

Intrapartum care for women with existing medical conditions or obstetric complications and their babies

[K] Evidence review for risk assessment for women with obstetric complications or no antenatal care

NICE guideline <TBC at publication>

Evidence reviews for women at high risk of adverse outcomes for themselves and/or their baby because of obstetric complications or other reasons

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Draft for consultation

Developed by the National Guideline Alliance hosted by the Royal College of Obstetricians and Gynaecologists

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1 Risk assessment

Review question

- 3 What maternal observations should be performed for women at high risk of adverse
4 outcomes in labour for the woman or the baby, and what is the optimal frequency of making
5 these observations?

Introduction

7 The aim of this review is to determine what maternal observations should be performed for
8 women at high risk of adverse outcomes in labour due to obstetric complications. It will
9 address maternal observations where the woman or the baby may experience adverse
10 outcomes in labour due to an obstetric complication. It will also address the optimal
11 frequency of performing observations. Women who present in labour having had no
12 antenatal care will also be included.

Summary of the protocol

14 See Table 1 for a summary of the population, intervention, comparison and outcome (PICO)
15 characteristics of this review.

16 Table 1: Summary of the protocol (PICO table)

Population	<p>Women at high risk of adverse outcomes in labour due to obstetric complications covered by the guideline scope.</p> <p>Relevant obstetric complications include:</p> <ul style="list-style-type: none"> • pyrexia • sepsis (suspected or diagnosed) • intrapartum haemorrhage (that is, haemorrhage occurring during the course of labour and birth) • breech presenting in labour • a small-for-gestational age baby • a large-for-gestational age baby • previous caesarean section • labour after 42 weeks of pregnancy. <p>Women who present in labour having had no antenatal care will also be included</p>
Intervention	<p><u>Intervention 1</u></p> <p>Additional observations/tests (compared to usual care):</p> <ul style="list-style-type: none"> • respiratory rate • oxygen saturation • measurement of urine output (volume) • AVPU ('alert, voice, pain, unresponsive') • amount of bleeding

	<p><u>Intervention 2</u> Different frequency of carrying out observations or tests listed in comparison 1 and others listed below (compared to usual care):</p> <ul style="list-style-type: none"> • blood pressure • pulse or heart rate • temperature • findings on abdominal and vaginal examinations (for example, cervical dilatation, or descent of presenting part) • frequency and intensity of contractions <p><u>Intervention 3</u> Use of assessment or early warning tools:</p> <ul style="list-style-type: none"> • modified early obstetric warning score (MEWS or MEOWS) • national early warning score (EWS) • standard emergency warning signal (SEWS)
Comparison	<p><u>Comparison 1</u> Usual care (maternal observations) as defined in the NICE guideline on intrapartum care for healthy women and babies (CG190)</p> <p><u>Comparison 2</u> Usual frequency of maternal observations as defined in the NICE guideline on intrapartum care for healthy women and babies (CG190)</p> <p><u>Comparison 3</u> No use of assessment/early warning tools</p>
Outcomes	<p>For the woman:</p> <ul style="list-style-type: none"> • admission to HDU or ITU and duration of hospital stay • major morbidities (for example, transfusion of blood products, disseminated intravascular coagulation, organ dysfunction, or postpartum haemorrhage including secondary postpartum haemorrhage) • mortality • woman's experience of labour and birth, including experience of the birth companion, separation of the woman and baby and breastfeeding initiation <p>For the baby:</p> <ul style="list-style-type: none"> • major morbidities (HIE, cerebral palsy/neurodevelopmental disability/developmental delay, or neonatal sepsis) • mortality including intrapartum stillbirth • admission to NICU including re-admission and duration of hospital stay

1 HDU: high dependency unit; HIE: hypoxic ischaemic encephalopathy; ITU: intensive therapy unit; NICU: neonatal intensive care unit

3 For further details see the full review protocol in Appendix A. The search strategies are presented in Appendix B.

Clinical evidence

1 Included studies

- 3 No clinical evidence was identified for this review.
- 4 See the study selection flow chart in Appendix C.

Excluded studies

- 6 Studies not included in this review with reasons for their exclusion are listed in Appendix D.

Summary of clinical studies included in the evidence review

- 8 No clinical evidence was identified for this review (and so there are no evidence tables in
- 9 Appendix E – Clinical evidence tables). No meta-analysis was undertaken for this review
- 10 (and so there are no forest plots in Appendix F – Forest plots).

1 Quality assessment of clinical studies included in the evidence review

- 12 No clinical evidence was identified for this review (and so no quality assessment was
- 13 undertaken and there are no GRADE tables in Appendix G – GRADE tables).

1 Economic evidence

1 Included studies

- 16 No economic evidence was identified for this review.
- 17 See the study selection flow chart in Supplement 2 (Health economics).

1 Excluded studies

- 19 No full-text copies of articles were requested for this review and so there is no excluded
- 20 studies list (see Supplement 2 (Health economics)).

2 Summary of studies included in the economic evidence review

- 22 No economic evidence was identified for this review (and so there are no economic evidence
- 23 tables in Supplement 2 (Health economics)).

2 Economic model

- 25 No economic modelling was undertaken for this review because the committee agreed that
- 26 other topics were higher priorities for economic evaluation (see Supplement 2 (Health
- 27 economics)).

2 Evidence statements

- 29 No clinical evidence was identified for this review.

Recommendations

2 K1. Take account of symptoms reported and concerns expressed by women in labour with
3 any of the following:

- 4 • pyrexia
- 5 • sepsis
- 6 • intrapartum haemorrhage
- 7 • breech presentation
- 8 • suspected small-for-gestational-age baby
- 9 • suspected large-for-gestational-age baby
- 10 • previous caesarean section
- 11 • labour after 42 weeks of pregnancy
- 12 • no antenatal care.

13 K2. Ensure that a healthcare professional with skills and experience in managing obstetric
14 complications reviews and assesses the condition of a woman with any of the complications
15 in recommendation K1, including any observations recorded, and escalates care as needed.

16 K3. Carry out and record maternal observations (pulse, blood pressure, temperature and
17 urine output), as recommended in the NICE guideline on [intrapartum care for healthy women
18 and babies](#), and the respiratory rate as shown in table K1, for women in labour with any of
19 the following and no other reasons for concern:

- 20 • breech presentation
- 21 • suspected small-for-gestational age baby
- 22 • suspected large-for-gestational age baby
- 23 • previous caesarean section
- 24 • labour after 42 weeks of pregnancy
- 25 • no antenatal care.

26 K4. For women in labour with fever, a temperature of 38°C or above on a single reading or
27 37.5°C or above on 2 consecutive readings (1 hour apart), carry out maternal observations
28 as shown in table K2.

29 K5. For women in labour with sepsis or suspected sepsis, carry out maternal observations as
30 shown in table K2.

31 K6. For women with intrapartum haemorrhage, continuously monitor vaginal blood loss and
32 carry out maternal observations as shown in table K2.

1 **Table K1: Routine maternal observations for women in labour with any of the following**
 2 **obstetric complications and no other reasons for concern**

	Pulse	Blood pressure	Respiratory rate	Temperature	Level of consciousness (AVPU)	Oxygen saturation	Urine
Breech presentation	Hourly	4-hourly, and hourly in the second stage	4-hourly	4-hourly	-	-	Record output
Suspected small-for-gestational age	Hourly	4-hourly, and hourly in the second stage	4-hourly	4-hourly	-	-	Record output
Suspected large-for-gestational age	Hourly	4-hourly, and hourly in the second stage	4-hourly	4-hourly	-	-	Record output
No antenatal care	Hourly	4-hourly, and hourly in the second stage	4-hourly	4-hourly	-	-	Record output
Previous caesarean section	Hourly	4-hourly, and hourly in the second stage	4-hourly	4-hourly	-	-	Record output
Onset of labour after 42 weeks	Hourly	4-hourly, and hourly in the second stage	4-hourly	4-hourly	-	-	Record output
AVPU; alert, voice, pain, unresponsive.							

3

1 **Table K2: Routine maternal observations for women in labour with fever, suspected**
 2 **sepsis, sepsis or intrapartum haemorrhage**

	Pulse	Blood pressure	Respiratory rate	Temperature	Level of consciousness (AVPU)	Oxygen saturation	Urine
Fever	Hourly	4-hourly, and hourly in the second stage	4-hourly	Hourly	-	4-hourly	Record output
Suspected sepsis - concern insufficient for antibiotic treatment	Hourly	4-hourly, and hourly in the second stage	4-hourly	Hourly	-	4-hourly	Record output
Sepsis or suspected sepsis - on antibiotic treatment	Continuous, or at least every 30 minutes	Continuous, or at least every 30 minutes	Continuous, or at least every 30 minutes	Hourly	Use clinical judgement	Continuous, or at least every 30 minutes	Record output, hourly if catheterised
Intrapartum haemorrhage	At least hourly	At least 4-hourly, and at least hourly in the second stage	At least 4-hourly	At least 4-hourly	Use clinical judgement	At least 4-hourly	Record output, hourly if catheterised
AVPU; alert, voice, pain, unresponsive.							

Research recommendations

- 4 What clinical features and laboratory investigations can be used to better stratify risk for
 5 women in labour with signs of sepsis (including fever and tachycardia)?

Rationale and impact

Why the committee made the recommendations

3 No evidence was found on observations for women in labour with obstetric complications so
4 the committee made recommendations based on their expertise and knowledge of good
5 practice. They agreed that in order to understand the whole clinical picture, it is important to
6 listen to the woman's concerns and her own account of her symptoms. The committee
7 acknowledged that women in the following groups would only need routine maternal
8 observations during labour if there were no other concerns:

- 9 • breech presentation
- 10 • suspected small-for-gestational age baby
- 11 • suspected large-for-gestational age baby
- 12 • previous caesarean section
- 13 • labour after 42 weeks of pregnancy
- 14 • no antenatal care.

15 The committee did not want to medicalise care for women with fever in labour and agreed
16 that many of these women do not need additional maternal observations apart from hourly
17 monitoring of temperature. However, if other symptoms or signs develop, the possibility of
18 sepsis should be considered.

19 The committee did not want to medicalise care for women with slight concerns about
20 possible sepsis, but they agreed that if concerns are enough to warrant antibiotic treatment
21 more frequent observations are needed because of the risk of sudden deterioration. The
22 committee recommended continuous or half-hourly measurement of pulse, blood pressure
23 and respiratory rate in line with the NICE guideline on sepsis. Hourly monitoring of
24 temperature is sufficient, but monitoring of urine output, level of consciousness (AVPU) and
25 oxygen saturation might also be needed, depending on the whole clinical picture and
26 according to clinical judgement.

27 The committee agreed that for women with intrapartum haemorrhage, continuous monitoring
28 of vaginal blood loss is important because this is often underestimated and it can be difficult
29 to decide when more action is needed. Therefore the committee recommended more
30 frequent observations to detect possible changes in a woman's condition. They also
31 recommended other observations such as respiratory rate, volume of urine output, AVPU
32 and oxygen saturation should be considered as needed to prompt transfer to an obstetric-led
33 unit and involvement of a senior obstetrician.

34 Because of the increased risk of serious medical problems in women with obstetric
35 complications or no antenatal care and the need for timely action when indicated, it is
36 important that the woman's condition is comprehensively reviewed by an experienced
37 healthcare professional who should be responsible for deciding if there is a need to escalate
38 care.

39 The lack of evidence on maternal observations for women in labour with suspected sepsis
40 prompted the committee to make a research recommendation to inform future guidance.

Impact of the recommendations on practice

- 2 The committee agreed that the recommendations reflect current best practice, but this may
- 3 result in changing practice in some units.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

7 The committee prioritised maternal admission to a high dependency unit (HDU) or intensive
8 therapy unit (ITU), including duration of hospital stay, as a critical outcome because this can
9 indicate that the woman did not receive an appropriate intervention early enough. Also, this
10 outcome is a proxy measure for serious maternal morbidity. The committee agreed that this
11 outcome is potentially modifiable and early detection of problems might reduce the number of
12 women admitted to HDU or ITU. Moreover, admission to HDU or ITU and duration of hospital
13 stay has a high economic impact, it can have a negative impact on maternal physical and
14 emotional wellbeing and it is a proxy measure for the woman's experience, including
15 separation of the woman and baby.

16 The committee agreed that major maternal morbidities (transfusion of blood products,
17 disseminated intravascular coagulation, organ dysfunction, and postpartum haemorrhage
18 including secondary postpartum haemorrhage) are critical outcomes because in rare cases
19 they can develop into a long-term health problem (for example, chronic kidney disease) and
20 they can have an impact on the woman's birth experience and future birth choices. This can
21 also affect the woman's physical and emotional wellbeing and is a proxy measure for the
22 woman's experience, including separation of woman and baby.

23 Major morbidities in the baby (hypoxic ischaemic encephalopathy (HIE), cerebral palsy,
24 neurodevelopmental disability, developmental delay and neonatal sepsis) were chosen as
25 critical outcomes because they can affect the rest of the baby's life.

26 Maternal mortality was rated as an important outcome because it occurs less frequently than
27 maternal morbidity.

28 The committee agreed that the woman's experience of labour and birth, including experience
29 of her birth companion(s), separation of the woman and baby, and breastfeeding initiation,
30 are important outcomes because they can have an impact on birth experience and on future
31 birth choices; they can also affect the woman's emotional wellbeing due to separation of the
32 woman and baby.

33 Mortality for the baby, including intrapartum stillbirth, was ranked as an important outcome.
34 Although rare, these events are the most serious potential outcomes and they have a
35 significant impact on women and their partners and families.

The quality of the evidence

37 No clinical evidence was identified for this review.

Benefits and harms

2 It is important that woman in labour with obstetric complications or having had no antenatal
3 care are encouraged to express any symptoms or concerns experienced during labour.
4 These observations should be taken into account, in addition to clinical observations and
5 measurements, when assessing the whole clinical picture. The committee discussed that the
6 woman herself is often the first and the best person to judge when something is not right.

7 Regular monitoring of maternal vital signs and other clinical signs should be performed for all
8 women in labour. The NICE guideline on [intrapartum care for healthy women and babies](#)
9 (CG190) includes recommendations for maternal observations during the first and second
10 stages of labour. The committee agreed that unless otherwise indicated, women in labour
11 with breech presentation, a suspected small-for-gestational-age baby, a suspected large-for-
12 gestational-age baby, a previous caesarean section, onset of labour after 42 weeks of
13 pregnancy or who with no antenatal care are generally healthy and routine maternal
14 observations (pulse, blood pressure, temperature and urine output), as recommended in the
15 NICE guideline on [intrapartum care for healthy women and babies](#) (CG190), plus the
16 respiratory rate, are sufficient.

17 Women in labour with fever, a temperature of 38°C or above on a single reading or 37.5°C or
18 above on 2 consecutive readings (1 hour apart), sepsis or suspected sepsis, or intrapartum
19 haemorrhage are not 'healthy'. They are at increased risk of sudden deterioration in the
20 woman's condition and, therefore, need closer monitoring. With no clinical evidence available
21 to guide recommendations, the optimal frequency and content of observations was left to the
22 committee's expertise. The committee agreed that the benefit of frequent observations is that
23 the woman is monitored closely and changes in measurements can be observed, while no
24 changes in observations can reassure that the woman's condition is stable. However, too
25 frequent observations might not bring benefit and instead might be inconvenient or
26 unpleasant for the woman and use staff resources unnecessarily. While monitoring of the
27 woman's vital signs might reflect the condition of the woman (and the baby) to some extent,
28 and potentially avert adverse outcomes, it cannot absolutely rule in or rule out all
29 complications. Therefore, relying too much on measurements might over- or under-estimate
30 the true condition of the woman and the baby. It should also be considered that regardless of
31 the frequency of observations there might be an acute deterioration in the woman's condition
32 between observations.

33 The NICE guideline on [sepsis](#) (NG51) recognises pregnant women and women who have
34 recently given birth with suspected sepsis as meeting criteria for being at higher risk than
35 other people with sepsis. The guideline recommends that people with high-risk sepsis criteria
36 be monitored continuously, or at least every 30 minutes, to assess any changes in their
37 condition. The guideline does not, however, specify which observations should be performed.
38 The committee agreed that for women in labour with sepsis or suspected sepsis, different
39 frequencies of observations would be appropriate according to whether there is insufficient
40 concern to start antibiotic treatment or whether antibiotic treatment is needed. For the latter
41 group, the committee agreed that maternal pulse, blood pressure and respiratory rate are
42 probably the most informative measurements to indicate deterioration in the woman's
43 condition and should, therefore, be performed continuously or at least every 30 minutes. The
44 committee also agreed that an hourly maternal temperature measurement would be sufficient
45 for this group of women and that more frequent measurements would not be informative. In
46 addition to these core observations, clinical judgement should be used to assess the

1 woman's level of consciousness (using the 'alert, voice, pain, unresponsive' (AVPU)
2 framework), while oxygen saturation should be measured continuously or at least every 30
3 minutes. The committee discussed that urine output is a difficult parameter to measure and
4 interpret for women in labour with sepsis. Whereas decreased urine output is generally a
5 marker for sepsis, for women in labour decreased urine output might not be alarming as a
6 single indicator but should be considered in the context of the whole clinical picture. In
7 labour, the effects of raised levels of antidiuretic hormone and the additional antidiuretic
8 effect of oxytocin can cause reduced urine output and water retention. Women in labour with
9 sepsis are commonly catheterised and then urine output can be monitored easily. However,
10 women in labour with suspected sepsis should usually not be catheterised to minimise their
11 risk of infection and to avoid additional procedures. The committee agreed, therefore, that for
12 women in labour with sepsis or suspected sepsis who are on antibiotic treatment, urine
13 output should be recorded, and that in catheterised women the recordings should be hourly.

14 For women in labour with sepsis or suspected sepsis and insufficient concern to start
15 antibiotic treatment, the committee agreed that maternal observations should mirror those for
16 the other obstetric complications covered by the guideline, with the addition of 4-hourly
17 measurements of oxygen saturation.

18 Many women in labour with fever do not have sepsis and are otherwise well. Sometimes
19 physiological changes during labour cause a rise in the woman's temperature that is
20 unrelated to infection. However, fever can be caused by an infection and fever in these
21 circumstances is more concerning. The committee agreed that for women in labour with
22 fever, maternal observations should mirror those for women in labour with sepsis or
23 suspected sepsis and insufficient concern to start antibiotic treatment. The committee also
24 discussed the importance of thinking about the whole clinical picture and that if any additional
25 symptoms or signs develop in a woman in labour with fever that sepsis could be a possibility.

26 Intrapartum haemorrhage is an alarming and potentially serious event and the volume of
27 vaginal bleeding during labour needs to be monitored closely. Vaginal blood loss is difficult to
28 estimate and the committee agreed that it is often underestimated. Because of the difficulty
29 of estimating vaginal blood loss, the committee emphasised the importance of paying
30 attention to the whole clinical picture and increasing the frequency of routine maternal
31 observations and performing necessary additional observations. The committee agreed that
32 for women in labour with intrapartum haemorrhage, maternal observations that should be
33 performed and recorded are: pulse (at least hourly); blood pressure (at least 4-hourly and at
34 least hourly in the second stage of labour); respiratory rate (at least 4-hourly); temperature
35 (at least 4-hourly); level of consciousness (AVPU, using clinical judgement); oxygen
36 saturation (at least 4-hourly) and urine output (recorded hourly if the woman is catheterised).

37 Based on knowledge of historical cases resulting in adverse outcomes, the committee
38 recognised the importance of an experienced member of the healthcare team taking
39 responsibility for systematically reviewing maternal observations, taking into consideration
40 the woman's own account of her condition and the whole clinical picture, and determining
41 whether or not care should be escalated.

4.2 Cost effectiveness and resource use

43 The committee recognised that for some women in labour with obstetric complications it
44 would be appropriate to carry out and record maternal observations as recommended in the

1 NICE guideline on [intrapartum care for healthy women and babies](#). The committee agreed
2 that such recommendations might reduce excessive monitoring in a proportion of women,
3 with the potential to release some staff time.

4 However, they also made recommendations for enhanced monitoring in some groups of
5 women, although they did not consider this to represent a major change in current practice,
6 The committee acknowledged that monitoring has resource implications but they considered
7 that enhanced monitoring in some women had the potential to improve outcomes which
8 would generate savings to the NHS in the longer term.

Other factors the committee took into account

10 The effectiveness of early warning tools for women in labour was discussed by the
11 committee. According to their experience, most maternity units use early warning tools
12 but not all units use them for women during labour and birth because there is uncertainty as
13 to how useful the tools are during the intrapartum period. The committee discussed that
14 because of the physical stress associated with labour and birth, such tools might trigger an
15 early warning unnecessarily (that is, there might be a high false positive rate). For example,
16 heart rate or respiratory rate could be elevated during labour and birth and so trigger an early
17 warning even if labour was progressing as planned and without complications. This might
18 then give rise to concern and lead to unnecessary interventions; conversely, repeated early
19 warning triggers might be ignored eventually and truly important warning signs might be
20 disregarded. The committee was aware of a US study (Shields 2016) comparing the use and
21 non-use of the Maternal Early Warning Trigger (MEWT) tool in maternity units. This study
22 showed that the use of the MEWT tool resulted in a significant decrease in severe maternal
23 morbidity. However, the study did not stratify according to labour period, that is, prepartum,
24 intrapartum and postpartum, and so the effectiveness of the tool for women in labour could
25 not be established and the study was excluded from the guideline review (see excluded
26 studies list). The committee chose not to make any recommendations related to early warning
27 tools.

28 The committee adopted the definition of fever in labour used in the NICE guideline on
29 [intrapartum care for healthy women and babies](#) (CG190), that is a temperature of 38°C or
30 above on a single reading or 37.5°C or above on 2 consecutive readings (1 hour apart).

31 The committee agreed to recommend further research to identify clinical features and
32 laboratory investigations that can be used to better stratify risk for women in labour with signs
33 of sepsis (including fever and tachycardia). See Appendix L for further details.

1 **References**

2 **Shields 2016**

- 3 Shields LE, Wiesner S, Klein C, Pelletreau B, Hedriana HL. (2016) Use of Maternal Early
- 4 Warning Trigger tool reduces maternal morbidity. *Am J Obstet Gynecol.* 214(4): 527.e1-
- 5 527.e6.

1 Appendices

Appendix A – Review protocol

Risk assessment

Item	Details	Working notes
Area in the scope	Women at high risk of adverse outcomes for themselves and/or their baby because of obstetric complications or other reasons – risk assessment	
Review question in the scope	What maternal observations should be performed for women at high risk of adverse outcomes in labour for the woman or the baby, and what is the optimal frequency of making these observations?	
Review question for the guideline	What maternal observations should be performed for women at high risk of adverse outcomes in labour for the woman or the baby, and what is the optimal frequency of making these observations?	
Objective	The aim of this review is to determine what maternal observations should be performed for women at high risk of adverse outcomes in labour due to obstetric complications. It will address maternal observations where the woman or the baby may experience adverse outcomes in labour due to an obstetric complication. It will also address the optimal frequency of performing observations. In developing the review protocol the committee was aware that in the UK there were 11 maternal deaths per 100,000 maternities due to haemorrhage between 2010 and 2012 (MBRRACE-UK 2014)	
Population and directness	<p>Women at high risk of adverse outcomes in labour due to obstetric complications covered by the scope.</p> <p>Relevant obstetric complications include:</p> <ul style="list-style-type: none"> • pyrexia • sepsis (suspected or diagnosed) • intrapartum haemorrhage (defined as haemorrhage occurring in the course of first and second stage of labour) • breech presenting in labour • small-for-gestational age • large-for-gestational age • previous caesarean section • labour after 42 weeks of pregnancy. <p>Women who present in labour having had no antenatal care will also be included.</p>	

Item	Details	Working notes
	<p>Studies in which up to 34% of the women have multiple pregnancy will be included. Evidence in which any of the women have multiple pregnancy should be downgraded for indirectness.</p>	
Intervention	<p><u>Intervention 1</u> Additional observations/tests (compared to usual care):</p> <ul style="list-style-type: none"> • respiratory rate • oxygen saturation • measurement of urine output (volume) • AVPU ('alert, voice, pain, unresponsive') • amount of bleeding <p><u>Intervention 2</u> Different frequency of carrying out observations/tests listed in comparison 1 and others listed below (compared to usual care):</p> <ul style="list-style-type: none"> • blood pressure • pulse/heart rate • temperature • findings on abdominal and vaginal examinations (for example, cervical dilatation, or descent of presenting part) • frequency and intensity of contractions <p><u>Intervention 3</u></p> <ul style="list-style-type: none"> • Use of assessment/early warning tools: <ul style="list-style-type: none"> ○ modified early obstetric warning score (MEWS or MEOWS) ○ national early warning score (EWS) ○ standard emergency warning signal (SEWS) 	
Comparison	<p><u>Comparison 1</u> Usual care (maternal observations) as defined in the NICE guideline on intrapartum care for healthy women and babies (CG190); some recommendations are reproduced below for ease of reference</p> <p>Observations during the established first stage 1.12.7 Record the following observations during the first stage of labour:</p> <ul style="list-style-type: none"> • half-hourly documentation of frequency of contractions • hourly pulse • 4-hourly temperature and blood pressure • frequency of passing urine • offer a vaginal examination (see recommendation 1.4.5) 4-hourly or if there is concern about progress or in 	

Item	Details	Working notes
	<p>response to the woman's wishes (after abdominal palpation and assessment of vaginal loss). [2007]</p> <p>Observations during the second stage</p> <p>1.13.2 Carry out the following observations in the second stage of labour, record all observations on the partogram and assess whether transfer of care may be needed (see recommendation 1.5.1) [2007, amended 2014]:</p> <ul style="list-style-type: none"> • half-hourly documentation of the frequency of contractions [2007] • hourly blood pressure [2007] • continued 4-hourly temperature [2007] • frequency of passing urine [2007] • offer a vaginal examination (see recommendation 1.4.5) hourly in the active second stage, or in response to the woman's wishes (after abdominal palpation and assessment of vaginal loss). [2007] <p>In addition: ...</p> <ul style="list-style-type: none"> • Assess progress, which should include the woman's behaviour, the effectiveness of pushing and the baby's wellbeing, taking into account the baby's position and station at the onset of the second stage. These factors will assist in deciding the timing of further vaginal examination and any need for transfer to obstetric led care. [2007, amended 2014] <p><u>Comparison 2</u> Usual frequency of maternal observations as defined in the NICE guideline on intrapartum care for healthy women and babies (CG190)</p> <p><u>Comparison 3</u> No use of assessment/early warning tools</p>	
Outcomes	<p>Critical outcomes:</p> <ul style="list-style-type: none"> • for the woman: <ul style="list-style-type: none"> ○ admission to HDU/ITU and duration of hospital stay ○ major morbidities (for example, transfusion of blood products, disseminated intravascular coagulation, organ dysfunction, or postpartum haemorrhage including secondary postpartum haemorrhage) • for the baby: <ul style="list-style-type: none"> ○ major morbidities (hypoxic ischaemic encephalopathy (HIE), cerebral palsy/neurodevelopmental disability/developmental delay, or neonatal sepsis) <p>Important:</p> <ul style="list-style-type: none"> • for the woman: 	

Item	Details	Working notes
	<ul style="list-style-type: none"> ○ mortality ○ woman's experience of labour and birth, including experience of the birth companion, separation of the woman and baby and breastfeeding initiation ● for the baby: <ul style="list-style-type: none"> ○ mortality including intrapartum stillbirth <p>Outcomes of limited importance:</p> <ul style="list-style-type: none"> ● for the baby: <ul style="list-style-type: none"> ○ admission to NICU including re-admission and duration of hospital stay 	
Importance of outcomes	<p>Preliminary classification of the outcomes for decision making:</p> <ul style="list-style-type: none"> ● critical (up to 3 outcomes) ● important but not critical (up to 3 outcomes) ○ of limited importance (1 outcome) 	
Setting	All birth settings	
Stratified, subgroup and adjusted analyses	<p>Groups that will be reviewed and analysed separately:</p> <ul style="list-style-type: none"> ● pyrexia ● sepsis (suspected or diagnosed) ● intrapartum haemorrhage (that is a haemorrhage occurring in the course of labour and birth) ● breech presenting in labour ● small-for-gestational age ● large-for-gestational age ● previous caesarean section ● labour after 42 weeks of pregnancy ● women who present in labour having had no antenatal care <p>In the presence of heterogeneity, the following subgroups will be considered for sensitivity analysis:</p> <ul style="list-style-type: none"> ● none <p>Potential confounders:</p> <ul style="list-style-type: none"> ● age ● body mass index ● parity ● previous vaginal birth 	
Language	English	
Study design	<ul style="list-style-type: none"> ● Published full text papers only ● Systematic reviews ● RCTs ● Only if RCTs unavailable or there is limited data to inform decision making: 	

Item	Details	Working notes
	<ul style="list-style-type: none"> ○ prospective or retrospective comparative observational studies (including cohort and case-control studies) ● Prospective study designs will be prioritised over retrospective study designs ● Conference abstracts will not be considered 	
Search strategy	<p>Sources to be searched: Medline, Medline In-Process, CCTR, CDSR, DARE, HTA and Embase.</p> <p>Limits (e.g. date, study design): All study designs. Apply standard animal/non-English language filters. No date limit.</p> <p>Supplementary search techniques: No supplementary search techniques were used.</p> <p>See appendix B for full strategies</p>	
Review strategy	<p>Appraisal of methodological quality:</p> <ul style="list-style-type: none"> ● the methodological quality of each study will be assessed using checklists recommended in the NICE guidelines manual 2014 (for example, AMSTAR or ROBIS for systematic reviews, and Cochrane RoB tool for RCTs) and the quality of the evidence for each outcome (that is, across studies) will be assessed using GRADE ● if studies report only p-values, this information will be recorded in GRADE tables without an assessment of imprecision <p>Synthesis of data:</p> <ul style="list-style-type: none"> ● meta-analysis will be conducted where appropriate ● default MIDs will be used; 0.8 and 1.25 for dichotomous outcomes; 0.5 times the SD of the measurement in the control arm (or median score across control arms if multiple studies are included) for continuous outcomes ● for continuous data, change scores will be used in preference to final scores for data from non-RCT studies; final and change scores will not be pooled; if any study reports both, the method used in the majority of studies will be adopted 	<p>Review questions selected as high priorities for health economic analysis (and those selected as medium priorities and where health economic analysis could influence recommendations) will be subject to dual weeding and study selection; any discrepancies will be resolved through discussion between the first and second reviewers or by reference to a third person. This review question was prioritised for health economic analysis and so formal dual weeding and study selection (inclusion/exclusion) will be undertaken. Additionally, internal (NGA) quality assurance processes will include consideration of the outcomes of weeding, study selection and data extraction and the committee will review the results of study</p>

Item	Details	Working notes
		selection and data extraction
Equalities	<p>Equalities considerations will be considered systematically in relation to the available evidence and draft recommendations.</p> <p>The guideline scope includes women with cognitive or physical disability as populations for whom there may be equalities issues.</p> <p>Women who have received no antenatal care will be considered as a subgroup for all systematic reviews performed within the medical conditions work stream and a specific question has been included in the obstetric complications work stream for this population</p>	
Notes/additional information	None	
Key papers	<ul style="list-style-type: none"> • MBRRACE-UK report 2014 Knight M, Kenyon S, Brocklehurst P, Neilson J, Shakespeare J, Kurinczuk JJ (editors) on behalf of MBRRACEUK (2014) Saving Lives, Improving Mothers' Care - Lessons learned to inform future maternity care from the UK and Ireland Confidential Enquiries into Maternal Deaths and Morbidity 2009–12. Oxford: National Perinatal Epidemiology Unit, University of Oxford (Accessed on February 18, 2017 from: https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/Saving%20Lives%20Improving%20Mothers%20Care%20report%202014%20Full.pdf) 	

- 1 AMSTAR: Assessing the Methodological Quality of Systematic Reviews; CDSR: Cochrane Database of Systematic Reviews; CENTRAL: Cochrane Central Register of Controlled Trials; DARE: Database of Abstracts of Reviews of Effects; GRADE: Grading of Recommendations Assessment, Development and Evaluation; HDU: high dependency unit; HTA: Health Technology Assessment; ITU: intensive therapy unit; MID: minimally important difference; NGA: National Guideline Alliance; NICE: National Institute for Health and Care Excellence; 6 NICU: neonatal intensive care unit; RCT: randomised controlled trial; RoB: risk of bias; SD: standard deviation; 7 ROBIS: Risk of Bias in Systematic Reviews

Appendix B – Literature search strategies

Risk assessment

1 Database: Medline; Medline EPub Ahead of Print; and Medline In-Process & Other Non-Indexed Citations

#	Searches
1	PERIPARTUM PERIOD/
2	PARTURITION/
3	exp LABOR, OBSTETRIC/
4	OBSTETRIC LABOR, PREMATURE/

#	Searches
5	DELIVERY, OBSTETRIC/
6	(labo?r or childbirth or partu\$ or intra?part\$ or peri?part\$).ti,ab.
7	((during or giving or give) adj3 birth?).ti,ab.
8	((Postpartum? or Post-partum? or Postnatal\$ or Post-natal\$ or Puerperium? or Puerperal?) adj3 period adj3 immediat\$).ti,ab.
9	((twenty four hour? or twentyfour hour? or 24 hour? or 24 h? or 24h?) adj3 (birth\$ or childbirth\$ or parturition?)).ti,ab.
10	or/1-9
11	exp FEVER/
12	(fever\$ or pyrexia\$ or hyperthermia\$).ti,ab.
13	((elevat\$ or high\$) adj3 temperature?).ti,ab.
14	or/11-13
15	exp SEPSIS/
16	sepsis.ti,ab.
17	BLOOD-BORNE PATHOGENS/
18	(blood\$ adj3 (pathogen\$ or poison\$)).ti,ab.
19	exp SYSTEMIC INFLAMMATORY RESPONSE SYNDROME/
20	"systemic inflammatory response syndrome".ti,ab.
21	SIRS.ti,ab.
22	septic?emi\$.ti,ab.
23	((septic or endotoxic or toxic) adj3 shock).ti,ab.
24	(py?emi\$ or pyohemia\$).ti,ab.
25	(bacter?emi\$ or fung?emi\$ or parasit?emi\$ or vir?emi\$ or endotox?emi\$ or candid?emi\$).ti,ab.
26	or/15-25
27	FETAL MACROSOMIA/
28	macrosomia?.ti,ab.
29	(large adj3 gestational adj3 age?).ab,ti.
30	(large adj3 date?).ab,ti.
31	or/27-30
32	BREECH PRESENTATION/
33	(breech\$ adj3 (present\$ or complet\$ or incomplet\$ or frank\$)).ab,ti.
34	or/32-33
35	PREGNANCY, PROLONGED/
36	(pregnan\$ adj3 prolong\$).ab,ti.
37	(pregnan\$ adj1 late).ab,ti.
38	(postterm\$ or post-term\$).ab,ti.
39	(postdate\$ or post-date\$).ab,ti.
40	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
41	((42 week? or forty two week? or forty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.

#	Searches
42	or/35-41
43	CESAREAN SECTION, REPEAT/
44	CESAREAN SECTION/ and (repeat\$ or previous\$).ti.
45	CESAREAN SECTION/ and (repeat\$ or previous\$).ab. /freq=2
46	((c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$)) adj3 (repeat\$ or previous\$)).ti,ab.
47	VAGINAL BIRTH AFTER CESAREAN/
48	(vagina\$ adj1 (birth\$ or born or deliver\$) adj2 after\$ adj2 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
49	VBAC.ti,ab.
50	TRIAL OF LABOR/ and CESAREAN SECTION/
51	(trial adj2 labo?r adj3 after\$ adj3 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
52	TOLAC.ti,ab.
53	or/43-52
54	INFANT, SMALL FOR GESTATIONAL AGE/
55	GESTATIONAL AGE/ and small.ti.
56	GESTATIONAL AGE/ and small.ab. /freq=2
57	(small adj3 gestational age?).ab,ti.
58	SGA.ti,ab.
59	FETAL GROWTH RETARDATION/
60	((fetal\$ or fetus\$ or intrauterine) adj3 grow\$ adj3 (restrict\$ or retard\$)).ti,ab.
61	IUGR.ti,ab.
62	INFANT, LOW BIRTH WEIGHT/
63	exp INFANT, VERY LOW BIRTH WEIGHT/
64	(low birthweight? or low birth weight?).ti,ab.
65	LBW.ti,ab.
66	or/54-65
67	*HEALTH SERVICES ACCESSIBILITY/
68	HEALTHCARE DISPARITIES/
69	HEALTH SERVICES MISUSE/
70	NO-SHOW PATIENTS/
71	((no or late or delay\$ or lack\$ or without) adj5 (antenatal\$ or prenatal\$ or pre-natal\$) adj3 care).ab,ti.
72	((no or unable or restrict\$ or limit\$) adj3 access\$ adj3 (care or healthcare or service?)).ti,ab.
73	(unbook\$ or un-book\$ or (late adj3 book\$)).ti,ab.
74	walk\$ in?.ti,ab.
75	((no or non) adj3 engag\$).ti,ab.
76	no show.ti,ab.
77	or/67-76
78	PREGNANCY, UNPLANNED/

#	Searches
79	PREGNANCY, UNWANTED/
80	((conceal\$ or hide? or hidden or hiding or unexpected or un-expected or unintended or un-intended or unsuspect\$ or un-suspect\$ or unaware or un-aware or unplanned or un-planned or unwanted or un-wanted) adj3 pregnan\$).ti,ab.
81	or/78-80
82	PERIPARTUM PERIOD/
83	PARTURITION/
84	LABOR, OBSTETRIC/
85	UTERINE CONTRACTION/
86	LABOR ONSET/
87	LABOR STAGE, FIRST/
88	LABOR STAGE, SECOND/
89	OBSTETRIC LABOR, PREMATURE/
90	DELIVERY, OBSTETRIC/
91	(labo?r or childbirth or partur\$ or intra?part\$ or peri?part\$).ti,ab.
92	((during or giving) adj3 birth?).ti,ab.
93	or/82-92
94	HEMORRHAGE/
95	SHOCK, HEMORRHAGIC/
96	UTERINE HEMORRHAGE/
97	or/94-96
98	93 and 97
99	((labo?r or birth? or childbirth? or partur\$ or intra?part\$ or peri?part\$) adj3 (h?emorrhag\$ or bleed\$)).ti,ab.
100	or/98-99
101	*PREGNANCY, HIGH-RISK/
102	(pregnan\$ adj2 high\$ adj2 risk\$).ab,ti.
103	or/101-102
104	10 and (14 or 26 or 31 or 34 or 42 or 53 or 66 or 77 or 81 or 103)
105	100 or 104
106	((maternal\$ or mother?) adj3 observ\$).ti,ab.
107	((maternal\$ or mother?) adj3 surveillance).ti,ab.
108	PATIENT CARE PLANNING/
109	CRITICAL PATHWAY/
110	CLINICAL PROTOCOLS/
111	((observ\$ or surveillance) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.
112	((hospital? or department? or unit?) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.
113	or/106-112
114	((add\$ or extra or further) adj3 (observ\$ or test\$)).ti,ab.
115	RESPIRATORY RATE/

#	Searches
116	OXIMETRY/
117	(Respirat\$ adj3 rate?).ti,ab.
118	oximetr\$.ti,ab.
119	(oxygen adj3 saturat\$).ti,ab.
120	(urin\$ adj3 (output? or volume?)).ti,ab.
121	(alert\$ adj1 (voice? or verbal\$) adj1 pain\$ adj1 (unrespon\$ or un-respon\$)).ti,ab.
122	AVPU.ti,ab.
123	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Blood adj3 (loss or lose or losing)).ti,ab.
124	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Bleed\$).ti,ab.
125	or/114-124
126	(frequen\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
127	(regular\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
128	(hour\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
129	BLOOD PRESSURE DETERMINATION/
130	HEART RATE DETERMINATION/
131	BODY TEMPERATURE/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ti.
132	BODY TEMPERATURE/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ab. /freq=2
133	GYNECOLOGICAL EXAMINATION/
134	DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ti.
135	DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ab. /freq=2
136	UTERINE CONTRACTION/ and (observ\$ or examin\$ or surveillance).ti.
137	UTERINE CONTRACTION/ and (observ\$ or examin\$ or surveillance).ab. /freq=2
138	((Blood or systolic or diastolic) adj3 pressure? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
139	((Heart or pulse) adj3 rate? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
140	(Temperature? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
141	((abdom\$ or vaginal\$) adj3 examin\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
142	(abdom\$ adj3 palpat\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
143	(dilat\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
144	(descen\$ adj3 present\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
145	(contract\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
146	or/126-145
147	(assess\$ adj3 tool?).ti,ab.

#	Searches
148	(scor\$ adj3 system?).ti,ab.
149	(early adj3 warning adj3 (scor\$ or system? or tool?)).ti,ab.
150	EWS.ti,ab.
151	MEWS.ti,ab.
152	MEOWS.ti,ab.
153	SEWS.ti,ab.
154	or/147-153
155	UK Obstetric Surveillance System.ti,ab.
156	UKOSS.ti,ab.
157	"Mothers and babies? reducing risk through audits and confidential enquiries across the UK".ti,ab.
158	MBRRACE.ti,ab.
159	Scottish confidential audit of severe maternal morbidity.ti,ab.
160	SCASMM.ti,ab.
161	"Confidential Enquiry into Maternal and Child Health".ti,ab.
162	CEMACH.ti,ab.
163	or/155-162
164	105 and 113
165	105 and 125
166	105 and 146
167	105 and 154
168	105 and 163
169	or/164-168
170	limit 169 to english language
171	LETTER/
172	EDITORIAL/
173	NEWS/
174	exp HISTORICAL ARTICLE/
175	ANECDOTES AS TOPIC/
176	COMMENT/
177	CASE REPORT/
178	(letter or comment*).ti.
179	or/171-178
180	RANDOMIZED CONTROLLED TRIAL/ or random*.ti,ab.
181	179 not 180
182	ANIMALS/ not HUMANS/
183	exp ANIMALS, LABORATORY/
184	exp ANIMAL EXPERIMENTATION/
185	exp MODELS, ANIMAL/
186	exp RODENTIA/

#	Searches
187	(rat or rats or mouse or mice).ti.
188	or/181-187
189	170 not 188

Database: Cochrane Central Register of Controlled Trials

#	Searches
1	PERIPARTUM PERIOD/
2	PARTURITION/
3	exp LABOR, OBSTETRIC/
4	OBSTETRIC LABOR, PREMATURE/
5	DELIVERY, OBSTETRIC/
6	(labo?r or childbirth or partu\$ or intra?part\$ or peri?part\$).ti,ab,kw.
7	((during or giving or give) adj3 birth?).ti,ab.
8	((Postpartum? or Post-partum? or Postnatal\$ or Post-natal\$ or Puerperium? or Puerperal?) adj3 period adj3 immediat\$).ti,ab.
9	((twenty four hour? or twentyfour hour? or 24 hour? or 24 h? or 24h?) adj3 (birth\$ or childbirth\$ or parturition?)).ti,ab.
10	or/1-9
11	exp FEVER/
12	(fever\$ or pyrexia\$ or hyperthermia\$).ti,ab,kw.
13	((elevat\$ or high\$) adj3 temperature?).ti,ab.
14	or/11-13
15	exp SEPSIS/
16	sepsis.ti,ab,kw.
17	BLOOD-BORNE PATHOGENS/
18	(blood\$ adj3 (pathogen\$ or poison\$)).ti,ab.
19	exp SYSTEMIC INFLAMMATORY RESPONSE SYNDROME/
20	"systemic inflammatory response syndrome".ti,ab.
21	SIRS.ti,ab.
22	septic?emi\$.ti,ab,kw.
23	((septic or endotoxic or toxic) adj3 shock).ti,ab.
24	(py?emi\$ or pyohemia\$).ti,ab,kw.
25	(bacter?emi\$ or fung?emi\$ or parasit?emi\$ or vir?emi\$ or endotox?emi\$ or candid?emi\$).ti,ab,kw.
26	or/15-25
27	FETAL MACROSOMIA/
28	macrosomia?.ti,ab,kw.
29	(large adj3 gestational adj3 age?).ab,ti.
30	(large adj3 date?).ab,ti.
31	or/27-30
32	BREECH PRESENTATION/

#	Searches
33	(breech\$ adj3 (present\$ or complet\$ or incomplet\$ or frank\$)).ab,ti.
34	or/32-33
35	PREGNANCY, PROLONGED/
36	(pregnan\$ adj3 prolong\$).ab,ti.
37	(pregnan\$ adj1 late).ab,ti.
38	(postterm\$ or post-term\$).ab,ti.
39	(postdate\$ or post-date\$).ab,ti.
40	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
41	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
42	or/35-41
43	CESAREAN SECTION, REPEAT/
44	CESAREAN SECTION/ and (repeat\$ or previous\$).ti.
45	CESAREAN SECTION/ and (repeat\$ or previous\$).ab. /freq=2
46	((c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$)) adj3 (repeat\$ or previous\$)).ti,ab.
47	VAGINAL BIRTH AFTER CESAREAN/
48	(vagina\$ adj1 (birth\$ or born or deliver\$) adj2 after\$ adj2 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
49	VBAC.ti,ab.
50	TRIAL OF LABOR/ and CESAREAN SECTION/
51	(trial adj2 labo?r adj3 after\$ adj3 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
52	TOLAC.ti,ab.
53	or/43-52
54	INFANT, SMALL FOR GESTATIONAL AGE/
55	GESTATIONAL AGE/ and small.ti.
56	GESTATIONAL AGE/ and small.ab. /freq=2
57	(small adj3 gestational age?).ab,ti.
58	SGA.ti,ab.
59	FETAL GROWTH RETARDATION/
60	((fetal\$ or fetus\$ or intrauterine) adj3 grow\$ adj3 (restrict\$ or retard\$)).ti,ab.
61	IUGR.ti,ab.
62	INFANT, LOW BIRTH WEIGHT/
63	exp INFANT, VERY LOW BIRTH WEIGHT/
64	(low birthweight? or low birth weight?).ti,ab,kw.
65	LBW.ti,ab.
66	or/54-65
67	*HEALTH SERVICES ACCESSIBILITY/
68	HEALTHCARE DISPARITIES/
69	HEALTH SERVICES MISUSE/

#	Searches
70	NO-SHOW PATIENTS/
71	((no or late or delay\$ or lack\$ or without) adj5 (antenatal\$ or prenatal\$ or pre-natal\$) adj3 care).ab,ti.
72	((no or unable or restrict\$ or limit\$) adj3 access\$ adj3 (care or healthcare or service?)).ti,ab.
73	(unbook\$ or un-book\$ or (late adj3 book\$)).ti,ab.
74	walk\$ in?.ti,ab.
75	((no or non) adj3 engag\$).ti,ab.
76	((no or non) adj3 show\$).ti,ab.
77	or/67-76
78	PREGNANCY, UNPLANNED/
79	PREGNANCY, UNWANTED/
80	((conceal\$ or hide? or hidden or hiding or unexpected or un-expected or unintended or un-intended or unsuspect\$ or un-suspect\$ or unaware or un-aware or unplanned or un-planned or unwanted or un-wanted) adj3 pregnan\$).ti,ab.
81	or/78-80
82	PERIPARTUM PERIOD/
83	PARTURITION/
84	LABOR, OBSTETRIC/
85	UTERINE CONTRACTION/
86	LABOR ONSET/
87	LABOR STAGE, FIRST/
88	LABOR STAGE, SECOND/
89	OBSTETRIC LABOR, PREMATURE/
90	DELIVERY, OBSTETRIC/
91	(labo?r or childbirth or partur\$ or intra?part\$ or peri?part\$).ti,ab,kw.
92	((during or giving) adj3 birth?).ti,ab.
93	or/82-92
94	HEMORRHAGE/
95	SHOCK, HEMORRHAGIC/
96	UTERINE HEMORRHAGE/
97	or/94-96
98	93 and 97
99	((labo?r or birth? or childbirth? or partur\$ or intra?part\$ or peri?part\$) adj3 (h?emorrhag\$ or bleed\$)).ti,ab.
100	or/98-99
101	*PREGNANCY, HIGH-RISK/
102	(pregnan\$ adj2 high\$ adj2 risk\$).ab,ti.
103	or/101-102
104	10 and (14 or 26 or 31 or 34 or 42 or 53 or 66 or 77 or 81 or 103)
105	100 or 104
106	((maternal\$ or mother?) adj3 observ\$).ti,ab.

#	Searches
107	((maternal\$ or mother?) adj3 surveillance).ti,ab.
108	PATIENT CARE PLANNING/
109	CRITICAL PATHWAY/
110	CLINICAL PROTOCOLS/
111	((observ\$ or surveillance) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.
112	((hospital? or department? or unit?) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.
113	or/106-112
114	((add\$ or extra or further) adj3 (observ\$ or test\$)).ti,ab.
115	RESPIRATORY RATE/
116	OXIMETRY/
117	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj10 Respirat\$ adj3 rate?).ti,ab.
118	oximetr\$.ti,ab,kw.
119	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj10 oxygen adj3 saturat\$).ti,ab.
120	(urin\$ adj3 (output? or volume?)).ti,ab.
121	(alert\$ adj1 (voice? or verbal\$) adj1 pain\$ adj1 (unrespon\$ or un-respon\$)).ti,ab.
122	AVPU.ti,ab.
123	((observ\$ or test\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Blood adj3 (loss or lose or losing)).ti,ab.
124	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Bleed\$).ti,ab.
125	or/114-124
126	(frequen\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
127	(regular\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
128	(hour\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
129	BLOOD PRESSURE DETERMINATION/
130	HEART RATE DETERMINATION/
131	BODY TEMPERATURE/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ti.
132	BODY TEMPERATURE/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ab. /freq=2
133	GYNECOLOGICAL EXAMINATION/
134	DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ti.
135	DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ab. /freq=2
136	UTERINE CONTRACTION/ and (observ\$ or examin\$ or surveillance).ti.
137	UTERINE CONTRACTION/ and (observ\$ or examin\$ or surveillance).ab. /freq=2
138	((Blood or systolic or diastolic) adj3 pressure? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.

#	Searches
139	((Heart or pulse) adj3 rate? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
140	(Temperature? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
141	((abdom\$ or vaginal\$) adj3 examin\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
142	(abdom\$ adj3 palpat\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
143	(dilat\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
144	(descen\$ adj3 present\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
145	(contract\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
146	or/126-145
147	(assess\$ adj3 tool?).ti,ab.
148	(scor\$ adj3 system?).ti,ab.
149	(early adj3 warning adj3 (scor\$ or system? or tool?)).ti,ab.
150	EWS.ti,ab.
151	MEWS.ti,ab.
152	MEOWS.ti,ab.
153	SEWS.ti,ab.
154	or/147-153
155	UK Obstetric Surveillance System.ti,ab.
156	UKOSS.ti,ab.
157	"Mothers and babies? reducing risk through audits and confidential enquiries across the UK".ti,ab.
158	MBRRACE.ti,ab.
159	Scottish confidential audit of severe maternal morbidity.ti,ab.
160	SCASMM.ti,ab.
161	"Confidential Enquiry into Maternal and Child Health".ti,ab.
162	CEMACH.ti,ab.
163	or/155-162
164	105 and 113
165	105 and 125
166	105 and 146
167	105 and 154
168	105 and 163
169	or/164-168

Database: Cochrane Database of Systematic Reviews

#	Searches
1	PERIPARTUM PERIOD.kw.
2	PARTURITION.kw.

#	Searches
3	LABOR, OBSTETRIC.kw.
4	OBSTETRIC LABOR, PREMATURE.kw.
5	DELIVERY, OBSTETRIC.kw.
6	(labo?r or childbirth or partu\$ or intra?part\$ or peri?part\$).ti,ab.
7	((during or giving or give) adj3 birth?).ti,ab.
8	((Postpartum? or Post-partum? or Postnatal\$ or Post-natal\$ or Puerperium? or Puerperal?) adj3 period adj3 immediat\$).ti,ab.
9	((twenty four hour? or twentyfour hour? or 24 hour? or 24 h? or 24h?) adj3 (birth\$ or childbirth\$ or parturition?)).ti,ab.
10	or/1-9
11	FEVER.kw.
12	(fever\$ or pyrexia\$ or hyperthermia\$).ti,ab.
13	((elevat\$ or high\$) adj3 temperature?).ti,ab.
14	or/11-13
15	SEPSIS.kw.
16	sepsis.ti,ab.
17	BLOOD-BORNE PATHOGENS.kw.
18	(blood\$ adj3 (pathogen\$ or poison\$)).ti,ab.
19	SYSTEMIC INFLAMMATORY RESPONSE SYNDROME.kw.
20	"systemic inflammatory response syndrome".ti,ab.
21	SIRS.ti,ab.
22	septic?emi\$.ti,ab.
23	((septic or endotoxic or toxic) adj3 shock).ti,ab.
24	(py?emi\$ or pyohemia\$).ti,ab.
25	(bacter?emi\$ or fung?emi\$ or parasit?emi\$ or vir?emi\$ or endotox?emi\$ or candid?emi\$).ti,ab.
26	or/15-25
27	FETAL MACROSOMIA.kw.
28	macrosomia?.ti,ab.
29	(large adj3 gestational adj3 age?).ab,ti.
30	(large adj3 date?).ab,ti.
31	or/27-30
32	BREECH PRESENTATION.kw.
33	(breech\$ adj3 (present\$ or complet\$ or incomplet\$ or frank\$)).ab,ti.
34	or/32-33
35	PREGNANCY, PROLONGED.kw.
36	(pregnan\$ adj3 prolong\$).ab,ti.
37	(pregnan\$ adj1 late).ab,ti.
38	(postterm\$ or post-term\$).ab,ti.
39	(postdate\$ or post-date\$).ab,ti.

#	Searches
40	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
41	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
42	or/35-41
43	CESAREAN SECTION, REPEAT.kw.
44	CESAREAN SECTION.kw. and (repeat\$ or previous\$).ti.
45	CESAREAN SECTION.kw. and (repeat\$ or previous\$).ab.
46	((c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$)) adj3 (repeat\$ or previous\$)).ti,ab.
47	VAGINAL BIRTH AFTER CESAREAN.kw.
48	(vagina\$ adj1 (birth\$ or born or deliver\$) adj2 after\$ adj2 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
49	VBAC.ti,ab.
50	(TRIAL OF LABOR and CESAREAN SECTION).kw.
51	(trial adj2 labo?r adj3 after\$ adj3 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
52	TOLAC.ti,ab.
53	or/43-52
54	INFANT, SMALL FOR GESTATIONAL AGE.kw.
55	GESTATIONAL AGE.kw. and small.ti.
56	GESTATIONAL AGE.kw. and small.ab.
57	(small adj3 gestational age?).ab,ti.
58	SGA.ti,ab.
59	FETAL GROWTH RETARDATION.kw.
60	((fetal\$ or fetus\$ or intrauterine) adj3 grow\$ adj3 (restrict\$ or retard\$)).ti,ab.
61	IUGR.ti,ab.
62	INFANT, LOW BIRTH WEIGHT.kw.
63	INFANT, VERY LOW BIRTH WEIGHT.kw.
64	(low birthweight? or low birth weight?).ti,ab.
65	LBW.ti,ab.
66	or/54-65
67	HEALTH SERVICES ACCESSIBILITY.kw.
68	HEALTHCARE DISPARITIES.kw.
69	HEALTH SERVICES MISUSE.kw.
70	NO-SHOW PATIENTS.kw.
71	((no or late or delay\$ or lack\$ or without) adj5 (antenatal\$ or prenatal\$ or pre-natal\$) adj3 care).ab,ti.
72	((no or unable or retsrict\$ or limit\$) adj3 access\$ adj3 (care or healthcare or service?)).ti,ab.
73	(unbook\$ or un-book\$ or (late adj3 book\$)).ti,ab.
74	walk\$ in?.ti,ab.
75	((no or non) adj3 engag\$).ti,ab.

#	Searches
76	((no or non) adj3 show\$).ti,ab.
77	or/67-76
78	PREGNANCY, UNPLANNED.kw.
79	PREGNANCY, UNWANTED.kw.
80	((conceal\$ or hide? or hidden or hiding or unexpected or un-expected or unintended or un-intended or unsuspect\$ or un-suspect\$ or unaware or un-aware or unplanned or un-planned or unwanted or un-wanted) adj3 pregnan\$).ti,ab.
81	or/78-80
82	PERIPARTUM PERIOD.kw.
83	PARTURITION.kw.
84	LABOR, OBSTETRIC.kw.
85	UTERINE CONTRACTION.kw.
86	LABOR ONSET.kw.
87	LABOR STAGE, FIRST.kw.
88	LABOR STAGE, SECOND.kw.
89	OBSTETRIC LABOR, PREMATURE.kw.
90	DELIVERY, OBSTETRIC.kw.
91	(labo?r or childbirth or partur\$ or intra?part\$ or peri?part\$).ti,ab.
92	((during or giving) adj3 birth?).ti,ab.
93	or/82-92
94	HEMORRHAGE.kw.
95	SHOCK, HEMORRHAGIC.kw.
96	UTERINE HEMORRHAGE.kw.
97	or/94-96
98	93 and 97
99	((labo?r or birth? or childbirth? or partur\$ or intra?part\$ or peri?part\$) adj3 (h?emorrhag\$ or bleed\$)).ti,ab.
100	or/98-99
101	PREGNANCY, HIGH-RISK.kw.
102	(pregnan\$ adj2 high\$ adj2 risk\$).ab,ti.
103	or/101-102
104	10 and (14 or 26 or 31 or 34 or 42 or 53 or 66 or 77 or 81 or 103)
105	100 or 104
106	((maternal\$ or mother?) adj3 observ\$).ti,ab.
107	((maternal\$ or mother?) adj3 surveillance).ti,ab.
108	PATIENT CARE PLANNING.kw.
109	CRITICAL PATHWAY.kw.
110	CLINICAL PROTOCOLS.kw.
111	((observ\$ or surveillance) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.
112	((hospital? or department? or unit?) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.

#	Searches
113	or/106-112
114	((add\$ or extra or further) adj3 (observ\$ or test\$)).ti,ab.
115	RESPIRATORY RATE.kw.
116	OXIMETRY.kw.
117	(Respirat\$ adj3 rate?).ti,ab.
118	oximetr\$.ti,ab.
119	(oxygen adj3 saturat\$).ti,ab.
120	(urin\$ adj3 (output? or volume?)).ti,ab.
121	(alert\$ adj1 (voice? or verbal\$) adj1 pain\$ adj1 (unrespon\$ or un-respon\$)).ti,ab.
122	AVPU.ti,ab.
123	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Blood adj3 (loss or lose or losing)).ti,ab.
124	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Bleed\$).ti,ab.
125	or/114-124
126	(frequen\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
127	(regular\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
128	(hour\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
129	BLOOD PRESSURE DETERMINATION.kw.
130	HEART RATE DETERMINATION.kw.
131	BODY TEMPERATURE.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ti.
132	BODY TEMPERATURE.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ab.
133	GYNECOLOGICAL EXAMINATION.kw.
134	DILATATION.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ti.
135	DILATATION.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ab.
136	UTERINE CONTRACTION.kw. and (observ\$ or examin\$ or surveillance).ti.
137	UTERINE CONTRACTION.kw. and (observ\$ or examin\$ or surveillance).ab.
138	((Blood or systolic or diastolic) adj3 pressure? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
139	((Heart or pulse) adj3 rate? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
140	(Temperature? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
141	((abdom\$ or vaginal\$) adj3 examin\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
142	(abdom\$ adj3 palpat\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
143	(dilat\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
144	(descen\$ adj3 present\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.

#	Searches
145	(contract\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
146	or/126-145
147	(assess\$ adj3 tool?).ti,ab.
148	(scor\$ adj3 system?).ti,ab.
149	(early adj3 warning adj3 (scor\$ or system? or tool?)).ti,ab.
150	EWS.ti,ab.
151	MEWS.ti,ab.
152	MEOWS.ti,ab.
153	SEWS.ti,ab.
154	or/147-153
155	UK Obstetric Surveillance System.ti,ab.
156	UKOSS.ti,ab.
157	"Mothers and babies? reducing risk through audits and confidential enquiries across the UK".ti,ab.
158	MBRRACE.ti,ab.
159	Scottish confidential audit of severe maternal morbidity.ti,ab.
160	SCASMM.ti,ab.
161	"Confidential Enquiry into Maternal and Child Health".ti,ab.
162	CEMACH.ti,ab.
163	or/155-162
164	105 and 113
165	105 and 125
166	105 and 146
167	105 and 154
168	105 and 163
169	or/164-168

Database: Database of Abstracts of Reviews of Effects

#	Searches
1	PERIPARTUM PERIOD.kw.
2	PARTURITION.kw.
3	LABOR, OBSTETRIC.kw.
4	OBSTETRIC LABOR, PREMATURE.kw.
5	DELIVERY, OBSTETRIC.kw.
6	(labo?r or childbirth or partu\$ or intra?part\$ or peri?part\$).tw,tx.
7	((during or giving or give) adj3 birth?).tw,tx.
8	((Postpartum? or Post-partum? or Postnatal\$ or Post-natal\$ or Puerperium? or Puerperal?) adj3 period adj3 immediat\$).tw,tx.
9	((twenty four hour? or twentyfour hour? or 24 hour? or 24 h? or 24h?) adj3 (birth\$ or childbirth\$ or parturition?)).tw,tx.

#	Searches
10	or/1-9
11	FEVER.kw.
12	(fever\$ or pyrexia\$ or hyperthermia\$).tw,tx.
13	((elevat\$ or high\$) adj3 temperature?).tw,tx.
14	or/11-13
15	SEPSIS.kw.
16	sepsis.tw,tx.
17	BLOOD-BORNE PATHOGENS.kw.
18	(blood\$ adj3 (pathogen\$ or poison\$)).tw,tx.
19	SYSTEMIC INFLAMMATORY RESPONSE SYNDROME.kw.
20	"systemic inflammatory response syndrome".tw,tx.
21	SIRS.tw,tx.
22	septic?emi\$.tw,tx.
23	((septic or endotoxic or toxic) adj3 shock).tw,tx.
24	(py?emi\$ or pyohemia\$).tw,tx.
25	(bacter?emi\$ or fung?emi\$ or parasit?emi\$ or vir?emi\$ or endotox?emi\$ or candid?emi\$).tw,tx.
26	or/15-25
27	FETAL MACROSOMIA.kw.
28	macrosomia?.tw,tx.
29	(large adj3 gestational adj3 age?).tw,tx.
30	(large adj3 date?).tw,tx.
31	or/27-30
32	BREECH PRESENTATION.kw.
33	(breech\$ adj3 (present\$ or complet\$ or incomplet\$ or frank\$)).tw,tx.
34	or/32-33
35	PREGNANCY, PROLONGED.kw.
36	(pregnan\$ adj3 prolong\$).tw,tx.
37	(pregnan\$ adj1 late).tw,tx.
38	(postterm\$ or post-term\$).tw,tx.
39	(postdate\$ or post-date\$).tw,tx.
40	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw,tx.
41	((42 week? or forty two week? or forty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw,tx.
42	or/35-41
43	CESAREAN SECTION, REPEAT.kw.
44	CESAREAN SECTION.kw. and (repeat\$ or previous\$).tw,tx.
45	CESAREAN SECTION.kw. and (repeat\$ or previous\$).tw,tx.
46	((c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$)) adj3 (repeat\$ or previous\$)).tw,tx.

#	Searches
47	VAGINAL BIRTH AFTER CESAREAN.kw.
48	(vagina\$ adj1 (birth\$ or born or deliver\$) adj2 after\$ adj2 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).tw,tx.
49	VBAC.tw,tx.
50	(TRIAL OF LABOR and CESAREAN SECTION).kw.
51	(trial adj2 labo?r adj3 after\$ adj3 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).tw,tx.
52	TOLAC.tw,tx.
53	or/43-52
54	INFANT, SMALL FOR GESTATIONAL AGE.kw.
55	GESTATIONAL AGE.kw. and small.tw,tx.
56	GESTATIONAL AGE.kw. and small.tw,tx.
57	(small adj3 gestational age?).tw,tx.
58	SGA.tw,tx.
59	FETAL GROWTH RETARDATION.kw.
60	((fetal\$ or fetus\$ or intrauterine) adj3 grow\$ adj3 (restrict\$ or retard\$)).tw,tx.
61	IUGR.tw,tx.
62	INFANT, LOW BIRTH WEIGHT.kw.
63	INFANT, VERY LOW BIRTH WEIGHT.kw.
64	(low birthweight? or low birth weight?).tw,tx.
65	LBW.tw,tx.
66	or/54-65
67	HEALTH SERVICES ACCESSIBILITY.kw.
68	HEALTHCARE DISPARITIES.kw.
69	HEALTH SERVICES MISUSE.kw.
70	NO-SHOW PATIENTS.kw.
71	((no or late or delay\$ or lack\$ or without) adj5 (antenatal\$ or prenatal\$ or pre-natal\$) adj3 care).tw,tx.
72	((no or unable or restrict\$ or limit\$) adj3 access\$ adj3 (care or healthcare or service?)).tw,tx.
73	(unbook\$ or un-book\$ or (late adj3 book\$)).tw,tx.
74	walk\$ in?.tw,tx.
75	((no or non) adj3 engag\$).tw,tx.
76	((no or non) adj3 show\$).tw,tx.
77	or/67-76
78	PREGNANCY, UNPLANNED.kw.
79	PREGNANCY, UNWANTED.kw.
80	((conceal\$ or hide? or hidden or hiding or unexpected or un-expected or unintended or un-intended or unsuspect\$ or un-suspect\$ or unaware or un-aware or unplanned or un-planned or unwanted or un-wanted) adj3 pregnan\$).tw,tx.
81	or/78-80
82	PERIPARTUM PERIOD.kw.

#	Searches
83	PARTURITION.kw.
84	LABOR, OBSTETRIC.kw.
85	UTERINE CONTRACTION.kw.
86	LABOR ONSET.kw.
87	LABOR STAGE, FIRST.kw.
88	LABOR STAGE, SECOND.kw.
89	OBSTETRIC LABOR, PREMATURE.kw.
90	DELIVERY, OBSTETRIC.kw.
91	(labo?r or childbirth or partur\$ or intra?part\$ or peri?part\$).tw,tx.
92	((during or giving) adj3 birth?).tw,tx.
93	or/82-92
94	HEMORRHAGE.kw.
95	SHOCK, HEMORRHAGIC.kw.
96	UTERINE HEMORRHAGE.kw.
97	or/94-96
98	93 and 97
99	((labo?r or birth? or childbirth? or partur\$ or intra?part\$ or peri?part\$) adj3 (h?emorrhag\$ or bleed\$)).tw,tx.
100	or/98-99
101	PREGNANCY, HIGH-RISK.kw.
102	(pregnan\$ adj2 high\$ adj2 risk\$).tw,tx.
103	or/101-102
104	10 and (14 or 26 or 31 or 34 or 42 or 53 or 66 or 77 or 81 or 103)
105	100 or 104
106	((maternal\$ or mother?) adj3 observ\$).tw,tx.
107	((maternal\$ or mother?) adj3 surveillance).tw,tx.
108	PATIENT CARE PLANNING.kw.
109	CRITICAL PATHWAY.kw.
110	CLINICAL PROTOCOLS.kw.
111	((observ\$ or surveillance) adj3 (protocol? or pathway? or care plan\$ or guideline?)).tw,tx.
112	((hospital? or department? or unit?) adj3 (protocol? or pathway? or care plan\$ or guideline?)).tw,tx.
113	or/106-112
114	((add\$ or extra or further) adj3 (observ\$ or test\$)).tw,tx.
115	RESPIRATORY RATE.kw.
116	OXIMETRY.kw.
117	(Respirat\$ adj3 rate?).tw,tx.
118	oximetr\$.tw,tx.
119	(oxygen adj3 saturat\$).tw,tx.
120	(urin\$ adj3 (output? or volume?)).tw,tx.

#	Searches
121	(alert\$ adj1 (voice? or verbal\$) adj1 pain\$ adj1 (unrespon\$ or un-respon\$)).tw,tx.
122	AVPU.tw,tx.
123	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Blood adj3 (loss or lose or losing)).tw,tx.
124	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Bleed\$).tw,tx.
125	or/114-124
126	(frequen\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).tw,tx.
127	(regular\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).tw,tx.
128	(hour\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).tw,tx.
129	BLOOD PRESSURE DETERMINATION.kw.
130	HEART RATE DETERMINATION.kw.
131	BODY TEMPERATURE.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw,tx.
132	BODY TEMPERATURE.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw,tx.
133	GYNECOLOGICAL EXAMINATION.kw.
134	DILATATION.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw,tx.
135	DILATATION.kw. and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw,tx.
136	UTERINE CONTRACTION.kw. and (observ\$ or examin\$ or surveillance).tw,tx.
137	UTERINE CONTRACTION.kw. and (observ\$ or examin\$ or surveillance).tw,tx.
138	((Blood or systolic or diastolic) adj3 pressure? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
139	((Heart or pulse) adj3 rate? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
140	(Temperature? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
141	((abdom\$ or vaginal\$) adj3 examin\$ adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
142	(abdom\$ adj3 palpat\$ adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
143	(dilat\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
144	(descen\$ adj3 present\$ adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
145	(contract\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw,tx.
146	or/126-145
147	(assess\$ adj3 tool?).tw,tx.
148	(scor\$ adj3 system?).tw,tx.
149	(early adj3 warning adj3 (scor\$ or system? or tool?)).tw,tx.
150	EWS.tw,tx.
151	MEWS.tw,tx.

#	Searches
152	MEOWS.tw,tx.
153	SEWS.tw,tx.
154	or/147-153
155	UK Obstetric Surveillance System.tw,tx.
156	UKOSS.tw,tx.
157	"Mothers and babies? reducing risk through audits and confidential enquiries across the UK".tw,tx.
158	MBRRACE.tw,tx.
159	Scottish confidential audit of severe maternal morbidity.tw,tx.
160	SCASMM.tw,tx.
161	"Confidential Enquiry into Maternal and Child Health".tw,tx.
162	CEMACH.tw,tx.
163	or/155-162
164	105 and 113
165	105 and 125
166	105 and 146
167	105 and 154
168	105 and 163
169	or/164-168

Database: Health Technology Assessment

#	Searches
1	PERIPARTUM PERIOD/
2	PARTURITION/
3	exp LABOR, OBSTETRIC/
4	OBSTETRIC LABOR, PREMATURE/
5	DELIVERY, OBSTETRIC/
6	(labo?r or childbirth or partu\$ or intra?part\$ or peri?part\$).tw.
7	((during or giving or give) adj3 birth?).tw.
8	((Postpartum? or Post-partum? or Postnatal\$ or Post-natal\$ or Puerperium? or Puerperal?) adj3 period adj3 immediat\$).tw.
9	((twenty four hour? or twentyfour hour? or 24 hour? or 24 h? or 24h?) adj3 (birth\$ or childbirth\$ or parturition?)).tw.
10	or/1-9
11	exp FEVER/
12	(fever\$ or pyrexia\$ or hyperthermi\$).tw.
13	((elevat\$ or high\$) adj3 temperature?).tw.
14	or/11-13
15	exp SEPSIS/
16	sepsis.tw.
17	BLOOD-BORNE PATHOGENS/

#	Searches
18	(blood\$ adj3 (pathogen\$ or poison\$)).tw.
19	exp SYSTEMIC INFLAMMATORY RESPONSE SYNDROME/
20	"systemic inflammatory response syndrome".tw.
21	SIRS.tw.
22	septic?emi\$.tw.
23	((septic or endotoxic or toxic) adj3 shock).tw.
24	(py?emi\$ or pyohemi\$).tw.
25	(bacter?emi\$ or fung?emi\$ or parasit?emi\$ or vir?emi\$ or endotox?emi\$ or candid?emi\$).tw.
26	or/15-25
27	FETAL MACROSOMIA/
28	macrosomia?.tw.
29	(large adj3 gestational adj3 age?).tw.
30	(large adj3 date?).tw.
31	or/27-30
32	BREECH PRESENTATION/
33	(breech\$ adj3 (present\$ or complet\$ or incomplet\$ or frank\$)).tw.
34	or/32-33
35	PREGNANCY, PROLONGED/
36	(pregnan\$ adj3 prolong\$).tw.
37	(pregnan\$ adj1 late).tw.
38	(postterm\$ or post-term\$).tw.
39	(postdate\$ or post-date\$).tw.
40	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw.
41	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw.
42	or/35-41
43	CESAREAN SECTION, REPEAT/
44	CESAREAN SECTION/ and (repeat\$ or previous\$).tw.
45	CESAREAN SECTION/ and (repeat\$ or previous\$).tw.
46	((c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$)) adj3 (repeat\$ or previous\$)).tw.
47	VAGINAL BIRTH AFTER CESAREAN/
48	(vagina\$ adj1 (birth\$ or born or deliver\$) adj2 after\$ adj2 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).tw.
49	VBAC.tw.
50	TRIAL OF LABOR/ and CESAREAN SECTION/
51	(trial adj2 labo?r adj3 after\$ adj3 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).tw.
52	TOLAC.tw.
53	or/43-52
54	INFANT, SMALL FOR GESTATIONAL AGE/

#	Searches
55	GESTATIONAL AGE/ and small.tw.
56	GESTATIONAL AGE/ and small.tw.
57	(small adj3 gestational age?).tw.
58	SGA.tw.
59	FETAL GROWTH RETARDATION/
60	((fetal\$ or fetus\$ or intrauterine) adj3 grow\$ adj3 (restrict\$ or retard\$)).tw.
61	IUGR.tw.
62	INFANT, LOW BIRTH WEIGHT/
63	exp INFANT, VERY LOW BIRTH WEIGHT/
64	(low birthweight? or low birth weight?).tw.
65	LBW.tw.
66	or/54-65
67	*HEALTH SERVICES ACCESSIBILITY/
68	HEALTHCARE DISPARITIES/
69	HEALTH SERVICES MISUSE/
70	NO-SHOW PATIENTS/
71	((no or late or delay\$ or lack\$ or without) adj5 (antenatal\$ or prenatal\$ or pre-natal\$) adj3 care).tw.
72	((no or unable or restrict\$ or limit\$) adj3 access\$ adj3 (care or healthcare or service?)).tw.
73	(unbook\$ or un-book\$ or (late adj3 book\$)).tw.
74	walk\$ in?.tw.
75	((no or non) adj3 engag\$).tw.
76	no show.tw.
77	or/67-76
78	PREGNANCY, UNPLANNED/
79	PREGNANCY, UNWANTED/
80	((conceal\$ or hide? or hidden or hiding or unexpected or un-expected or unintended or un-intended or unsuspect\$ or un-suspect\$ or unaware or un-aware or unplanned or un-planned or unwanted or un-wanted) adj3 pregnan\$).tw.
81	or/78-80
82	PERIPARTUM PERIOD/
83	PARTURITION/
84	LABOR, OBSTETRIC/
85	UTERINE CONTRACTION/
86	LABOR ONSET/
87	LABOR STAGE, FIRST/
88	LABOR STAGE, SECOND/
89	OBSTETRIC LABOR, PREMATURE/
90	DELIVERY, OBSTETRIC/
91	(labo?r or childbirth or partur\$ or intra?part\$ or peri?part\$).tw.

#	Searches
92	((during or giving) adj3 birth?).tw.
93	or/82-92
94	HEMORRHAGE/
95	SHOCK, HEMORRHAGIC/
96	UTERINE HEMORRHAGE/
97	or/94-96
98	93 and 97
99	((labo?r or birth? or childbirth? or partur\$ or intra?part\$ or peri?part\$) adj3 (h?emorrhag\$ or bleed\$)).tw.
100	or/98-99
101	*PREGNANCY, HIGH-RISK/
102	(pregnan\$ adj2 high\$ adj2 risk\$).tw.
103	or/101-102
104	10 and (14 or 26 or 31 or 34 or 42 or 53 or 66 or 77 or 81 or 103)
105	100 or 104
106	((maternal\$ or mother?) adj3 observ\$).tw.
107	((maternal\$ or mother?) adj3 surveillance).tw.
108	PATIENT CARE PLANNING/
109	CRITICAL PATHWAY/
110	CLINICAL PROTOCOLS/
111	((observ\$ or surveillance) adj3 (protocol? or pathway? or care plan\$ or guideline?)).tw.
112	((hospital? or department? or unit?) adj3 (protocol? or pathway? or care plan\$ or guideline?)).tw.
113	or/106-112
114	((add\$ or extra or further) adj3 (observ\$ or test\$)).tw.
115	RESPIRATORY RATE/
116	OXIMETRY/
117	(Respirat\$ adj3 rate?).tw.
118	oximetr\$.tw.
119	(oxygen adj3 saturat\$).tw.
120	(urin\$ adj3 (output? or volume?)).tw.
121	(alert\$ adj1 (voice? or verbal\$) adj1 pain\$ adj1 (unrespon\$ or un-respon\$)).tw.
122	AVPU.tw.
123	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Blood adj3 (loss or lose or losing)).tw.
124	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Bleed\$).tw.
125	or/114-124
126	(frequen\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).tw.
127	(regular\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).tw.
128	(hour\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).tw.

#	Searches
129	BLOOD PRESSURE DETERMINATION/
130	HEART RATE DETERMINATION/
131	BODY TEMPERATURE/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw.
132	BODY TEMPERATURE/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw.
133	GYNECOLOGICAL EXAMINATION/
134	DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw.
135	DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).tw.
136	UTERINE CONTRACTION/ and (observ\$ or examin\$ or surveillance).tw.
137	UTERINE CONTRACTION/ and (observ\$ or examin\$ or surveillance).tw.
138	((Blood or systolic or diastolic) adj3 pressure? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw.
139	((Heart or pulse) adj3 rate? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw.
140	(Temperature? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw.
141	((abdom\$ or vaginal\$) adj3 examin\$ adj10 (frequen\$ or regular\$ or hour\$)).tw.
142	(abdom\$ adj3 palpat\$ adj10 (frequen\$ or regular\$ or hour\$)).tw.
143	(dilat\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw.
144	(descen\$ adj3 present\$ adj10 (frequen\$ or regular\$ or hour\$)).tw.
145	(contract\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).tw.
146	or/126-145
147	(assess\$ adj3 tool?).tw.
148	(scor\$ adj3 system?).tw.
149	(early adj3 warning adj3 (scor\$ or system? or tool?)).tw.
150	EWS.tw.
151	MEWS.tw.
152	MEOWS.tw.
153	SEWS.tw.
154	or/147-153
155	UK Obstetric Surveillance System.tw.
156	UKOSS.tw.
157	"Mothers and babies? reducing risk through audits and confidential enquiries across the UK".tw.
158	MBRRACE.tw.
159	Scottish confidential audit of severe maternal morbidity.tw.
160	SCASMM.tw.
161	"Confidential Enquiry into Maternal and Child Health".tw.
162	CEMACH.tw.

#	Searches
163	or/155-162
164	105 and 113
165	105 and 125
166	105 and 146
167	105 and 154
168	105 and 163
169	or/164-168

Database: Embase

#	Searches
1	*PERINATAL PERIOD/
2	exp *BIRTH/
3	exp *LABOR/
4	*PREMATURE LABOR/
5	*OBSTETRIC DELIVERY/
6	*INTRAPARTUM CARE/
7	(labo?r or childbirth or partu\$ or intra?part\$ or peri?part\$).ti,ab.
8	((during or giving or give) adj3 birth?).ti,ab.
9	((Postpartum? or Post-partum? or Postnatal\$ or Post-natal\$ or Puerperium? or Puerperal?) adj3 period adj3 immediat\$).ti,ab.
10	((twenty four hour? or twentyfour hour? or 24 hour? or 24 h? or 24h?) adj3 (birth\$ or childbirth\$ or parturition?)).ti,ab.
11	or/1-10
12	*FEVER/
13	(fever\$ or pyrexia\$ or hyperthermia\$).ti,ab.
14	((elevat\$ or high\$) adj3 temperature?).ti,ab.
15	or/12-14
16	exp *SEPSIS/
17	sepsis.ti,ab.
18	*BLOODBORNE BACTERIUM/
19	(blood\$ adj3 (pathogen\$ or poison\$)).ti,ab.
20	*SYSTEMIC INFLAMMATORY RESPONSE SYNDROME/
21	"systemic inflammatory response syndrome".ti,ab.
22	SIRS.ti,ab.
23	septic?emi\$.ti,ab.
24	((septic or endotoxic or toxic) adj3 shock).ti,ab.
25	(py?emi\$ or pyohemia\$).ti,ab.
26	(bacter?emi\$ or fung?emi\$ or parasit?emi\$ or vir?emi\$ or endotox?emi\$ or candid?emi\$).ti,ab.
27	or/16-26
28	*MACROSOMIA/

#	Searches
29	macrosomia?.ti,ab.
30	(large adj3 gestational adj3 age?).ab,ti.
31	(large adj3 date?).ab,ti.
32	or/28-31
33	*BREECH PRESENTATION/
34	(breech\$ adj3 (present\$ or complet\$ or incomplet\$ or frank\$)).ab,ti.
35	or/33-34
36	*PROLONGED PREGNANCY/
37	(pregnan\$ adj3 prolong\$).ab,ti.
38	(pregnan\$ adj1 late).ab,ti.
39	(postterm\$ or post-term\$).ab,ti.
40	(postdate\$ or post-date\$).ab,ti.
41	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
42	((42 week? or forty two week? or forty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
43	or/36-42
44	*REPEAT CESAREAN SECTION/
45	*CESAREAN SECTION/ and (repeat\$ or previous\$).ti.
46	*CESAREAN SECTION/ and (repeat\$ or previous\$).ab. /freq=2
47	((c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$)) adj3 (repeat\$ or previous\$)).ti,ab.
48	*VAGINAL BIRTH AFTER CESAREAN/
49	(vagina\$ adj1 (birth\$ or born or deliver\$) adj2 after\$ adj2 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
50	VBAC.ti,ab.
51	*"TRIAL OF LABOR"/ and *CESAREAN SECTION/
52	(trial adj2 labo?r adj3 after\$ adj3 (c?esar#an\$ or c section\$ or csection\$ or (deliver\$ adj3 abdom\$))).ti,ab.
53	TOLAC.ti,ab.
54	or/44-53
55	*SMALL FOR DATE INFANT/
56	*GESTATIONAL AGE/ and small.ti.
57	*GESTATIONAL AGE/ and small.ab. /freq=2
58	(small adj3 gestational age?).ab,ti.
59	SGA.ti,ab.
60	*INTRAUTERINE GROWTH RETARDATION/
61	((fetal\$ or fetus\$ or intrauterine) adj3 grow\$ adj3 (restrict\$ or retard\$)).ti,ab.
62	IUGR.ti,ab.
63	*LOW BIRTH WEIGHT/
64	exp *VERY LOW BIRTH WEIGHT/
65	(low birthweight? or low birth weight?).ti,ab.

#	Searches
66	LBW .ti,ab.
67	or/55-66
68	*HEALTH CARE DISPARITY/
69	*PATIENT ATTENDANCE/
70	((no or late or delay\$ or lack\$ or without) adj5 (antenatal\$ or prenatal\$ or pre-natal\$) adj3 care).ab,ti.
71	((no or unable or restrict\$ or limit\$) adj3 access\$ adj3 (care or healthcare or service?)).ti,ab.
72	(unbook\$ or un-book\$ or (late adj3 book\$)).ti,ab.
73	walk\$ in?.ti,ab.
74	((no or non) adj3 engag\$).ti,ab.
75	no show.ti,ab.
76	or/68-75
77	*UNPLANNED PREGNANCY/
78	*UNWANTED PREGNANCY/
79	((conceal\$ or hide? or hidden or hiding or unexpected or un-expected or unintended or un-intended or unsuspect\$ or un-suspect\$ or unaware or un-aware or unplanned or un-planned or unwanted or un-wanted) adj3 pregnan\$).ti,ab.
80	or/77-79
81	*PERINATAL PERIOD/
82	*BIRTH/
83	*LABOR/
84	*UTERUS CONTRACTION/
85	*LABOR ONSET/
86	*LABOR STAGE 1/
87	*LABOR STAGE 2/
88	*PREMATURE LABOR/
89	*OBSTETRIC DELIVERY/
90	*INTRAPARTUM CARE/
91	(labo?r or childbirth or partur\$ or intra?part\$ or peri?part\$).ti,ab.
92	((during or giving) adj3 birth?).ti,ab.
93	or/81-92
94	*BLEEDING/
95	*OBSTETRIC HEMORRHAGE/
96	*INTRAPARTUM HEMORRHAGE/
97	*HEMORRHAGIC SHOCK/
98	*UTERUS BLEEDING/
99	or/94-98
100	93 and 99
101	((labo?r or birth? or childbirth? or partur\$ or intra?part\$ or peri?part\$) adj3 (h?emorrhag\$ or bleed\$)).ti,ab.
102	or/100-101

#	Searches
103	*HIGH RISK PREGNANCY/
104	(pregnan\$ adj2 high\$ adj2 risk\$).ab,ti.
105	or/103-104
106	11 and (15 or 27 or 32 or 35 or 43 or 54 or 67 or 76 or 80 or 105)
107	102 or 106
108	((maternal\$ or mother?) adj3 observ\$).ti,ab.
109	((maternal\$ or mother?) adj3 surveillance).ti,ab.
110	*PATIENT CARE PLANNING/
111	*CLINICAL PATHWAY/
112	*CLINICAL PROTOCOLS/
113	((observ\$ or surveillance) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.
114	((hospital? or department? or unit?) adj3 (protocol? or pathway? or care plan\$ or guideline?)).ti,ab.
115	or/108-114
116	((add\$ or extra or further) adj3 (observ\$ or test\$)).ti,ab.
117	*BREATHING RATE/
118	*OXIMETRY/
119	*OXYGEN SATURATION/
120	*URINE VOLUME/
121	(Respirat\$ adj3 rate?).ti,ab.
122	oximetr\$.ti,ab.
123	(oxygen adj3 saturat\$).ti,ab.
124	(urin\$ adj3 (output? or volume?)).ti,ab.
125	(alert\$ adj1 (voice? or verbal\$) adj1 pain\$ adj1 (unrespon\$ or un-respon\$)).ti,ab.
126	AVPU.ti,ab.
127	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Blood adj3 (loss or lose or losing)).ti,ab.
128	((observ\$ or test\$ or measur\$ or quanti\$ or amount? or severit\$ or degree or threshold? or examin\$ or surveillance or monitor\$) adj3 Bleed\$).ti,ab.
129	or/116-128
130	(frequen\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
131	(regular\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
132	(hour\$ adj3 (observ\$ or test\$ or examin\$ or surveillance)).ti,ab.
133	*BLOOD PRESSURE MEASUREMENT/
134	HEART RATE MEASUREMENT/
135	BODY TEMPERATURE MEASUREMENT/
136	UTERINE CERVIX DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ti.
137	UTERINE CERVIX DILATATION/ and (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$).ab. /freq=2
138	UTERUS CONTRACTION/ and (observ\$ or examin\$ or surveillance).ti.

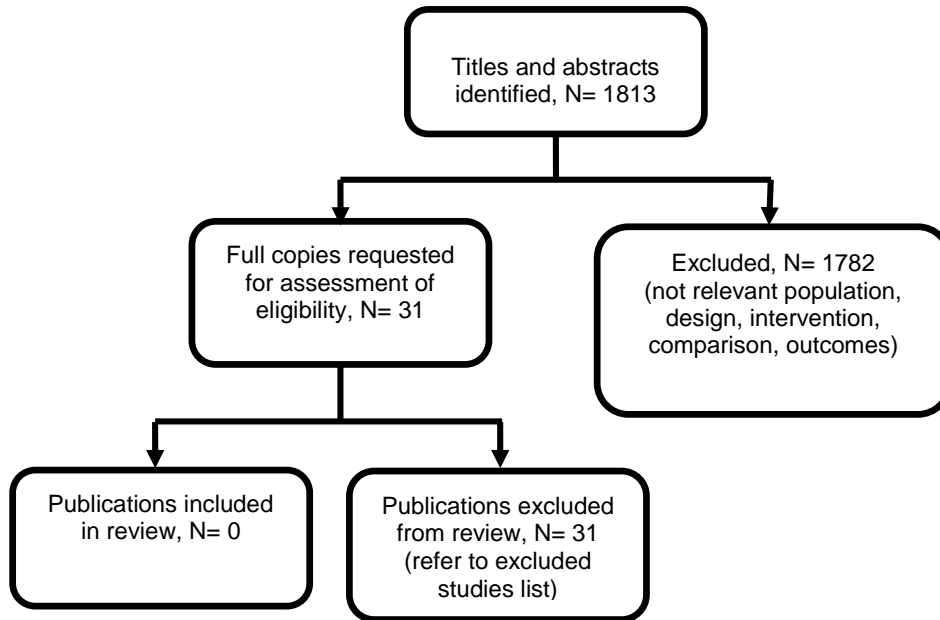
#	Searches
139	UTERUS CONTRACTION/ and (observ\$ or examin\$ or surveillance).ab. /freq=2
140	((Blood or systolic or diastolic) adj3 pressure? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
141	((Heart or pulse) adj3 rate? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
142	(Temperature? adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
143	((abdom\$ or vaginal\$) adj3 examin\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
144	(abdom\$ adj3 palpat\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
145	(dilat\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
146	(descen\$ adj3 present\$ adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
147	(contract\$ adj10 (observ\$ or test\$ or measur\$ or examin\$ or surveillance or determin\$ or monitor\$) adj10 (frequen\$ or regular\$ or hour\$)).ti,ab.
148	or/130-147
149	(assess\$ adj3 tool?).ti,ab.
150	(scor\$ adj3 system?).ti,ab.
151	(early adj3 warning adj3 (scor\$ or system? or tool?)).ti,ab.
152	EWS.ti,ab.
153	MEWS.ti,ab.
154	MEOWS.ti,ab.
155	SEWS.ti,ab.
156	or/149-155
157	UK Obstetric Surveillance System.ti,ab.
158	UKOSS.ti,ab.
159	"Mothers and babies? reducing risk through audits and confidential enquiries across the UK".ti,ab.
160	MBRRACE.ti,ab.
161	Scottish confidential audit of severe maternal morbidity.ti,ab.
162	SCASMM.ti,ab.
163	"Confidential Enquiry into Maternal and Child Health".ti,ab.
164	CEMACH.ti,ab.
165	or/157-164
166	107 and 115
167	107 and 129
168	107 and 148
169	107 and 156
170	107 and 165
171	or/166-170
172	limit 171 to english language
173	letter.pt. or LETTER/

#	Searches
174	note.pt.
175	editorial.pt.
176	CASE REPORT/ or CASE STUDY/
177	(letter or comment*).ti.
178	or/173-177
179	RANDOMIZED CONTROLLED TRIAL/ or random*.ti,ab.
180	178 not 179
181	ANIMAL/ not HUMAN/
182	NONHUMAN/
183	exp ANIMAL EXPERIMENT/
184	exp EXPERIMENTAL ANIMAL/
185	ANIMAL MODEL/
186	exp RODENT/
187	(rat or rats or mouse or mice).ti.
188	or/180-187
189	172 not 188

Appendix C – Clinical evidence study selection

Risk assessment

3 Figure 1: Flow diagram of clinical article selection for risk assessment



4

Appendix D – Excluded studies

Risk assessment

Clinical studies

Study	Reason for exclusion
Ahmed, S., Romejko-Wolniewicz, E., Zareba-Szczudlik, J., Czajkowski, K., Fetal macrosomia - An obstetrician's nightmare?, <i>Neuroendocrinology Letters</i> , 33, 149-155, 2012	A full-text copy of the article could not be obtained
Ananth, C. V., Savitz, D. A., Vaginal bleeding and adverse reproductive outcomes: a meta-analysis, <i>Paediatric and Perinatal Epidemiology</i> , 8, 62-78, 1994	No relevant interventions
Anteby, E.Y., Yagel, S., Hanoch, J., Shapiro, M., Moses, A.E., Puerperal and intrapartum group A streptococcal infection, <i>Infectious Diseases in Obstetrics and Gynecology</i> , 7, 276-282, 1999	No relevant interventions
Austin, D. M., Sadler, L., McLintock, C., McArthur, C., Masson, V., Farquhar, C., Rhodes, S., Early detection of severe maternal morbidity: a retrospective assessment of the role of an Early Warning Score System, <i>Australian & New Zealand Journal of Obstetrics & Gynaecology</i> , 54, 152-5, 2014	Only a small proportion of the study population was relevant, no relevant comparison
Banerjee, S., Cashman, P., Yentis, S. M., Steer, P. J., Maternal temperature monitoring during labor: concordance and variability among monitoring sites, <i>Obstetrics & Gynecology</i> , 103, 287-93, 2004	No relevant comparison. Population not relevant
Boers, K. E., Bijlenga, D., Mol, B. W., LeCessie, S., Birnie, E., van Pampus, M. G., Stigter, R. H., Bloemenkamp, K. W., van Meir, C. A., van der Post, J. A., Bekedam, D. J., Ribbert, L. S., Drogtop, A. P., van der Salm, P. C., Huisjes, A. J., Willekes, C., Roumen, F. J., Scheepers, H. C., de Boer, K., Duvekot, J. J., Thornton, J. G., Scherjon, S. A., Disproportionate Intrauterine Growth Intervention Trial At Term: DIGITAT, <i>BMC Pregnancy & Childbirth</i> , 7, 12, 2007	Protocol for a trial. The findings of the trial were checked from separate publications but there was no relevant data reported
Bower, D., Hamilton, S., Moody, S., Johnstone, E., Audit of small for gestational age/fetal growth restriction detection and management, <i>BJOG: An International Journal of Obstetrics and Gynaecology</i> , 123, 219, 2016	Conference abstract
Chebbo, A., Tan, S., Kassis, C., Tamura, L., Carlson, R. W., Maternal Sepsis and Septic Shock, <i>Critical Care Clinics</i> , 32, 119-35, 2016	Narrative review. Potentially relevant references checked, no relevant evidence identified
De Silva, A., Topping, J., Post term pregnancy outcomes-Eight-year experience in a tertiary obstetric unit in the UK, <i>International Journal of Gynecology and Obstetrics</i> , 107, S415, 2009	Conference abstract
Delaney, M., Roggensack, A., No. 214-Guidelines for the Management of Pregnancy at 41+0 to 42+0 Weeks, <i>Journal of Obstetrics and Gynaecology Canada</i> , 39, e164-e174, 2017	This paper presents the the Society of Obstetricians and Gynaecologists of Canada's

Study	Reason for exclusion
	recommendations for the management of pregnancy at 41 and 42 weeks and the evidence behind the recommendations. No evidence (or recommendations) regarding maternal observations during labour are presented
Delaney, M., Roggensack, A., Leduc, D. C., Ballermann, C., Biringer, A., Dontigny, L., Gleason, T. P., Lee, L. S. Y., Martel, M. J., Morin, V., Polsky, J. N., Rowntree, C., Shepherd, D. J., Wilson, K., Guidelines for the Management of Pregnancy at 41+0 to 42+0 Weeks, <i>Journal of Obstetrics and Gynaecology Canada</i> , 30, 800-810, 2008	Superseded by an update published in 2017 (Delaney 2017)
Diani, F., Venanzi, S., Zanconato, G., Murari, S., Moscatelli, C., Turinetto, A., Fetal macrosomia and management of delivery, <i>Clinical and Experimental Obstetrics and Gynecology</i> , 24, 212-214, 1997	No relevant intervention
Garcia Adanez, J., Navarro Lopez, M., Escudero, A., Vaquerizo, O., Sanchez, M., Pagola, N., Fernandez Ferrera, C., Vaginal breech delivery rescue, <i>Journal of Maternal-Fetal and Neonatal Medicine</i> , Conference, 2012	Conference abstract
Grunewald, C., Hakansson, S., Saltvedt, S., Kallen, K., Significant effects on neonatal morbidity and mortality after regional change in management of post-term pregnancy, <i>Acta Obstetrica et Gynecologica Scandinavica</i> , 90, 26-32, 2011	No relevant intervention
Gunther, R. E., Harer, W. B., Jr., Vaginal Examinations during Late Pregnancy and Labor, <i>Obstetrics & Gynecology</i> , 24, 695-700, 1964	Population not relevant, no relevant comparison
Hamer, P., Taylor, N., Collis, R. E., Implementing a maternal specific sepsis bundle, <i>International Journal of Obstetric Anesthesia</i> , 23, S31, 2014	Conference abstract
Hedriana, H. L., Wiesner, S., Downs, B. G., Pelletreau, B., Shields, L. E., Baseline assessment of a hospital-specific early warning trigger system for reducing maternal morbidity, <i>International Journal of Gynaecology & Obstetrics</i> , 132, 337-41, 2016	This retrospective case-control study studies the ability of maternal early warning triggers on predicting ICU admission. Comparison not relevant. No relevant outcomes. Population only partly relevant
Heimstad, R., Romundstad, P. R., Hyett, J., Mattsson, L. A., Salvesen, K. A., Women's experiences and attitudes towards expectant management and induction of labor for post-term pregnancy, <i>Acta Obstetrica et Gynecologica Scandinavica</i> , 86, 950-956, 2007	No relevant intervention
James, B., Barclay, P., Invasive monitoring within the maternal critical care unit, <i>International Journal of Obstetric Anesthesia</i> , 21, S30, 2012	Conference abstract
Lockhart, G., Mehta, P., Exline, M. C., Kynyk, J., Ali, N. A., Mews score as a tool for identifying patients with severe	Conference abstract

Study	Reason for exclusion
sepsis and adverse outcomes, American Journal of Respiratory and Critical Care Medicine, 191, 2015	
McFarlin, B. L., Intrauterine growth retardation. Etiology, diagnosis, and management, Journal of Nurse-Midwifery, 39, 52S-65S, 1994	A narrative review about intrauterine growth restriction. No relevant intervention, comparison, outcome
Nair, M., Kurinczuk, J. J., Brocklehurst, P., Sellers, S., Lewis, G., Knight, M., Factors associated with maternal death from direct pregnancy complications: a UK national case-control study, BJOG: An International Journal of Obstetrics & Gynaecology, 122, 653-62, 2015	No relevant population, intervention, comparison
Narain, S., Malin, G., Moore, J., How well do we observe women who have had caesarean sections?, BJOG: An International Journal of Obstetrics and Gynaecology, 123, 92-93, 2016	Conference abstract
Roach, V. J., Rogers, M. S., Pregnancy outcome beyond 41 weeks gestation, International journal of gynaecology and obstetrics: the official organ of the International Federation of Gynaecology and Obstetrics, 59, 19-24, 1997	No relevant interventions or comparisons. Women in this study are not in labour
Schoorel, E. N. C., Melman, S., Van Kuijk, S. M. J., Grobman, W. A., Kwee, A., Mol, B. W. J., Nijhuis, J. G., Smits, L. J. M., Aardenburg, R., De Boer, K., Delemarre, F. M. C., Van Dooren, I. M., Franssen, M. T. M., Kleiverda, G., Kaplan, M., Kuppens, S. M. I., Lim, F., Sikkema, J. M., Smid-Koopman, E., Visser, H., Vrouwenraets, F. P. J. M., Woiski, M., Hermens, R. P. M. G., Scheepers, H. C. J., Predicting successful intended vaginal delivery after previous caesarean section: External validation of two predictive models in a Dutch nationwide registration-based cohort with a high intended vaginal delivery rate, BJOG: An International Journal of Obstetrics and Gynaecology, 121, 840-847, 2014	No relevant interventions, no relevant comparison, no relevant outcomes
Schouten, F. D., Wolf, H., Smit, B. J., Bekedam, D. J., de Vos, R., Wahlen, I., Maternal temperature during labour, BJOG: An International Journal of Obstetrics & Gynaecology, 115, 1131-7, 2008	This study descriptively reports variation in temperature in women in labour. No relevant comparison, population includes women with and without fever
Seeley, J., Bowness, J., Anderson, F., Johnston, P., McLeod, G., Campbell, G., Evaluation of two clinical scoring tools to predict sepsis in labouring patients and aid decision making about epidural insertion, International Journal of Obstetric Anesthesia, 31, S41, 2017	Conference abstract
Seeley, J., Bowness, J., Anderson, F., Johnston, P., McLeod, G., Campbell, G., SOFA and qSOFA scoring in labouring women suspected to have sepsis, International Journal of Obstetric Anesthesia, 31, S9, 2017	Conference abstract
Shields, Laurence E., Wiesner, Suzanne, Klein, Catherine, Pelletreau, Barbara, Hedriana, Herman L., Use of Maternal Early Warning Trigger tool reduces maternal morbidity, American Journal of Obstetrics and Gynecology, 214, 527.e1-527.e6, 2016	This study compares clinical outcomes between using and not using Maternal Early Warning Trigger (MEWT) tool. However, the tool is used in maternity units and

Study	Reason for exclusion
	does not stratify results according to antepartum, intrapartum and postpartum period, therefore, the effectiveness of this tool in women in labour cannot be assessed
Troyer, L. R., Parisi, V. M., Obstetric parameters affecting success in a trial of labor: designation of a scoring system, American Journal of Obstetrics & Gynecology, 167, 1099-104, 1992	No relevant interventions
Zhang, T., Liu, C., Comparison between continuing midwifery care and standard maternity care in vaginal birth after cesarean, Pakistan Journal of Medical Sciences, 32, 711-4, 2016	No relevant interventions

Economic studies

- 2 See Supplement 2 (Health economics) for details of economic evidence reviews and health
3 economic modelling.

Appendix E – Clinical evidence tables

Risk assessment

- 6 No clinical evidence was identified for this review and so there are no evidence tables.

Appendix F – Forest plots

Risk assessment

- 9 No meta-analysis was undertaken for this review and so there are no forest plots.

Appendix G – GRADE tables

Risk assessment

- 12 No clinical evidence was identified for this review and so there are no GRADE tables.

Appendix H – Economic evidence study selection

Risk assessment

- 15 See Supplement 2 (Health economics) for details of economic evidence reviews and health
16 economic modelling.

Appendix I – Economic evidence tables

Risk assessment

3 See Supplement 2 (Health economics) for details of economic evidence reviews and health
4 economic modelling.

Appendix J – Health economic evidence profiles

Risk assessment

7 See Supplement 2 (Health economics) for details of economic evidence reviews and health
8 economic modelling.

Appendix K – Health economic analysis

1Risk assessment

11 See Supplement 2 (Health economics) for details of economic evidence reviews and health
12 economic modelling.

13 Appendix L – Research recommendations

1Risk assessment

15 What clinical features and laboratory investigations can be used to better stratify risk for
16 women in labour with signs of sepsis (including fever and tachycardia)?

1Why this is important

18 No evidence was found to inform the committee in recommending maternal observations that
19 should be carried out for women in labour with suspected sepsis to stratify risk and,
20 ultimately, to guide management. The committee formulated recommendations based on
21 their expertise, and also agreed to recommend research to evaluate the prognostic value of
22 individual measurements and/or composite scores, or the effectiveness of clinical decision
23 tools based on prognostic factors in reducing the incidence of serious medical problems.
24 Prognostic factors to be considered in the research could include:

- 25 • additional observations or tests (compared to usual care in labour for healthy women and
26 babies) such as respiratory rate, oxygen saturation and measurement of urine output
- 27 • observations and tests performed as part of usual care in labour for healthy women and
28 babies such as blood pressure, pulse or heart rate, temperature, findings on abdominal
29 and vaginal examinations (for example, cervical dilatation or descent of the presenting
30 part) and frequency and intensity of contractions.

31 Clinical decision tools to be evaluated as part of the research could include the use of
32 assessment or early warning tools such as (obstetric) early warning scores. The research
33 should aim to distinguish between sepsis and fever in labour, that is, in identifying women
34 who are sick and have early-onset organ failure.

Research recommendation rationale

Research question	What clinical features and laboratory investigations can be used to better stratify risk for women in labour with signs of sepsis (including fever and tachycardia)?
Importance to 'patients' or the population	More effective stratification of risk for women in labour with suspected sepsis could reduce the incidence of serious medical problems for both women and babies
Relevance to NICE guidance	The recommended research would facilitate development of a future update of this NICE guideline
Relevance to NHS	It is recognised that women in labour with sepsis or suspected sepsis are at increased risk of serious medical problems, including death of the woman or baby. More effective guidance would facilitate a reduction in the risk of such problems while effectively distinguishing between women with sepsis and early-onset organ failure and those with a fever but no other manifestations of sepsis
National priorities	The ability to better stratify risk of serious medical problems associated with sepsis or suspected sepsis in labour would: <ul style="list-style-type: none"> • improve care and outcomes • reduce costs associated with preventable medical problems • reduce variations in practice
Current evidence base	No evidence was found to inform the committee in recommending maternal observations that should be carried out for women in labour with suspected sepsis to stratify risk and, ultimately, to guide management
Equalities	No specific equalities issues were identified

Research recommendation PICO

Criterion	Explanation
Population	Women in labour with signs of sepsis, including fever and tachycardia
Intervention	Prognostic value of individual measurements and/or composite scores Application of clinical decision tools based on prognostic factors
Comparator	Standard/routine observations such as (obstetric) early warning scores Comparison between different prognostic factors (alone or in combination) and/or clinical decision tools based on prognostic factors
Outcomes	For the woman: <ul style="list-style-type: none"> • mortality • morbidity, including complications related to neuraxial block (such as epidural abscess and meningitis)

Criterion	Explanation
	<ul style="list-style-type: none"> • For the baby: • mortality • neonatal sepsis • administration of antibiotics (as a marker of neonatal sepsis) • hypoxic ischaemic encephalopathy
Study design	Randomised or prospective observational study
Timeframe	Sufficient duration of follow up to allow evaluation of perinatal outcomes including identification of neonatal sepsis and hypoxic ischaemic encephalopathy

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