service)
28. John Reilly (Scottish Ambulance Service)
29. Stephanie Jones (Scottish Ambulance Service)
30. Dr James Ward (Scottish Ambulance Service)
31. Tracey Humphry (expert witness: midwifery)
32. Angela Cunningham (expert witness: midwifery)
33. Hannah Matthews (expert witness: midwifery)
34. Rhona Hughes (expert witness: obstetrics)
35. Ben Stenson (expert witness: neonatology)
36. Mark Newton (expert witness: paramedic)

Appendix 3

Glossary of medical terms

MEDICAL TERM	MEANING
Acidosis (acidotic)	*n.* a condition in which the acidity of body fluids and tissues is abnormally high
Agonal	*Adj* describing or relating to the phenomena, such as cessation of breathing or change in the ECG or EEG, that are associated with the moment of death
Anomaly	*n.* any deviation from the normal, especially a congenital or developmental defect
Antepartum	*Adj* occurring before the onset of labour
Autolysis	*n.* the destruction of tissues or cells brought about by the actions of their own enzymes
Bradycardia	*n.* slowing of the heart rate to less than 50 beats per minute
Catecholamines	*Pl. n.* a group of physiologically important substances including adrenaline, noradrenaline, and dopamine, having various different roles in the functioning of the sympathetic and central nervous systems
Cyanosis	*n.* a bluish discoloration of the skin and mucous membranes resulting from an inadequate
Ectropion (cervical)	Cervical ectropion is caused by exposure to higher levels of oestrogen, which occurs normally at certain times (e.g. pregnancy). It usually causes no symptoms but in a few cases may be associated with postcoital bleeding and a mucoid vaginal discharge
Effusion	*n.* 1. the escape of pus, serum, blood, lymph or other fluid into a body cavity

	as a result of inflammation or the presence of excess blood or tissue fluid in an organ or tissue. 2. Fluid that has escaped into a body cavity. Such effusions may be exudate (rich in protein) or transudates (low in protein)
Encephalopathy	*n.* any of various diseases that affect the functioning of the brain
Glucocorticoid (Corticosteroid)	*n.* any steroid hormone synthesized by the adrenal cortex. There are two main groups of corticosteroid. The glucocorticoids are essential for the utilisation of carbohydrate, fat, and protein by the body and for a normal response to stress
Haem-, haema-, haemo-, haemato-	Combining form denoting blood
Hypertelorism	*n.* an abnormally increased distance between two organs or parts, commonly referring to widely spaced eyes
Hypoplasia	*n.* the underdevelopment of an organ or tissue
Hypoxia	*n.* a deficiency of oxygen in the tissues
lntraosseous needle	A wide-bore needle for insertion directly into the bone marrow of (usually) the tibia in children, used only in emergencies when no other means of intra-venous access can be gained. lntraosseous needles enable fluids and drugs to be given rapidly
Intrapartum	*Adj* occurring during labour or childbirth
lschaemia (ischaemic)	*n.* an inadequate flow of blood to a part of the body, caused by constriction or blockage of the blood vessels supplying it
Liquor	*n.* the amniotic fluid surrounding a foetus
Meconium	*n.* the first stools of a newborn baby, which are sticky and dark green and composed of cellular

	debris, mucus, and bile pigments
Neonate/Neonatal	*n.* an infant at any time during the first 28 days of life. The word is particularly applied to infants just born or in first week of life. *Adj* neonatal
Nuchal (adj)	*n.* the nape of the neck
Obstetrics	*n.* the branch of medical science concerned with the care of women during pregnancy, childbirth, and the period of about six weeks following the birth, when the reproductive organs are recovering
Oedema	*n.* excessive accumulation of fluid in the body tissues
Parenchyma	*n.* the functional part of an organ, as opposed to the supporting tissue
Perinatal	*Pl. n.* small round flat dark-red spots caused by bleeding into the skin or beneath the mucous membrane
Phenylketonuria (PKU)	*n.* an inherited defect of protein metabolism causing an excess of the amino acid phenylalanine in the blood, which damages the nervous system and leads to severe learning disabilities
Placenta praevia	A condition in which the placenta is situated wholly or partially in the lower and noncontractile part of the uterus. When this becomes elongated and stretched during the last few weeks of pregnancy, and the cervix becomes stretched with before or during labour, placental separation and haemorrhage will occur
Polydactyly (hyperdactylism) (polydactylism)	*n.* the condition of having more than the normal number of fingers or toes
Postpartum	*Adj.* relating to the period of a few days immediately after birth

Preterm birth	Birth of a baby before 37 weeks of gestation (259 days), calculated from the first day of the mother's last menstrual period
Primigravida	*n.* a women experiencing her first pregnancy
Primipara	*n.* a woman who has given birth to one infant capable of survival
Retro (placental)	*Prefix denoting* at the back or behind
Syndactyly	*n.* congenital webbing of the fingers. Adjacent fingers are joined along part or all of their length
Vernix caseosa	The layer of greasy material which covers the skin of a fetus or newborn baby. It is produced by the oil-secreting glands of the skin and contains skin scales and fine hairs

Reference: Concise Medical Dictionary (Oxford University Press, 10th Edition, 2020)

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