

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

[T] Evidence review for labour after 42 weeks of pregnancy

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

Disclaimer

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Local commissioners and/or providers have a responsibility to enable the guideline to be applied when individual health professionals and their patients or service users wish to use it. They should do so in the context of local and national priorities for funding and developing services, and in light of their duties to have due regard to the need to eliminate unlawful discrimination, to advance equality of opportunity and to reduce health inequalities. Nothing in this guideline should be interpreted in a way that would be inconsistent with compliance with those duties.

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Contents

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	7
Review question	7
Introduction	7
Summary of the protocol	7
Clinical evidence	8
Summary of clinical studies included in the evidence review	8
Quality assessment of clinical studies included in the evidence review	8
Economic evidence	9
Summary of studies included in the economic evidence review.....	9
Economic model.....	9
Evidence statements	9
Recommendations	9
Rationale and impact.....	9
The committee’s discussion of the evidence.....	10
References.....	12
Appendices.....	13
Appendix A – Review protocol.....	13
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	13
Appendix B – Literature search strategies	17
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	17
Appendix C – Clinical evidence study selection	26
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	26
Appendix D – Excluded studies	27
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	27
Clinical studies	27
Economic studies	35
Appendix E – Clinical evidence tables	35
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	35
Appendix F – Forest plots.....	35
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	35
Appendix G – GRADE tables.....	35
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	35

Appendix H – Economic evidence study selection.....	35
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	35
Appendix I – Economic evidence tables	36
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	36
Appendix J – Health economic evidence profiles.....	36
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	36
Appendix K – Health economic analysis	37
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	37
Appendix L – Research recommendations	37
Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	37

1 Intrapartum care for women in labour after 2 42 weeks of pregnancy – maternal and 3 fetal monitoring

Review question

5 What maternal and fetal monitoring should be carried out for women in labour after 42 weeks
6 of pregnancy?

Introduction

8 The aim of this review is to determine the optimal maternal and fetal monitoring for women in
9 labour after 42 weeks of pregnancy. The NICE guideline on [inducing labour](#) (CG70)
10 recommends that women with uncomplicated pregnancies should usually be offered
11 induction of labour between 41⁺⁰ and 42⁺⁰ weeks to avoid the risks of prolonged pregnancy.
12 This review addresses maternal and fetal monitoring in labour for women who decline the
13 offer of induction of labour.

14 Summary of the protocol

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

17 **Table 1: Summary of the protocol (PICO table)**

Population	Women in labour after 42 weeks of pregnancy
Intervention	<p><u>Maternal monitoring:</u> Intervention 1: Any clinical protocol for maternal monitoring in women in labour after 42 weeks of pregnancy</p> <p><u>Fetal monitoring:</u> Intervention 2: CTG</p> <p>Intervention 3: Ultrasound measurement of liquor/amniotic fluid volume in labour</p>
Comparison	<p><u>Maternal monitoring:</u> Comparison 1: Usual care (for women up to 42 weeks) consistent with recommendations in the NICE guideline on intrapartum care for healthy women and babies (CG190)</p> <p><u>Fetal monitoring:</u> Comparison 2: IA</p>

	Comparison 3: No ultrasound measurement of liquor/amniotic fluid volume in labour
Outcomes	<p>For the woman:</p> <ul style="list-style-type: none"> • mode of birth • major morbidities (major haemorrhage, bladder and bowel injury, sepsis, thromboembolic disease, OASI, pelvic girdle pain, pubic symphysis diastasis, or shoulder dystocia) • 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"> • perinatal mortality • major morbidities (cerebral palsy, hypoxic ischaemic encephalopathy, respiratory distress, or infection) • admission to NICU and duration of hospital stay • cord blood gas values at birth (arterial or venous pH < 7.10)

- 1 CTG: cardiotocography; IA: intermittent auscultation; NICU: neonatal intensive care unit; OASI: obstetric anal
2 sphincter injury (third- or fourth-degree perineal tears)

- 3 For further details see the full review protocol in Appendix A – Review protocol. The search
4 strategies are presented in Appendix B – Literature search strategies.

Clinical evidence

Included studies

- 7 No clinical evidence was identified for this review.
8 See the study selection flow chart in Appendix C – Clinical evidence study selection.

Excluded studies

- 10 Studies not included in this review with reasons for their exclusion are listed in Appendix D –
11 Excluded studies.

Summary of clinical studies included in the evidence review

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

Quality assessment of clinical studies included in the evidence review

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

Economic evidence

Included studies

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

Excluded studies

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

Summary of studies included in the economic evidence review

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

Economic model

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

Evidence statements

- 16 No clinical evidence was identified for this review.

Recommendations

- 18 T1. Offer continuous cardiotocography to women in labour after 42 weeks of pregnancy,
- 19 explaining that there is an increased chance of stillbirth after 42 weeks, although there is no
- 20 evidence to guide the choice of continuous cardiotocography compared with intermittent
- 21 auscultation.
- 22 T2. If a woman in labour after 42 weeks of pregnancy declines continuous cardiotocography,
- 23 offer intermittent auscultation in line with the NICE guideline on [intrapartum care for healthy](#)
- 24 [women and babies](#).
- 25 T3. Explain to women in labour after 42 weeks of pregnancy that they have an increased risk
- 26 of instrumental birth and caesarean section.

Rationale and impact

Why the committee made the recommendations

Betal and maternal monitoring for women in labour after 42 weeks of pregnancy

- 30 No evidence was found for monitoring in labour after 42 weeks of pregnancy so the
- 31 committee made recommendations based on their knowledge and experience. The
- 32 committee was aware of some evidence of an increased risk of stillbirth or neonatal death
- 33 after 42 weeks and this was consistent with their own experience. Because of this, the

1 committee agreed that continuous cardiotocography should be offered to women in labour
2 after 42 weeks. There should be an explanation of why continuous monitoring is being
3 offered, emphasising the increased risk of stillbirth in these circumstances, while
4 acknowledging that there is no evidence on which to base the choice of continuous
5 cardiotocography compared with intermittent auscultation. If the woman declines continuous
6 monitoring, intermittent auscultation should be offered in line with the NICE guideline on
7 intrapartum care for healthy women and babies.

Impact of the recommendations on practice

9 The recommendation to offer continuous cardiotocography to women in labour after 42
10 weeks is in line with current practice. Because there is no evidence to support or undermine
11 the use of continuous monitoring after 42 weeks, women should be given this information.
12 These choices also influence decisions about place of birth, because cardiotocography is
13 usually only available in obstetric-led care.

The committee's discussion of the evidence

Interpreting the evidence

The outcomes that matter most

17 The committee prioritised mortality and major morbidities in the baby (cerebral palsy, hypoxic
18 ischaemic encephalopathy, respiratory distress or infection) as critical outcomes because
19 babies are at higher risk of perinatal morbidities after 42 weeks of pregnancy. The committee
20 prioritised mode of birth as a critical outcome because caesarean section might be
21 associated with separation of the woman and the baby, and consequently reduced
22 breastfeeding initiation. Caesarean section also has a higher cost than vaginal birth.

23 Important outcomes were major maternal morbidities (major haemorrhage, bladder and
24 bowel injury, sepsis, thromboembolic disease, obstetric anal sphincter injury (OASI), pelvic
25 girdle pain, pubic symphysis diastasis or shoulder dystocia) because pregnancies that
26 continue beyond 42 weeks have a higher risk of the baby being large for gestational age,
27 which may in turn be associated with a greater chance of caesarean section or birth trauma.
28 The committee considered 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 as
30 important outcomes.

31 The committee considered admission to the neonatal intensive care unit (NICU) and duration
32 of hospital stay as important outcomes because babies may be at higher risk of admission
33 after 42 weeks of pregnancy. These outcomes are proxies for morbidity in the baby.

The quality of the evidence

35 No clinical evidence was identified for this review.

Benefits and harms

37 No evidence was found for monitoring in labour after 42 weeks of pregnancy and so the
38 committee made recommendations based on their knowledge and experience. The
39 committee was aware of some evidence of an increased risk of intrapartum stillbirth or
40 neonatal death after 42 weeks of pregnancy; this evidence was reviewed in the NICE
41 guideline on [inducing labour](#) (CG70), which recommends induction between 41⁺⁰ and 42⁺⁰

1 weeks. The evidence is consistent with the committee's clinical experience. Page 28 of the
2 full version of the guideline states that births after 42 weeks of pregnancy are associated with
3 an increased risk of intrapartum and neonatal deaths. The evidence statement was based on
4 non-analytical studies (for example, case reports or case series). Because of the increased
5 risk of stillbirth or neonatal death after 42 weeks of pregnancy, the committee agreed that
6 continuous cardiotocography should be offered to women in labour after 42 weeks, and that
7 the reasons why it is being offered (particularly the increased risk of stillbirth after 42 weeks
8 of pregnancy) should be explained. However, the committee also agreed that women in
9 labour after 42 weeks of pregnancy should be informed that there is no evidence to guide the
10 choice between continuous cardiotocography and intermittent auscultation. The committee
11 agreed that if a woman were to decline continuous monitoring then intermittent auscultation
12 should be offered in line with the NICE guideline on [intrapartum care for healthy women and](#)
13 [babies](#) (CG190).

14 The committee recommended explaining to women in labour after 42 weeks of pregnancy
15 that they have an increased risk of instrumental birth and caesarean section. This
16 recommendation was based on the committee's knowledge and experience, as well as being
17 informed by some descriptive data in the NICE guideline on [inducing labour](#) (CG70). Table
18 4.1 on page 25 of the full version of the guideline reports descriptive data on maternal
19 outcomes by week of pregnancy and is based on studies conducted in several different
20 countries. The table shows a higher incidence of caesarean section and haemorrhage of
21 more than 500 ml after 42 weeks of pregnancy compared to births at earlier gestational ages;
22 these findings were based on a study conducted in Denmark. The table also shows a higher
23 incidence of instrumental vaginal births at 42 weeks of pregnancy compared to births at
24 earlier gestational ages; these findings were based on studies conducted in Norway, the
25 USA and Israel. However, the guideline does not provide an assessment of the statistical
26 significance or clinical importance of the reported differences.

27 The committee was aware that ultrasound is used antenatally for monitoring amniotic fluid
28 volume after 42 weeks of pregnancy and they sought evidence about the effectiveness of
29 ultrasound for measuring amniotic fluid volume for women in labour after 42 weeks of
30 pregnancy. No evidence was identified and the committee agreed not to make a
31 recommendation about the use of ultrasound for measuring amniotic fluid volume for women
32 in labour after 42 weeks of pregnancy.

3 Cost effectiveness and resource use

34 No clinical evidence was identified for this review and therefore the committee made a
35 qualitative assessment of cost effectiveness. The committee considered it would be cost
36 effective to offer continuous cardiotocography as they were aware of evidence of an
37 increased risk of stillbirth or neonatal death after 42 weeks of pregnancy.

38 The committee considered that the recommendations largely reflected current practice and
39 they did not anticipate that they would have a significant resource impact to the NHS. Also
40 the recommendations would apply to a relatively small number of women. The Office for
41 National Statistics [Birth characteristics dataset for 2016](#) indicates that approximately 2.5% of
42 all births occur at 42 weeks of pregnancy or later.

1 **References**

- 2 No publications (other than publications that are freely available on the Internet) were cited in
- 3 the review(s) in this document and so there is no reference list.

1 Appendices

Appendix A – Review protocol

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

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 – intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring	
Review question in the scope	What maternal and fetal monitoring should be carried out for women in labour after 42 weeks of pregnancy?	
Review question for the guideline	What maternal and fetal monitoring should be carried out for women in labour after 42 weeks of pregnancy?	
Objective	The aim of this review is to determine the optimal maternal and fetal monitoring for women in labour after 42 weeks of pregnancy. This is an important topic because in England and Wales, 3% of live births were post-term in 2013 (ONS 2015) and post-term pregnancy is associated with an increased risk of perinatal and maternal complications (Caughey 2007, Olesen 2003)	
Population and directness	Women in labour after 42 weeks of pregnancy 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.	
Intervention	<u>Maternal monitoring</u> Intervention 1: Any clinical protocol for maternal monitoring in women in labour after 42 weeks of pregnancy <u>Fetal monitoring</u> Intervention 2: CTG Intervention 3: Ultrasound measurement of liquor/amniotic fluid volume in labour	
Comparison	<u>Maternal monitoring</u> Comparison 1: Usual care (for women up to 42 weeks) consistent with recommendations in the NICE guideline on intrapartum care for healthy women and babies (CG190)	

Item	Details	Working notes
	<p><u>Fetal monitoring</u></p> <p>Comparison 2: IA</p> <p>Comparison 3: No ultrasound measurement of liquor/amniotic fluid volume in labour</p>	
<u>Outcomes</u>	<p>Critical outcomes:</p> <ul style="list-style-type: none"> • for the woman: <ul style="list-style-type: none"> ○ mode of birth • for the baby: <ul style="list-style-type: none"> ○ perinatal mortality ○ major morbidities (cerebral palsy, hypoxic ischaemic encephalopathy, respiratory distress, or infection) <p>Important outcomes:</p> <ul style="list-style-type: none"> • for the woman: <ul style="list-style-type: none"> ○ major morbidities (major haemorrhage, bladder and bowel injury, sepsis, thromboembolic disease, obstetric anal sphincter injury, pelvic girdle pain, pubic symphysis diastasis, or shoulder dystocia) ○ 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"> ○ admission to NICU and duration of hospital stay <p>Outcomes of limited importance:</p> <ul style="list-style-type: none"> • for the baby: <ul style="list-style-type: none"> ○ cord blood gas values at birth (arterial or venous pH <7.10) 	
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"> • parity • onset of labour • prelabour rupture of membranes • meconium-stained liquor or amniotic fluid <p>In the presence of heterogeneity, the following subgroups will be considered for sensitivity analysis:</p>	

Item	Details	Working notes
	<ul style="list-style-type: none"> • parity <p>Potential confounders:</p> <ul style="list-style-type: none"> • age • ethnicity • IVF • late booking • place of birth • parity • body mass index 	
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: <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 • Qualitative or cross-sectional studies for outcome of woman's experience of labour and birth 	
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 – Literature search strategies 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 	<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</p>

Item	Details	Working notes
	<ul style="list-style-type: none"> • 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>discussion between the first and second reviewers or by reference to a third person. This review question was not prioritised for health economic analysis and so no formal dual weeding, study selection (inclusion/exclusion) or data extraction into evidence tables will be undertaken.</p> <p>However, 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 selection and data extraction</p>
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	<ul style="list-style-type: none"> • Statistical bulletin: Pregnancy and ethnic factors influencing births and infant mortality: 2013. Death rates of pre-term, full-term and post-term babies and various factors that may influence their survival., 2015, Office for National Statistics (https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/pregnancyandethnicfactorsinfluencingbirthsandinfantmortality/2015-10-14#gestational-age) • Olesen AW, Westergaard JG, Olsen J. Perinatal and maternal complications related to postterm delivery: a national register-based study, 1978-1993. Am J Obstet Gynecol. 2003, 189(1):222-7 	

Item	Details	Working notes
	<ul style="list-style-type: none"> • Caughey AB, Stotland NE, Washington AE, Escobar GJ. Maternal and obstetric complications of pregnancy are associated with increasing gestational age at term. <i>Am J Obstet Gynecol.</i> 2007, 196(2):155.e1-6 	
Key papers	<ul style="list-style-type: none"> • Inducing labour. Clinical guideline [CG70], 2008 (https://www.nice.org.uk/guidance/cg70/chapter/1-guidance) 	

- 1 AMSTAR: *Assessing the Methodological Quality of Systematic Reviews*; CDSR: *Cochrane Database of Systematic Reviews*; CENTRAL: *Cochrane Central Register of Controlled Trials*; CTG: *cardiotocography*; DARE: *Database of Abstracts of Reviews of Effects*; DIC: *disseminated intravascular coagulation*; GRADE: *Grading of Recommendations Assessment, Development and Evaluation*; HTA: *Health Technology Assessment*; IA: *intermittent auscultation*; IVF: *in vitro fertilisation*; MID: *minimally important difference*; NGA: *National Guideline Alliance*; NICE: *National Institute for Health and Care Excellence*; NICU: *neonatal intensive care unit*; RCT: *randomised controlled trial*; RoB: *risk of bias*; SD: *standard deviation*; ROBIS: *Risk of Bias in Systematic Reviews*

Appendix B – Literature search strategies

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

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

#	Searches
1	PREGNANCY, PROLONGED/
2	(pregnan\$ adj3 prolong\$).ab,ti.
3	(pregnan\$ adj1 late).ab,ti.
4	(postterm\$ or post-term\$).ab,ti.
5	(postdate\$ or post-date\$).ab,ti.
6	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
7	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
8	or/1-7
9	((maternal\$ or mother? or wom?n or female?) adj3 (monitor\$ or observ\$)).ti,ab.
10	((maternal\$ or mother? or wom?n or female?) adj5 surveillance).ti,ab.
11	(matern\$ adj3 scor\$).ti,ab.
12	PATIENT CARE PLANNING/
13	CRITICAL PATHWAY/
14	CLINICAL PROTOCOLS/
15	((monitor\$ or observ\$ or surveillance) adj5 (protocol? or pathway? or care plan\$)).ti,ab.
16	or/9-15
17	CARDIOTOCOGRAPHY/
18	ELECTROCARDIOGRAPHY/
19	cardiotocogra\$.ti,ab.
20	CTG.ti,ab.

#	Searches
21	electrocardiogra\$.ti,ab.
22	ECG.ti,ab.
23	EKG.ti,ab.
24	(electr\$ adj5 (f?etal or f?etus\$ or uter\$) adj5 (heart\$ or monitor\$ or assess\$)).ti,ab.
25	EFM.ti,ab.
26	or/17-25
27	exp AUSCULTATION/
28	STETHOSCOPIES/
29	(auscultat\$ or IA or pin?ard\$ or fetoscop\$).ti,ab.
30	((f?etal or f?etus\$) adj3 stethoscop\$).ti,ab.
31	"listen\$ in".ti,ab.
32	or/27-31
33	FETAL MONITORING/mt [Methods]
34	exp ULTRASONOGRAPHY/
35	ultrasonograph\$.ti,ab.
36	sonograph\$.ti,ab.
37	ultrasound.ti,ab.
38	sonogram?.ti,ab.
39	or/34-38
40	AMNIOTIC FLUID/
41	((amniotic or amnii) adj3 (fluid? or liquor)).ti,ab.
42	(liquor adj3 volume?).ti,ab.
43	or/40-42
44	((((pregnan\$ adj3 prolong\$) or postterm\$ or post-term\$ or postdate\$ or post-date\$) and (guideline? or protocol? or pathway? or care plan\$)).ti.
45	8 and 16
46	8 and 26 and 32
47	8 and 33
48	8 and 39 and 43
49	or/44-48
50	limit 49 to english language
51	LETTER/
52	EDITORIAL/
53	NEWS/
54	exp HISTORICAL ARTICLE/
55	ANECDOTES AS TOPIC/
56	COMMENT/
57	CASE REPORT/
58	(letter or comment*).ti.
59	or/51-58
60	RANDOMIZED CONTROLLED TRIAL/ or random*.ti,ab.

#	Searches
61	59 not 60
62	ANIMALS/ not HUMANS/
63	exp ANIMALS, LABORATORY/
64	exp ANIMAL EXPERIMENTATION/
65	exp MODELS, ANIMAL/
66	exp RODENTIA/
67	(rat or rats or mouse or mice).ti.
68	or/61-67
69	50 not 68

Database: Cochrane Central Register of Controlled Trials

#	Searches
1	PREGNANCY, PROLONGED/
2	(pregnan\$ adj3 prolong\$).ab,ti.
3	(pregnan\$ adj1 late).ab,ti.
4	(postterm\$ or post-term\$).ab,ti,kw.
5	(postdate\$ or post-date\$).ab,ti,kw.
6	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
7	((42 week? or forty two week? or forty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
8	or/1-7
9	((maternal\$ or mother? or wom?n or female?) adj3 (monitor\$ or observ\$)).ti,ab.
10	((maternal\$ or mother? or wom?n or female?) adj5 surveillance).ti,ab.
11	(matern\$ adj3 scor\$).ti,ab.
12	PATIENT CARE PLANNING/
13	CRITICAL PATHWAY/
14	CLINICAL PROTOCOLS/
15	((monitor\$ or observ\$ or surveillance) adj5 (protocol? or pathway? or care plan\$)).ti,ab.
16	or/9-15
17	CARDIOTOGRAPHY/
18	ELECTROCARDIOGRAPHY/
19	cardiotocogra\$.ti,ab,kw.
20	CTG.ti,ab.
21	electrocardiogra\$.ti,ab,kw.
22	ECG.ti,ab.
23	EKG.ti,ab.
24	(electr\$ adj5 (f?etal or f?etus\$ or uter\$) adj5 (heart\$ or monitor\$ or assess\$)).ti,ab.
25	EFM.ti,ab.
26	or/17-25
27	exp AUSCULTATION/
28	STETHOSCOPES/

#	Searches
29	(auscultat\$ or IA or pin?ard\$ or fetoscop\$).ti,ab,kw.
30	((f?etal or f?etus\$) adj3 stethoscop\$).ti,ab.
31	"listen\$ in".ti,ab.
32	or/27-31
33	FETAL MONITORING/mt [Methods]
34	exp ULTRASONOGRAPHY/
35	ultrasonograph\$.ti,ab,kw.
36	sonograph\$.ti,ab,kw.
37	ultrasound.ti,ab,kw.
38	sonogram?.ti,ab,kw.
39	or/34-38
40	AMNIOTIC FLUID/
41	((amniotic or amnii) adj3 (fluid? or liquor)).ti,ab.
42	(liquor adj3 volume?).ti,ab.
43	or/40-42
44	((pregnan\$ adj3 prolong\$) or postterm\$ or post-term\$ or postdate\$ or post-date\$) and (guideline? or protocol? or pathway? or care plan\$).ti.
45	8 and 16
46	8 and 26 and 32
47	8 and 33
48	8 and 39 and 43
49	or/44-48

Database: Cochrane Database of Systematic Reviews

#	Searches
1	PREGNANCY, PROLONGED.kw.
2	(pregnan\$ adj3 prolong\$).ab,ti.
3	(pregnan\$ adj1 late).ab,ti.
4	(postterm\$ or post-term\$).ab,ti.
5	(postdate\$ or post-date\$).ab,ti.
6	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
7	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
8	or/1-7
9	((maternal\$ or mother? or wom?n or female?) adj3 (monitor\$ or observ\$)).ti,ab.
10	((maternal\$ or mother? or wom?n or female?) adj5 surveillance).ti,ab.
11	(matern\$ adj3 scor\$).ti,ab.
12	PATIENT CARE PLANNING.kw.
13	CRITICAL PATHWAY.kw.
14	CLINICAL PROTOCOLS.kw.
15	((monitor\$ or observ\$ or surveillance) adj5 (protocol? or pathway? or care plan\$)).ti,ab.

#	Searches
16	or/9-15
17	CARDIOTOGRAPHY.kw.
18	ELECTROCARDIOGRAPHY.kw.
19	cardiotocogra\$.ti,ab.
20	CTG.ti,ab.
21	electrocardiogra\$.ti,ab.
22	ECG.ti,ab.
23	EKG.ti,ab.
24	(electr\$ adj5 (f?etal or f?etus\$ or uter\$) adj5 (heart\$ or monitor\$ or assess\$)).ti,ab.
25	EFM.ti,ab.
26	or/17-25
27	AUSCULTATION.kw.
28	STETHOSCOPIES.kw.
29	(auscultat\$ or IA or pin?ard\$ or fetoscop\$).ti,ab.
30	((f?etal or f?etus\$) adj3 stethoscop\$).ti,ab.
31	"listen\$ in".ti,ab.
32	or/27-31
33	ULTRASONOGRAPHY.kw.
34	ultrasonograph\$.ti,ab.
35	sonograph\$.ti,ab.
36	ultrasound.ti,ab.
37	sonogram?.ti,ab.
38	or/33-37
39	AMNIOTIC FLUID.kw.
40	((amniotic or amnii) adj3 (fluid? or liquor)).ti,ab.
41	(liquor adj3 volume?).ti,ab.
42	or/39-41
43	((pregnan\$ adj3 prolong\$) or postterm\$ or post-term\$ or postdate\$ or post-date\$) and (guideline? or protocol? or pathway? or care plan\$).ti.
44	8 and 16
45	8 and 26 and 32
46	8 and 38 and 42
47	or/43-46

Database: Database of Abstracts of Reviews of Effects

#	Searches
1	PREGNANCY, PROLONGED.kw.
2	(pregnan\$ adj3 prolong\$).tw,tx.
3	(pregnan\$ adj1 late).tw,tx.
4	(postterm\$ or post-term\$).tw,tx.
5	(postdate\$ or post-date\$).tw,tx.

#	Searches
6	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw,tx.
7	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw,tx.
8	or/1-7
9	((maternal\$ or mother? or wom?n or female?) adj3 (monitor\$ or observ\$)).tw,tx.
10	((maternal\$ or mother? or wom?n or female?) adj5 surveillance).tw,tx.
11	(matern\$ adj3 scor\$).tw,tx.
12	PATIENT CARE PLANNING.kw.
13	CRITICAL PATHWAY.kw.
14	CLINICAL PROTOCOLS.kw.
15	((monitor\$ or observ\$ or surveillance) adj5 (protocol? or pathway? or care plan\$)).tw,tx.
16	or/9-15
17	CARDIOTOGRAPHY.kw.
18	ELECTROCARDIOGRAPHY.kw.
19	cardiotocogra\$.tw,tx.
20	CTG.tw,tx.
21	electrocardiogra\$.tw,tx.
22	ECG.tw,tx.
23	EKG.tw,tx.
24	(electr\$ adj5 (f?etal or f?etus\$ or uter\$) adj5 (heart\$ or monitor\$ or assess\$)).tw,tx.
25	EFM.tw,tx.
26	or/17-25
27	AUSCULTATION.kw.
28	STETHOSCOPES.kw.
29	(auscultat\$ or IA or pin?ard\$ or fetoscop\$).tw,tx.
30	((f?etal or f?etus\$) adj3 stethoscop\$).tw,tx.
31	"listen\$ in".tw,tx.
32	or/27-31
33	ULTRASONOGRAPHY.kw.
34	ultrasonograph\$.tw,tx.
35	sonograph\$.tw,tx.
36	ultrasound.tw,tx.
37	sonogram?.tw,tx.
38	or/33-37
39	AMNIOTIC FLUID.kw.
40	((amniotic or amnii) adj3 (fluid? or liquor)).tw,tx.
41	(liquor adj3 volume?).tw,tx.
42	or/39-41
43	((pregnan\$ adj3 prolong\$) or postterm\$ or post-term\$ or postdate\$ or post-date\$) and (guideline? or protocol? or pathway? or care plan\$)).ti.
44	8 and 16

#	Searches
45	8 and 26 and 32
46	8 and 38 and 42
47	or/43-46

Database: Health Technology Assessment

#	Searches
1	PREGNANCY, PROLONGED/
2	(pregnan\$ adj3 prolong\$).tw.
3	(pregnan\$ adj1 late).tw.
4	(postterm\$ or post-term\$).tw.
5	(postdate\$ or post-date\$).tw.
6	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw.
7	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).tw.
8	or/1-7
9	((maternal\$ or mother? or wom?n or female?) adj3 (monitor\$ or observ\$)).tw.
10	((maternal\$ or mother? or wom?n or female?) adj5 surveillance).tw.
11	(matern\$ adj3 scor\$).tw.
12	PATIENT CARE PLANNING/
13	CRITICAL PATHWAY/
14	CLINICAL PROTOCOLS/
15	((monitor\$ or observ\$ or surveillance) adj5 (protocol? or pathway? or care plan\$)).tw.
16	or/9-15
17	CARDIOTOCOGRAPHY/
18	ELECTROCARDIOGRAPHY/
19	cardiotocogra\$.tw.
20	CTG.tw.
21	electrocardiogra\$.tw.
22	ECG.tw.
23	EKG.tw.
24	(electr\$ adj5 (f?etal or f?etus\$ or uter\$) adj5 (heart\$ or monitor\$ or assess\$)).tw.
25	EFM.tw.
26	or/17-25
27	exp AUSCULTATION/
28	STETHOSCOPES/
29	(auscultat\$ or IA or pin?ard\$ or fetoscop\$).tw.
30	((f?etal or f?etus\$) adj3 stethoscop\$).tw.
31	"listen\$ in".tw.
32	or/27-31
33	FETAL MONITORING/mt [Methods]
34	exp ULTRASONOGRAPHY/

#	Searches
35	ultrasonograph\$.tw.
36	sonograph\$.tw.
37	ultrasound.tw.
38	sonogram?.tw.
39	or/34-38
40	AMNIOTIC FLUID/
41	((amniotic or amnii) adj3 (fluid? or liquor)).tw.
42	(liquor adj3 volume?).tw.
43	or/40-42
44	((pregnan\$ adj3 prolong\$) or postterm\$ or post-term\$ or postdate\$ or post-date\$) and (guideline? or protocol? or pathway? or care plan\$).ti.
45	8 and 16
46	8 and 26 and 32
47	8 and 33
48	8 and 39 and 43
49	or/44-48

Database: Embase

#	Searches
1	PROLONGED PREGNANCY/
2	(pregnan\$ adj3 prolong\$).ab,ti.
3	(pregnan\$ adj1 late).ab,ti.
4	(postterm\$ or post-term\$).ab,ti.
5	(postdate\$ or post-date\$).ab,ti.
6	(overdue? adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
7	((42 week? or fourty two week? or fourty second week?) adj5 (pregnan\$ or birth? or childbirth? or labo?r\$)).ab,ti.
8	or/1-7
9	((maternal\$ or mother? or wom?n or female?) adj3 (monitor\$ or observ\$)).ti,ab.
10	((maternal\$ or mother? or wom?n or female?) adj5 surveillance).ti,ab.
11	(matern\$ adj3 scor\$).ti,ab.
12	PATIENT CARE PLANNING/
13	CLINICAL PATHWAY/
14	CLINICAL PROTOCOLS/
15	((monitor\$ or observ\$ or surveillance) adj5 (protocol? or pathway? or care plan\$)).ti,ab.
16	or/9-15
17	CARDIOTOCOGRAPHY/
18	ELECTROCARDIOGRAPHY/ or FETUS ELECTROCARDIOGRAPHY/
19	cardiotocogra\$.ti,ab.
20	CTG.ti,ab.
21	electrocardiogra\$.ti,ab.

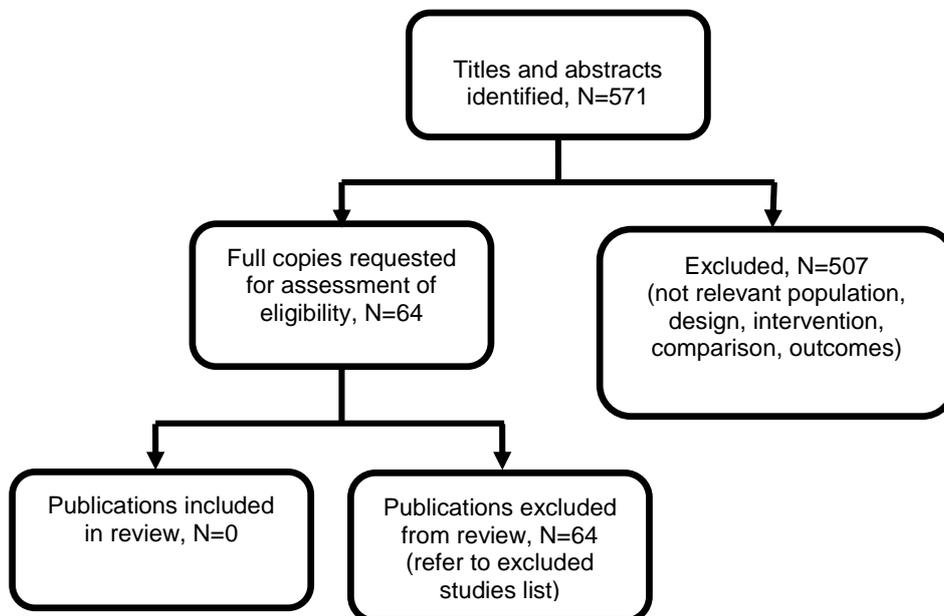
#	Searches
22	ECG.ti,ab.
23	EKG.ti,ab.
24	(electr\$ adj5 (f?etal or f?etus\$ or uter\$) adj5 (heart\$ or monitor\$ or assess\$)).ti,ab.
25	EFM.ti,ab.
26	or/17-25
27	exp AUSCULTATION/
28	exp STETHOSCOPE/
29	(auscultat\$ or IA or pin?ard\$ or fetoscop\$).ti,ab.
30	((f?etal or f?etus\$) adj3 stethoscop\$).ti,ab.
31	"listen\$ in".ti,ab.
32	or/27-31
33	exp ECHOGRAPHY/
34	ultrasonograph\$.ti,ab.
35	sonograph\$.ti,ab.
36	ultrasound.ti,ab.
37	sonogram?.ti,ab.
38	or/33-37
39	AMNION FLUID/
40	((amniotic or amnii) adj3 (fluid? or liquor)).ti,ab.
41	(liquor adj3 volume?).ti,ab.
42	or/39-41
43	((pregnan\$ adj3 prolong\$) or postterm\$ or post-term\$ or postdate\$ or post-date\$) and (guideline? or protocol? or pathway? or care plan\$)).ti.
44	8 and 16
45	8 and 26 and 32
46	8 and 38 and 42
47	or/43-46
48	limit 47 to english language
49	letter.pt. or LETTER/
50	note.pt.
51	editorial.pt.
52	CASE REPORT/ or CASE STUDY/
53	(letter or comment*).ti.
54	or/49-53
55	RANDOMIZED CONTROLLED TRIAL/ or random*.ti,ab.
56	54 not 55
57	ANIMAL/ not HUMAN/
58	NONHUMAN/
59	exp ANIMAL EXPERIMENT/
60	exp EXPERIMENTAL ANIMAL/
61	ANIMAL MODEL/

#	Searches
62	exp RODENT/
63	(rat or rats or mouse or mice).ti.
64	or/56-63
65	48 not 64

Appendix C – Clinical evidence study selection

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

4 **Figure 1: Flow diagram of clinical article selection for intrapartum care for women in**
 5 **labour after 42 weeks of pregnancy – maternal and fetal monitoring**



6

Appendix D – Excluded studies

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

Clinical studies

Study	Reason for exclusion
Adhikari,M., Gouws,E., Velaphi,S.C., Gwamanda,P., Meconium aspiration syndrome: importance of the monitoring of labor, <i>Journal of Perinatology</i> , 18, 55-60, 1998	No relevant population; 54% of babies were post-term; no subgroup analysis for post-term babies
Anteby, E. Y., Tadmor, O., Revel, A., Yagel, S., Post-term pregnancies with normal cardiotocographs and amniotic fluid columns: the role of Doppler evaluation in predicting perinatal outcome, <i>European Journal of Obstetrics, Gynecology, & Reproductive Biology</i> , 54, 93-8, 1994	Not evaluating monitoring in labour. This study assesses the role of antenatal Doppler ultrasound examination among post-term pregnancies with normal non-stress test and with normal amniotic fluid columns. The study focuses on the role of antenatal Doppler ultrasound in predicting abnormal perinatal outcomes such as moderate or thick meconium, abnormal fetal heart rate pattern in labour or intervention due to fetal distress during labour
Arduini,D., Rizzo,G., Fetal renal artery velocity waveforms and amniotic fluid volume in growth-retarded and post-term fetuses, <i>Obstetrics and Gynecology</i> , 77, 370-373, 1991	No relevant comparison; comparing Doppler measurements between post-term pregnancies with adequate amniotic fluid volume, with reduced amniotic fluid volume and with oligohydramnios; comparing Doppler measurements between term and post-term pregnancies
Bar-Hava, I., Divon, M. Y., Sardo, M., Barnhard, Y., Is oligohydramnios in postterm pregnancy associated with redistribution of fetal blood flow?, <i>American Journal of Obstetrics and Gynecology</i> , 173, 519-522, 1995	No relevant population; study population was women after 41 weeks of gestation; no subgroup analysis after 42 weeks. No relevant comparison; the study compares Doppler results between women with oligohydramnios and women with a normal amniotic fluid index
Baskett, T. F., Gestational age and fetal biophysical assessment, <i>American Journal of Obstetrics & Gynecology</i> , 158, 332-4, 1988	Not evaluating monitoring in labour; fetal biophysical assessments were carried out antenatally within 7 days of birth. No relevant comparison; comparing pregnancies with different gestational ages
Battaglia, C., Larocca, E., Lanzani, A., Coukos, G., Genazzani, A. R., Doppler velocimetry in prolonged pregnancy, <i>Obstetrics and Gynecology</i> , 77, 213-216, 1991	Not evaluating monitoring in labour. Nonstress test, amnioscopy, ultrasound assessment of amniotic fluid volume and Doppler analysis were performed on alternate days until parturition. Not relevant comparison; comparing normal and decreased time-averaged mean velocities in the descending thoracic aorta as opposed to comparing different monitoring protocols
Battaglia,C., Artini,P.G., Ballestri,M., Bonucchi,D., Galli,P.A., Bencini,S., Genazzani,A.P., Hemodynamic, hematological and hemorrheological evaluation of post-term	Not evaluating monitoring in labour; the study authors analysed the last values obtained within 48 hours prior to birth. No relevant population;

Study	Reason for exclusion
pregnancy, <i>Acta Obstetrica et Gynecologica Scandinavica</i> , 74, 336-340, 1995	no subgroup analysis for women after 42 weeks of gestation
Bowen-Chatoor, J.S., Kulkarni, S.K., Amniotic fluid index in the management of the postdates pregnancy, <i>The West Indian medical journal</i> , 44, 64-66, 1995	Not comparing monitoring protocols in labour. Amniotic fluid index measurement was initiated at 40 completed weeks and continued weekly to 42 completed weeks. The study assesses the relationship between amniotic fluid index and perinatal outcome
Bresadols, M., Mastro, F. L., Arena, V., Bellaveglia, L., Di Gennaro, D., Prognostic value of biophysical profile score in post-date pregnancy, <i>Clinical and Experimental Obstetrics and Gynecology</i> , 22, 330-338, 1995	Assessments were performed antenatally
Centre for Reviews and Dissemination, Management of prolonged pregnancy (Structured abstract), <i>Database of Abstracts of Reviews of Effects</i> , 2015	This review focused on 3 categories of intervention: antenatal testing; interventions to induce labour; and no intervention (no induction nor testing). The study did not examine the role of interventions performed during labour and birth
Chauhan, S.P., Magann, E.F., Scott, J.R., Scardo, J.A., Hendrix, N.W., Martin, J.N., Jr., Cesarean delivery for fetal distress: rate and risk factors, <i>Obstetrical and Gynecological Survey</i> , 58, 337-350, 2003	The study authors calculate likelihood ratios for different diagnostic tests using data from published articles that compare groups with normal and abnormal values (different papers use different tests). Although the results presented do not specify whether any of the primary articles are about post-term pregnancies, the articles are not relevant to the guideline question because none of them compares 2 different diagnostic tests. The study authors report a further analysis about risk factors for caesarean section for fetal distress and identify post-term pregnancy as a risk factor
Cibils, L.A., Votta, R., Clinical significance of fetal heart rate patterns during labor. IX: Prolonged pregnancy, <i>Journal of Perinatal Medicine</i> , 21, 107-116, 1993	No relevant comparison; all women received continuous electronic intrapartum monitoring of fetal heart rate and uterine contractions; no comparison with intermittent auscultation
Cirik, D. A., Taskin, E. A., Karcaaltincaba, D., Dai, O., Study of uterine and fetal hemodynamics in response to labor induction with dinoprostone in prolonged pregnancies with normal amniotic fluid and oligohydramnios, <i>Journal of Maternal-Fetal & Neonatal Medicine</i> , 27, 691-5, 2014	No relevant comparison. Comparison of Doppler indices before and after dinoprostone administration, and between women with normal amniotic fluid index and women with oligohydramnios. No comparison of different monitoring protocols in labour
Clark, M. J., Use of the oxytocin challenge test in the management of postdate pregnancy, <i>Journal of the American Osteopathic Association</i> , 79, 632-5, 1980	Not evaluating monitoring in labour. The oxytocin challenge tests were performed antenatally
Crowley, P., Non quantitative estimation of amniotic fluid volume in suspected prolonged pregnancy, <i>Journal of Perinatal Medicine</i> , 8, 249-251, 1980	Ultrasound examination was performed antenatally

Study	Reason for exclusion
Crowley,P., O'Herlihy,C., Boylan,P., The value of ultrasound measurement of amniotic fluid volume in the management of prolonged pregnancies, British Journal of Obstetrics and Gynaecology, 91, 444-448, 1984	Ultrasound assessment of amniotic fluid volume was performed antenatally. Women underwent ultrasound assessment of amniotic fluid every 4 days until labour began or the fluid volume became reduced. If the fluid volume was reduced, labour was induced. The article also explores the role of clinical assessment of amniotic fluid volume by palpation within 4 days of birth. Finally the article assesses the ability of amniocentesis to predict significant meconium staining or absent amniotic fluid. No relevant comparison; comparison of perinatal outcomes between women with normal amniotic fluid volume and reduced volume as assessed by antenatal ultrasound; no comparison between different monitoring protocols in labour
De Silva, A., Topping, J., Post term pregnancy outcomes- Eight-year experience in a tertiary obstetric unit in the UK, International Journal of Gynecology and Obstetrics, 107, S415, 2009	Conference abstract
Figueras, F., Lanna, M., Palacio, M., Zamora, L., Puerto, B., Coll, O., Cararach, V., Vanrell, J. A., Middle cerebral artery Doppler indices at different sites: Prediction of umbilical cord gases in prolonged pregnancies, Ultrasound in Obstetrics and Gynecology, 24, 529-533, 2004	Not evaluating monitoring in labour. Doppler indices were obtained via antenatal testing; biophysical profiles were performed twice a week; amniotic fluid index was measured as part of antenatal testing
Ghosh,G.S., Gudmundsson,S., Nuchal cord in post-term pregnancy - relationship to suspected intrapartum fetal distress indicating operative intervention, Journal of Perinatal Medicine, 36, 142-144, 2008	No relevant comparison; compares perinatal outcomes between pregnancies with and without nuchal cord. Amniotic fluid index was assessed at antenatal examination and the prevalence of oligohydramnios was compared between pregnancies with and without nuchal chord
Goebelsmann, U., The uses of oestriol as a monitoring tool, Clinics in Obstetrics & Gynaecology, 6, 223-44, 1979	Non-systematic literature review
Griffin, M., Attilakos, G., Greenwood, R., Denbow, M., Amniotic fluid index in low-risk, post-dates pregnancies, Fetal Diagnosis and Therapy, 26, 212-215, 2009	Not evaluating monitoring in labour. Women underwent a pregnancy assessment which included AFI estimation and CTG. A proportion of women was offered induction of labour following the assessment
Guin, G., Puneekar, S., Lele, A., Khare, S., A prospective clinical study of feto-maternal outcome in pregnancies with abnormal liquor volume, Journal of Obstetrics & Gynaecology of India, 61, 652-5, 2011	No relevant comparison. Comparison between women with different levels of amniotic fluid index. The article mentions concordance between clinical and ultrasonographic detection of abnormal liquor volume before 28 weeks and after 35 weeks of gestation. No comparison of monitoring protocols in labour
Hamdi,K., Bastani,P., Gafarieh,R., Mozafari,H., Hashemi,S.H., Ghotbi,M.H., The influence of maternal ketonuria on fetal well-being tests in	Study population was pregnant women with gestational age of more than 40 weeks. No subgroup analysis for women after 42 weeks of gestation

Study	Reason for exclusion
postterm pregnancy, Archives of Iranian Medicine, 9, 144-147, 2006	
Hashimoto, B., Filly, R. A., Belden, C., Callen, P. W., Laros, R. K., Objective method of diagnosing oligohydramnios in postterm pregnancies, Journal of Ultrasound in Medicine, 6, 81-4, 1987	Not evaluating monitoring in labour. Sonograms were performed within 10 days of birth. No relevant comparison; the study compares pregnancies with low and normal amniotic fluid index
Hutson, J.M., Petrie, R.H., Possible limitations of fetal monitoring, Clinical Obstetrics and Gynecology, 29, 104-113, 1986	Non-systematic literature review
Jetti, A., Poovali, S., Stanley, K.P., Prolonged pregnancy, Obstetrics, Gynaecology and Reproductive Medicine, 18, 7-11, 2008	Non-systematic literature review
Khooshideh, M., Izadi, S., Shahriari, A., Mirteymouri, M., The predictive value of ultrasound assessment of amniotic fluid index, biophysical profile score, nonstress test and foetal movement chart for meconium-stained amniotic fluid in prolonged pregnancies, JPMA - Journal of the Pakistan Medical Association, 59, 471-474, 2009	Not evaluating monitoring in labour. This study focuses on sensitivity and specificity of antenatal tests for the prediction of meconium-stained amniotic fluid. Study population was women with pregnancies beyond 40 weeks of gestation; there was no subgroup analysis for women after 42 weeks of gestation
Lam, H., Leung, W.C., Lee, C.P., Lao, T.T., The use of fetal Doppler cerebroplacental blood flow and amniotic fluid volume measurement in the surveillance of postdated pregnancies, Acta Obstetrica et Gynecologica Scandinavica, 84, 844-848, 2005	Not evaluating monitoring in labour. The measurement of Doppler cerebroplacental blood flow and of amniotic fluid volume was carried out before induction of labour. Women had induction of labour at 41 weeks of gestation
Leveno, K. J., Quirk, J. G., Jr., Cunningham, F. G., Nelson, S. D., Santos-Ramos, R., Toofanian, A., DePalma, R. T., Prolonged pregnancy. I. Observations concerning the causes of fetal distress, American Journal of Obstetrics & Gynecology, 150, 465-73, 1984	No relevant comparison; the study authors did not compare 2 different monitoring protocols in labour. They compared perinatal outcomes in women who had a caesarean section for fetal distress (diagnosed with intrapartum electronic fetal heart rate monitoring) and women that did not have a caesarean section for fetal distress. They also looked at associations between different electronic monitoring tracing features. Moreover, ultrasonographic examinations were performed within 7 days of birth, and the study authors compared outcomes between pregnancies with normal and decreased amniotic fluid volume. Only 25% of the study population had "a certain gestation of 42 weeks or more"; 75% of women "were considered to have uncertain prolonged pregnancies"
Losh, D. P., Duhring, J. L., Management of the postdates pregnancy, American Family Physician, 36, 184-94, 1987	Non-systematic literature review
Mandrizzato, G., Alfirevic, Z., Chervenak, F., Gruenebaum, A., Heimstad, R., Heinonen, S., Levene, M., Romero, R., Salvesen, K., Saugstad, O., Skupski, D., Thilaganathan, B.,	Guidelines and not a primary study reporting evidence

Study	Reason for exclusion
Guidelines for the management of postterm pregnancy, Journal of Perinatal Medicine, 38, 111-119, 2010	
Morris, J. M., Thompson, K., Smithey, J., Gaffney, G., Cooke, I., Chamberlain, P., Hope, P., Altman, D., MacKenzie, I. Z., Magann, E. F., Chauhan, S. P., Measures of amniotic fluid volume are poor predictors of adverse perinatal outcome in prolonged pregnancies, Evidence-based Obstetrics and Gynecology, 6, 109-110, 2004	Ultrasonographic examination was carried out antenatally. The study population was women with pregnancies at or after 40 weeks of gestation; there was no subgroup analysis for women after 42 weeks of gestation
Moya, F., Grannum, P., Pinto, K., Bracken, M., Kadar, N., Hobbins, J. C., Ultrasound assessment of the postmature pregnancy, Obstetrics & Gynecology, 65, 319-22, 1985	Focuses on the ultrasound assessment of placental grading and the ultrasound assessment of amniotic fluid volume as predictors of the fetus at risk of postmaturity or high ponderal index
Myers, ER, Blumrick, R, Christian, AL, Datta, S, Gray, RN, Kolimaga, JT, Livingston, E, Lukes, A, Matchar, DB, McCrory, DC, Management of prolonged pregnancy (Structured abstract), Health Technology Assessment Database, 2016	This review did not examine the role of interventions performed during labour and birth
Olowu, O., Simpson, R., Odejinmi, F., How useful is ultrasonography in predicting fetal outcome in pregnant women who perceived decreased fetal movement in low risk population - Systematic review, BJOG: An International Journal of Obstetrics and Gynaecology, 119, 86, 2012	Conference abstract
O'Reilly-Green, C. P., Divon, M. Y., Predictive value of amniotic fluid index for oligohydramnios in patients with prolonged pregnancies, Journal of Maternal-Fetal Medicine, 5, 218-26, 1996	Not evaluating different monitoring protocols in labour; comparing amniotic fluid index assessed antenatally and clinical observation of amniotic fluid quantity and quality at the time of rupture of membranes, as predictive tests of perinatal outcomes. No relevant population; prolonged pregnancies were defined as 1 or more weeks past the expected date of birth; no subgroup analysis for women after 42 weeks of gestation
Oz, A. U., Holub, B., Mendilcioglu, I., Mari, G., Bahado-Singh, R. O., Renal artery Doppler investigation of the etiology of oligohydramnios in postterm pregnancy, Obstetrics & Gynecology, 100, 715-8, 2002	Not evaluating monitoring in labour. Doppler measurements and amniotic fluid volume estimation were carried out antenatally
Ozkan, M. B., Ozkan, E., Emiroglu, B., Ozkaya, E., Doppler study of the fetal renal artery in oligohydramnios with post-term pregnancy, Journal of Medical Ultrasound, 22, 18-21, 2014	Fetal renal artery Doppler was performed in women at gestational age between 40.1 weeks and 41.3 weeks
Phelan, J.P., Platt, L.D., Yeh, S.Y., Broussard, P., Paul, R.H., The role of ultrasound assessment of amniotic fluid volume in the management of the postdate pregnancy, American Journal of Obstetrics and Gynecology, 151, 304-308, 1985	Not evaluating monitoring in labour. Comparing perinatal outcomes between women with different results from antenatal assessment of amniotic fluid volume ("adequate", "adequate but decreased" and "decreased")

Study	Reason for exclusion
Rauf, Z., Alfirevic, Z., Continuous remote fetal monitoring with MONICA AN24 during home induction of labor, <i>American Journal of Obstetrics and Gynecology</i> , 204, S263, 2011	Conference abstract
Rauf, Z., O'Brien, E., Stampalija, T., Popescu, F., Lavender, T., Alfirevic, Z., Remote fetal ECG monitoring and outpatient labour induction, <i>Archives of Disease in Childhood: Fetal and Neonatal Edition</i> , 96, 2011	Conference abstract
Rosati, P., Guariglia, L., Cavaliere, A. F., Ciliberti, P., Buongiorno, S., Ciardulli, A., Cianci, S., Vitale, S. G., Cignini, P., Mappa, I., A comparison between amniotic fluid index and the single deepest vertical pocket technique in predicting adverse outcome in prolonged pregnancy, <i>Journal of Prenatal Medicine</i> , 9, 12-5, 2015	Not evaluating monitoring in labour. Amniotic fluid volume was determined for each woman at least 2 days before birth, using both the single deepest vertical pocket technique and the amniotic fluid index
Rutherford, S. E., Smith, C. V., Phelan, J. P., Kawakami, K., Ahn, M. O., Four-quadrant assessment of amniotic fluid volume. Interobserver and intraobserver variation, <i>Journal of Reproductive Medicine for the Obstetrician and Gynecologist</i> , 32, 587-589, 1987	Not evaluating monitoring in labour. This article assesses the intraobserver and interobserver variation of antenatal measurement of amniotic fluid index. Pregnancies were both term and post-term; no subgroup analysis for post-term pregnancies
Selam, B., Koksal, R., Ozcan, T., Fetal arterial and venous Doppler parameters in the interpretation of oligohydramnios in postterm pregnancies, <i>Ultrasound in Obstetrics and Gynecology</i> , 15, 403-406, 2000	No relevant population; women after 41 weeks of gestation; no subgroup analysis for women after 42 weeks. No relevant comparison; not comparing different monitoring protocols; comparing Doppler measurements between pregnancies with oligohydramnios and those with normal amniotic fluid volume
Shahinaj, R., Tasha, I., Manoku, N., Doppler velocimetry in postterm pregnancies complicated by oligohydramnios, <i>Journal of Perinatal Medicine</i> , 41, 2013	A full-text copy of the article could not be obtained
Sherer, D. M., Onyeije, C. I., Bernstein, P. S., Kovacs, P., Manning, F. A., Utilization of real-time ultrasound on labor and delivery in an active academic teaching hospital, <i>American Journal of Perinatology</i> , 16, 303-307, 1999	Not evaluating monitoring in labour after 42 weeks. The study authors described the utilisation of ultrasound services in a hospital and highlighted the main indications for ultrasound performed for women not in labour as including "postdates"
Sherer, D.M., Onyeije, C.I., Binder, D., Bernstein, P.S., Divon, M.Y., Uncomplicated baseline fetal tachycardia or bradycardia in postterm pregnancies and perinatal outcome, <i>American Journal of Perinatology</i> , 15, 335-338, 1998	Not evaluating monitoring in labour. Inclusion criteria consisted of non-labouring women with pregnancies of at least 41 weeks of gestation. No subgroup analysis for women after 42 weeks of gestation
Stigter, R. H., Mulder, E. J., Bruinse, H. W., Visser, G. H., The amniotic fluid index in late pregnancy, <i>Journal of Maternal-Fetal & Neonatal Medicine</i> , 12, 291-7, 2002	Not comparing 2 monitoring protocols. The study focuses on the relationship between the amniotic fluid index and gestational age, and on the relationship between the amniotic fluid index

Study	Reason for exclusion
	and the number of days to the onset of spontaneous labour. The study also focuses on the relationship between meconium staining and amniotic fluid index in pregnancies at 42 weeks of gestation
Subramanian, V., Venkat, J., Dhanapal, M., Which is Superior, Doppler Velocimetry or Non-stress Test or Both in Predicting the Perinatal Outcome of High-Risk Pregnancies, <i>Journal of Obstetrics and Gynecology of India</i> , 66, 149-156, 2016	No relevant population. The study included women with gestational age greater than 34 weeks attending antenatal clinic. Postdate pregnancies were excluded
Thornton, Y. S., Yeh, S. Y., Petrie, R. H., Antepartum fetal heart rate testing and the post-term gestation, <i>Journal of Perinatal Medicine</i> , 10, 196-202, 1982	Not evaluating monitoring in labour. Comparing outcomes between women that had antenatal fetal heart rate testing and women who did not
Triunfo, S., Alessio, A., Mappa, I., Rosati, P., Guariglia, L., Ciliberti, P., Buongiorno, S., Scambia, G., Management of post term pregnancy: A comparison between two different management approaches, <i>International Journal of Gynecology and Obstetrics</i> , 119, S813, 2012	Conference abstract
Vayssiere, C., Haumonte, J. B., Chantry, A., Coatleven, F., Debord, M. P., Gomez, C., Le Ray, C., Lopez, E., Salomon, L. J., Senat, M. V., Sentilhes, L., Serry, A., Winer, N., Grandjean, H., Verspyck, E., Subtil, D., Prolonged and post-term pregnancies: Guidelines for clinical practice from the French College of Gynecologists and Obstetricians (CNGOF), <i>European Journal of Obstetrics Gynecology and Reproductive Biology</i> , 169, 10-16, 2013	Guidelines and not a primary study reporting evidence
Veille, J. C., Penry, M., Mueller-Heubach, E., Fetal renal pulsed Doppler waveform in prolonged pregnancies, <i>American Journal of Obstetrics and Gynecology</i> , 169, 882-884, 1993	No relevant population; women at or after 40 weeks of gestation; no subgroup analysis for women after 42 weeks. No relevant comparison; not comparing 2 monitoring protocols; comparing Doppler measurements and perinatal outcomes between pregnancies with oligohydramnios and pregnancies with normal amniotic fluid index
Verrotti, C., Bedocchi, L., Piantelli, G., Cavallotti, D., Fieni, S., Gramellini, D., Amniotic fluid index versus largest vertical pocket in the prediction of perinatal outcome in post-term pregnancies, <i>Acta Bio-Medica de l'Ateneo Parmense</i> , 75 Suppl 1, 67-70, 2004	No relevant population; women with pregnancies at term (from 37 to 41.6 weeks of gestation). Not evaluating monitoring in labour; amniotic fluid index and largest vertical pocket were evaluated at least 2 days before birth
Voltolini, C., Conti, N., Cannoni, A., Bocchi, C., Torricelli, M., Severi, F. M., Petraglia, F., Predictive role of novel ultrasound parameters for the response to induction of labor in postdate pregnancy, <i>Reproductive Sciences</i> , 21, 358A, 2014	Conference abstract

Study	Reason for exclusion
Walker, N., Gan, J. H., Prolonged pregnancy, <i>Obstetrics, Gynaecology and Reproductive Medicine</i> , 25, 83-87, 2015	Non-systematic literature review
Weiner, Z., Farmakides, G., Barnhard, Y., Bar-Hava, I., Divon, M. Y., Doppler study of the fetal cardiac function in prolonged pregnancies, <i>Obstetrics and Gynecology</i> , 88, 200-202, 1996	No relevant population; women between 41 and 43 weeks of gestation; no subgroup analysis for women after 42 weeks. No relevant comparison; not comparing 2 monitoring protocols in labour; comparing the change in antenatal measurements of amniotic fluid index and the change in antenatal Doppler measurements between births with normal and non-reassuring intrapartum fetal heart rate monitoring
Weiner, Z., Reichler, A., Zlozover, M., Mendelson, A., Thaler, I., The value of Doppler ultrasonography in prolonged pregnancies, <i>European Journal of Obstetrics Gynecology and Reproductive Biology</i> , 48, 93-97, 1993	Focuses on antenatal tests
Weiner, Z., Farmakides, G., Schulman, H., Casale, A., Itskovitz-Eldor, J., Central and peripheral haemodynamic changes in post-term fetuses: correlation with oligohydramnios and abnormal fetal heart rate pattern, <i>British Journal of Obstetrics and Gynaecology</i> , 103, 541-546, 1996	No relevant population; post-term was defined as 41 weeks of gestation or greater; no subgroup analysis after 42 weeks
Weiner, Z., Farmakides, G., Schulman, H., Kellner, L., Plancher, S., Maulik, D., Computerized analysis of fetal heart rate variation in postterm pregnancy: prediction of intrapartum fetal distress and fetal acidosis, <i>American Journal of Obstetrics and Gynecology</i> , 171, 1132-1138, 1994	A full-text copy of the article could not be obtained
Weiss, E., Abele, H., Bartz, C., Franz, M., Fischer, T., Gembruch, U., Gonser, M., Heim, K., Kainer, F., Kiefer, A., Konig, K., Ramsauer, B., Reister, F., Schneider, K. T., Surbek, D., Vetter, K., Wolff, F., S1-Guideline: Management of Late-term and Post-term Pregnancy: Short version - AWMF Registry Number: 015/065, <i>Geburtshilfe und Frauenheilkunde</i> , 74, 1099-1103, 2014	Guideline and not a primary study reporting evidence
Wilkinson, C., Bryce, R., Adelson, P., Turnbull, D., A randomised controlled trial of outpatient compared with inpatient cervical ripening with prostaglandin E2 (OPRA study), <i>BJOG: An International Journal of Obstetrics & Gynaecology</i> , 122, 94-104, 2015	Term pregnancies
Wood, C. L., Postdate pregnancy update, <i>Journal of Nurse-Midwifery</i> , 39, 110S-122S, 1994	Non-systematic literature review
Zimmermann, P., Alback, T., Koskinen, J., Vaalamo, P., Tuimala, R., Ranta, T., Doppler	Not evaluating monitoring in labour. This study focuses on antenatal surveillance and tests

Study	Reason for exclusion
flow velocimetry of the umbilical artery, uteroplacental arteries and fetal middle cerebral artery in prolonged pregnancy, Ultrasound in obstetrics & gynecology : the official journal of the International Society of Ultrasound in Obstetrics and Gynecology, 5, 189-197, 1995	

Economic studies

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

Appendix E – Clinical evidence tables

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and 6 fetal monitoring

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

Appendix F – Forest plots

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and 10 fetal monitoring

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

Appendix G – GRADE tables

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and 14 fetal monitoring

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

Appendix H – Economic evidence study selection

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and 18 fetal monitoring

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

Appendix I – Economic evidence tables

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

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

Appendix J – Health economic evidence profiles

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

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

11

Appendix K – Health economic analysis

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

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

Appendix L – Research recommendations

Intrapartum care for women in labour after 42 weeks of pregnancy – maternal and fetal monitoring

9 No research recommendations were made for this review.

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