NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Centre for Clinical Practice – Surveillance Programme

Clinical guideline
CG70: Induction of Labour

Publication date
July 2008

Surveillance report for GE
May 2014

Key findings

	Potential impact on guidance	
	Yes	**No**
Evidence identified from Evidence Update		✓
Evidence identified from literature search		✓
Feedback from Guideline Development Group Chair		✓
Anti-discrimination and equalities considerations		✓

No update	Rapid update	Standard update	Transfer to static list	Change review cycle
✓				

Surveillance recommendation
GE is asked to consider the following proposals and the attached paper for consultation:

- That CG70: Induction of Labour should not be considered for an update at this time.

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Centre for Clinical Practice – Surveillance Programme

Surveillance review of CG70: Induction of Labour

Background information

Guideline issue date: 2008
3 year review: 2011
Evidence update: 2013
6 year review: 2014

NCC: National Collaborating Centre for Women's and Children's Health

Main conclusions from previous surveillance review

1. CG70 previously underwent a surveillance review in 2011 when the review recommendation was that the guideline should not be considered for an update. New evidence was identified relating to induction of labour in specific circumstances, timing of induction, complications, methods of induction, and setting of induction of labour. The new evidence identified was considered unlikely to be sufficient to change or invalidate current guideline recommendations.

Current four year surveillance review

2. The Evidence Update on CG70: Induction of Labour (published July 2013) was used as a source of evidence for this surveillance review which considered new evidence since the previous surveillance review in 2011. No new evidence that would impact on the guideline recommendations was identified in the Evidence Update. An additional literature search for systematic reviews was carried out between February 2013 (the end of the search period for the Evidence Update) and December 2013 and relevant abstracts were assessed. The combination of these informed the review proposal at 6 years .

3. Clinical feedback on the guideline was obtained from three members of the GDG through a questionnaire. Two respondents felt the guideline needs to be updated: one member stated the guideline needs to address evidence on the induction of labour on the basis of age and high BMI as risk factors but no further details were given. Induction of labour on the basis of maternal age and BMI are areas outside the scope of the current guideline. As the 6 year surveillance review process is limited to the existing guideline scope only, these areas will be considered at the 8 year review point.

4. The GDG Chair was contacted regarding the review and agreed with the proposal not to update. Further clarity was sought from another GDG member regarding new evidence identified relating to misoprostol (vaginal misoprostol after oral mifepristone in late intrauterine fetal death and the misoprostol vaginal delivery system for the induction of labour). The GDG member agreed with the assessment of this evidence and that an update to the guideline was not required.

5. No new evidence that may impact on existing recommendations was identified relating to any of the clinical areas within the guideline.

Ongoing research

6. An HTA funded systematic review of methods for labour induction is due to report in 2015 although no further details were provided.

Anti-discrimination and equalities considerations

7. None identified.

Implications for other NICE programmes

8. This guideline relates to a Quality Standard currently in development on Induction of Labour which is expected to be published in April 2014.

Conclusion

9. Through the surveillance review of CG70, no new evidence which may potentially change the direction of guideline recommendations was identified. It is not recommended that this guideline should be considered for the static guidance list at this time because there is ongoing research in this area and a Quality Standard is in development.

Surveillance recommendation

10. GE is asked to consider the proposal to not update the guideline at this time. GE are asked to note that as a 6 year surveillance review, this 'no to update' proposal will not be consulted on.

Mark Baker – Centre Director
Sarah Willett – Associate Director
Diana O'Rourke – Technical Analyst

Centre for Clinical Practice
May 2014

Appendix 1 - Decision Matrix

The table below provides summaries of the evidence for key questions for which studies were identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
A. Information and decision making – recommendations 1.1.1.1 - 1.1.1.3			
70-01: What are women's views and experiences of induction of labour? **70-02: How should information be given to women and their partners concerning induction of labour?** **70-03: What information should be given?**			
3 yr review No relevant evidence identified. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
B. Induction of labour in specific circumstances – recommendations 1.2.1.1 - 1.2.10.1			
70-04: What are the risks of prolonged pregnancy? **70-05: What are the harms and benefits of induction of labour for the prevention of prolonged pregnancy?**			
3 yr review Through a high-level RCT search, two systematic reviews[1,2] were identified. One of the studies found that the induction of labour is associated with fewer perinatal deaths. However, the second study found that elective labour was not associated with lower mortality but was linked with a significantly lower rate of meconium	One systematic review[4] was identified which found that induction of labour in women of between 37-42 weeks of gestation with intact membranes reduces the risk of caesarean section compared with expectant management. These findings support the current guideline recommendation which states that	One GDG member felt that the guideline needs to be updated to cover issues such as the revised Diabetes in Pregnancy guideline, and obesity and age which are not covered in the existing guideline. In particular, inductions are now being done based on age which was an area not considered by the	New evidence identified through the literature search is consistent with guideline recommendations. Feedback from the GDG is unlikely to impact on the guideline recommendations at this time. Induction of labour of women with diabetes is out of scope of this guideline and is covered by CG63: Diabetes in Pregnancy. Age and obesity

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
aspiration syndrome and risk of delivery by caesarean section. Overall, the results from these studies were considered consistent with the current guideline recommendations. <u>Evidence Update (2013)</u> A Cochrane review[3] including 22 RCTs was identified which assessed induction of labour compared with waiting for spontaneous labour in women with pregnancies at or beyond term. The results showed that induction of labour led to significantly fewer perinatal deaths which was consistent with the findings in the guideline. In addition, there was a significant reduction in instances of meconium aspiration syndrome and caesarean sections. The results support the current guideline recommendations.	women with uncomplicated pregnancies should usually be offered induction of labour between the 41st and 42nd weeks to avoid the risks of prolonged pregnancy.	GDG.	were not specifically covered in the original guideline and no new evidence was identified at this surveillance point relating to these issues.
70-06: What are the harms and benefits of induction of labour in women with preterm prelabour rupture of membranes?			
<u>3 yr review</u> Through a high-level RCT search, two studies[5,6] (a systematic review and RCT) were identified. The findings	A systematic review[9] found that intentional delivery for preterm prelabour rupture of membranes between 28 and 34 weeks of	None identified.	New evidence identified is consistent with guideline recommendations.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
from one study found evidence to support the induction of labour for premature rupture of membranes near term with pulmonary maturity. This evidence was considered consistent with the current guideline recommendations. <u>Evidence Update (2013)</u> Two RCTs[7,8] were identified which compared induction of labour or expectant management in women at 34–37 weeks' gestation with preterm prelabour rupture of membranes. Both trials found no significant difference in neonatal sepsis between induction and expectant management, both individually and when the results were combined through a meta-analysis with a previously published systematic review. It was therefore considered that the results were consistent with current recommendations which state that the risks of induction of labour should be discussed with the woman before a decision is made.	gestation led to significantly higher rates of neonatal death (after excluding studies that gave antenatal steroid) and a higher incidence of caesarean section compared to expectant management. The findings support the current recommendation that induction of labour should not be offered in these circumstances unless there is unless there are additional obstetric indications which would suggest it is required.		

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
70-07: What are the harms and benefits of induction of labour in women with prelabour rupture of membranes at term?			
3 yr review Through a high-level RCT search, three systematic reviews[5,10,11] and three RCTs[12-14] were identified. The studies looked at different pharmacological methods of induction for the induction of labour in women with prelabour rupture of membranes at term. Overall, the results were considered broadly consistent with the guideline recommendations on the use of induction in these women. However, there was some evidence to suggest that oxytocin is an effective method for this group which contradicts the current recommendations. This evidence was considered unlikely to impact on the recommendations. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
70-08: What are the harms and benefits of induction of labour in women with a previous caesarean birth?			
3 yr review Through a high-level RCT search one RCT[15] was identified which found that	A Cochrane systematic review[16] was identified which aimed to assess methods for third trimester	None identified.	New evidence is consistent with guideline recommendations.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
serial membrane sweeping had no significant effect on the onset of labour, pregnancy duration, induction of labour, or repeat caesarean delivery. This evidence was considered not to contradict the current recommendations. Evidence Update (2013) No new evidence found.	cervical ripening or labour induction in women with prior caesarean section. The two small RCTs included in the review compared vaginal PGE_2 inserts versus oxytocin and misoprostol versus oxytocin. One of the RCTs found no significant difference in outcome measures between the groups. The second study was stopped early due to safety concerns and reported no difference between groups for uterine rupture, the only outcome measure reported by the authors. The results of this review are consistent with the GDG's original findings that the limited evidence base of RCTs was insufficient to determine the preferred method for induction.		
70-09: What are the harms and benefits of induction of labour at maternal request?			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
70-10: What are the harms and benefits of induction of labour in women with breech presentation?			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
70-11: What are the harms and benefits of induction of labour in women with presence of fetal growth restriction?			
3 yr review Through a high-level RCT search one RCT[17] was identified. The study found no important differences in adverse neonatal outcomes between induction of labour and expectant management. This was considered to be consistent with the current guideline which does not recommend induction in this situation. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
70-12: What are the harms and benefits of induction of labour in women with a history of precipitate labour?			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
70-13: What are the harms and benefits of induction of labour in women with intrauterine fetal death? **70-14: What are the best methods of induction of labour in women with intrauterine fetal death?** **70-15: What are the best methods of induction of labour in women with intrauterine fetal death, and who had a previous caesarean birth?**			
3 yr review Through a high-level RCT search two systematic reviews[18,19] and three RCTs[20-22] were identified. All the studies examined different methods of administration of misoprostol for induction of labour in women with intrauterine fetal death. Overall, the findings were consistent with the guideline recommendations although there was some evidence which suggested that vaginal misoprostol may not be the best method of administration. This method is currently recommended in the guideline, however, the new evidence was considered unlikely to change current recommendations. Evidence Update (2013) No new evidence found.	No studies identified. Search limited to systematic reviews only. Evidence summary of unlicensed and off label medicine 11 published: April 2013 - **Induction of labour in late intrauterine fetal death: vaginal misoprostol (after oral mifepristone)**. This summarises two small case series which compared a low-dose misoprostol treatment regimen with a higher dose regimen for induction of labour after late IUFD. The results of both studies suggest that low dose vaginal misoprostol following mifepristone is effective at inducing labour in late IUFD. The evidence provided in the ESUOM is unlikely to impact on the guideline both due to the size of trials considered, and also because the guideline recommends the choice and dose	None identified.	New evidence identified is consistent with guideline recommendations.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
	of prostaglandin used for induction of labour in IUFD should take into account the clinical circumstances, availability of preparations and local protocol.		
70-16: What are the harms and benefits of induction of labour in women with suspected fetal macrosomia?			
3 yr review Through a high-level RCT search two systematic reviews[5,23] were identified. Both studies found insufficient evidence to recommend induction of labour for fetal macrosomia which was consistent with the recommendations in the guideline. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
C. Methods of induction of labour – recommendations 1.3.1.1 - 1.4.4.1			
70-17: What are the harms and benefits of pharmacological-based methods in induction of labour?			
3 yr review *Vaginal PGE_2* Eight studies[24-31] (six RCTs, a systematic review and a cost-effectiveness analysis performed alongside a UK-based RCT) were identified. The majority of studies compared different methods of vaginal	No studies identified. Evidence summaries: new medicines 38 published: 25th March 2014 - Induction of labour: misoprostol vaginal delivery system. This summarises the results of an RCT (Wing et al,	One GDG member felt that there was now better evidence from RCTs that misoprostol may be a suitable alternative to dinoprostone (PGE_2). A GDG member also felt that low dose misoprostol may now be commercially available.	There is evidence from the previous review and in the ESNM that misoprostol has potential as an effective pharmacological-based method for the induction of labour, outside the current recommendations for its use for intrauterine fetal death. However, evidence suggests that the risk of uterine

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
administration of PGE_2. The findings from the studies were inconclusive as to the best method of administration, however, the guideline recommends vaginal PGE_2 in any form. As such the findings were unlikely to change the current recommendations. *Intracervical PGE_2* Three studies[32-34] (a systematic review and 2 RCTs) were identified which compared intracervical PGE_2 to placebo or another drug. Intracervical PGE_2 appeared to be effective when compared to placebo but inferior to intravaginal PGE_2. There was also some evidence that misoprostol (intravaginal or oral) is an effective alternative to intracervical PGE_2. As the current guideline states that intracervical PGE_2 should not be used for induction of labour, the new evidence was considered unlikely to impact on the current recommendations. *Intravenous oxytocin alone*	2013) which aimed to assess the efficacy and safety of a misoprostol controlled-release vaginal insert versus a dinoprostone controlled-release vaginal insert in 1358 women undergoing induction of labour. The study found that the median time to vaginal delivery was statistically significantly reduced by 11.3 hours in women who received misoprostol. However, the findings also suggest that the risk of uterine hyperstimulation is higher with the misoprostol vaginal insert. At the time that CG70 was produced, only short-acting oral preparations of misoprostol were available and none were licensed for the induction of labour in the UK. However, in November 2013, UK marketing authorisation was granted for the misoprostol controlled-release vaginal delivery system for the induction of labour in women with an unfavourable	A GDG member also reported concerns regarding resistance to using prostaglandin if the cervix has opened or the waters have gone, despite this being a recommendation of the guideline.	hyperstimulation is higher with misoprostol which is consistent with the evidence considered in the original guideline. It is therefore unlikely that this new evidence will impact on the current guideline recommendations.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
A systematic review[11] and an RCT[13] were identified. The findings from the systematic review were consistent with the current recommendation on intravenous oxytocin use. However, the findings from the RCT suggested that oxytocin is superior in inducing labour in pregnancies complicated with prelabour rupture of membranes and unfavorable cervixes. This contradicts the current recommendation which states that intravenous oxytocin alone should not be used for induction of labour. The new evidence was considered unlikely to impact on these recommendations. *Mifepristone* An update to a Cochrane review[35] was identified which found insufficient information to support the use of mifepristone to induce labour for third trimester cervical ripening or induction of labour. In current guideline, mifepristone is only recommended in intrauterine fetal death therefore the findings were considered unlikely to	cervix, from 36 weeks' gestation. Evidence for misoprostol was considered in CG70, including higher rates of successful induction of labour but at the expense of higher rates of uterine hyperstimulation. As such, it was recommended that misoprostol should only be offered as a method of induction of labour to women who have intrauterine fetal death or in the context of a clinical trial. Whilst the evidence provided in the ESNM suggest that the misoprostol controlled-release vaginal delivery system is effective in achieving a reduction in the time taken to achieve vaginal delivery (a primary outcome of interest in the guideline), there is still a risk of uterine hyperstimulation which is consistent with the evidence considered during the development of the guideline. It is therefore unlikely that this new evidence will		

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
impact on the current recommendations. *Nitric Oxide* Two RCTs[36,37] were identified. One found evidence that nitric oxide is associated with lower duration of labour compared with vaginal PGE_2. These findings are contradictory to the current guideline which states that nitric oxide donors are not recommended for the induction of labour. However, given the small size of the trial, the findings were considered unlikely to impact on the guideline recommendations. *Misoprostol* 44 studies were identified relating to misoprostol: • 19 studies[38-56] were identified (3 systematic reviews and 17 RCTs) which compared misoprostol with PGE_2 for the induction of labour. 9 studies indicated that misoprostol was more effective than PGE_2, particularly in relation to a shorter	be impact on the guideline recommendations at this time.		

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
induction to labour and delivery time. A number of other studies found misoprostol and PGE_2 to be equally safe and effective. • Four RCTs[57-60] were identified which compared misoprostol with oxytocin. There was no clear evidence to show that either misoprostol or oxytocin was more effective, and both are not recommended for the induction of labour (other than use of misoprostol for intrauterine fetal death). • A meta-analysis[61] and 4 RCTs[62-65] were identified which compared misoprostol with cervical Foley catheter. There was some evidence to suggest that misoprostol was as effective as or more effective than Foley catheter, although both misoprostol and Foley catheter are not recommended for use for the induction of labour (other than use of misoprostol for intrauterine fetal death).			

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
• One RCT[66] found that the addition of vaginal isosorbide mononitrate to oral misoprostol did not reduce time to vaginal delivery and was associated with headache. • A systematic review[67] and 9 RCTs[68-76] considered different methods of administration of misoprostol. The evidence suggested that oral misoprostol may be effective at induction in circumstances other than intrauterine fetal death. • Four RCTs[77-80] were identified comparing different dosages of misoprostol for the induction of labour. • One RCT[81] was identified which showed no differences in the route of delivery or neonatal outcomes between women receiving oral misoprostol and expectant management in an outpatient setting. As misoprostol was unlicensed for use in pregnancy and was only			

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
recommended in the guideline for use for women with intrauterine fetal death, the new evidence was considered unlikely to change the current recommendations. <u>Evidence Update (2013)</u> A Cochrane review[82], including 10 RCTs found that nitric oxide donors did not show significant benefits in the primary outcomes (including vaginal delivery within 24 hours) compared with any other interventions assessed. It was therefore considered that nitric oxide donors are not effective for induction of labour, which is consistent with recommendations in the guideline.			
70-18: What are the harms and benefits of non-pharmacological methods in induction of labour?			
<u>3 yr review</u> *Membrane sweeping* Through a high-level RCT search one RCT[83] and two conference abstracts[84,85] were identified. The findings were broadly supportive of the guideline recommendations relating to membrane sweeping although there was evidence that there may be an	An update to a Cochrane systematic review[97] used in the development of the guideline was identified. None of the trials considered reported on key clinical outcomes including vaginal delivery not achieved within 24 hours and uterine hyperstimulation with fetal heart rate. The findings are	None identified.	New evidence is consistent with guideline recommendations.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
increased risk of prelabour rupture of membranes for membrane sweeping in women with cervical dilation greater than 1cm. However, the new evidence was considered to be a known risk and was therefore considered unlikely to impact on current recommendations. *Acupuncture* 8 studies[86-93] were identified, including a systematic review and 7 RCTs, which examined the use of acupuncture for the induction of labour. Overall there was no conclusive evidence found for the beneficial impact of acupuncture and therefore the new evidence was considered unlikely to change the current recommendations. *Homeopathy* A Cochrane systematic review[94] was identified which found there was insufficient evidence to show the effect of homeopathy for inducing labour. This was consistent with current recommendations.	consistent with existing guideline recommendations which state that acupuncture should not be offered as a method of induction of labour. A systematic review[98] was identified which found no evidence of a difference between castor oil and placebo/no treatment for the rate of instrumental delivery or meconium-stained liquor. However, all women included in the trials experienced nausea. The findings are consistent with the evidence presented in the guideline and support the current recommendation that castor oil should not be offered as a method of induction of labour.		

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
Sexual intercourse An RCT[95] was identified which suggested that women who are coitally active are less likely to go into spontaneous labour prior to scheduled labour induction. This evidence was considered to be consistent with the existing guideline recommendations. <u>Evidence Update (2013)</u> The Evidence Update identified an RCT[96] which aimed to evaluate the impact of frequency of membrane sweeping in women with an unfavourable cervix at 39 weeks on rates of induction at 41 weeks. The results indicated that there was no conclusive evidence that increasing frequency of membrane sweeping reduced the rate of induction of labour at 41 weeks' gestation. The evidence was therefore considered unlikely to impact on the guideline.			
70-19: What are the harms and benefits of surgical methods in women undergoing induction of labour?			
<u>3 yr review</u> No new evidence found.	No studies found.	None identified.	No relevant evidence identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
<u>Evidence Update (2013)</u> No new evidence found.			
70-20: What are the harms and benefits of mechanical methods in women undergoing induction of labour?			
<u>3 yr review</u> Eight RCTs[50,99-105] and a systematic review[106] were identified considering different mechanical methods for the induction of labour. There was some evidence to suggest that use of a balloon catheter reduces time to delivery, and that extra-amniotic saline infusion with oxytocin reduces the time to the active phase of labour and is more likely to result in a vaginal delivery. However, the current guideline does not recommend use of mechanical methods and therefore the findings were considered unlikely to impact on the recommendations. <u>Evidence Update (2013)</u> A Cochrane review[107] conducted of 71 RCTs was identified which compared mechanical methods for induction with placebo or no treatment, prostaglandins, or oxytocin. There	No studies found.	One GDG member felt that there was now better evidence from RCTs that Foley catheters may be suitable alternatives to dinoprostone (PGE_2).	No relevant evidence identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
were no significant differences in the outcomes of vaginal delivery within 24 hours or caesarean section rates between mechanical methods and no treatment / prostaglandins. These findings were consistent with those in the guideline and supported the recommendation that mechanical procedures should not be used routinely for induction of labour. Two RCTs[108,109] were also identified which compared induction of labour using Foley catheter with PGE_2. The results of both studies indicated that Foley catheters were associated with higher oxytocin use and a longer time from start of induction to birth. This evidence was consistent with the guideline which recommends that Foley catheters should not be used for the induction of labour.			
D. Setting and timing for induction of labour – recommendations 1.5.1.1 - 1.5.1.3			
70-21: What are the effects (harms and benefits) when induction of labour is carried out in different settings (outpatient, inpatient)?			
3 yr review Nine studies[81,110-117] (two systematic reviews, a retrospective cohort study,	A Cochrane systematic review[118] was identified which aimed to assess the effects of induction of	None identified.	New evidence is consistent with guideline recommendations.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
a quasi-experimental study, 3 RCTs and a cost-effectiveness analysis) were identified through a high-level RCT and a focused search for evidence. The studies considered comparisons between outpatient and inpatient induction and various methods of induction in an outpatient setting. Overall the evidence was mixed regarding effective and safe methods of induction in an outpatient setting. This was consistent with the evidence in the guideline and was considered unlikely to impact on the current recommendations. <u>Evidence Update (2013)</u> No new evidence found.	labour in an outpatient versus an inpatient setting. Four trials were included studying different induction methods. For all methods there were few differences in outcomes between outpatient and inpatient groups. The findings are consistent with the current recommendations which state that induction of labour should only be carried out in an outpatient setting if safety and support procedures are in place.		
70-22: What are the effects (harms and benefits) when induction of labour is carried out at different days of week and at different times of day?			
<u>3 yr review</u> Through a high-level RCT search one RCT[119] was identified. The study found that induction of labour with intravenous oxytocin in the evening did not result in significantly different duration of labour, rate of instrumental delivery, rate of infection, or patient	No studies identified.	None identified.	No relevant evidence identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
satisfaction than induction in the morning. In addition, neonatal outcomes were better when women were induced in the evening. This new evidence was considered inconclusive to invalidate current recommendations. Evidence Update (2013) A Cochrane review[120] of 3 RCTs was identified which compared induction of labour in the morning and the evening. The results indicated that there are no differences in maternal and fetal safety outcomes between morning and evening prostaglandin administration. However, one trial reported that levels of dissatisfaction were significantly higher in women in the evening group. These findings are consistent with the recommendation in the guideline which states that induction of labour should be carried out in the morning.			
E. Monitoring and pain relief for induction of labour – recommendations 1.6.1.1 - 1.6.2.5			
70-23: How should labour be monitored at/during induction of labour?			
3 yr review Through a high-level RCT search two RCTs[121,122] were identified. Both	A systematic review[124] was identified that aimed to assess the ability of the Bishop score to	None identified.	New evidence is unlikely to impact on current recommendations.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
studies considered methods not currently in use in the UK. One of the studies found that the caesarean delivery rate decreased when intermittent pulse oximetry was used. The recommendations in the guideline were based on CG55 Intrapartum care. As such it was considered that the findings would be unlikely to impact on current recommendations. <u>Evidence Update (2013)</u> A systematic review[123] of 30 cohort studies and 1 RCT was identified. The studies considered use of ultrasonic measurement of cervical length as an alternative to the Bishop score. The findings from the study provided no evidence that measurement of cervical length with transvaginal ultrasonography is useful in predicting delivery outcomes in women scheduled for induction of labour. Therefore the evidence was considered unlikely to impact on the current recommendations.	predict the mode of delivery in women scheduled for induction of labour at term. The study concluded that Bishop score is a poor predictor of delivery method following induction. The studies included were reportedly mediocre in quality and therefore it is unlikely that the findings from this study will impact on the current recommendations.		

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
70-24: What is the evidence that induced labours are more painful than spontaneous labour? **70-25: What are the harms and effects of early (at induction) and late (active labour) administration of epidural analgesia?**			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
F. Complications of induction of labour – recommendations 1.7.1.1 - 1.7.4.1			
70-26: How are the complications of induction of labour prevented and managed?			
3 yr review One study[125], a secondary analysis from an RCT, was identified which found that almost 40% of women who remained in the latent phase after 12 hours of oxytocin and membrane rupture had vaginal delivery. The results were considered inconclusive regarding the management of failed inductions and therefore unlikely to affect the guideline recommendations. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Research Recommendations			
Information and decision making: • Studies are needed to compare women's views and experiences on the different methods of induction of labour with those during spontaneous labour. • Studies are needed to assess the needs of pregnant women throughout the induction of labour experience to identify the support they require and prefer			

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Risks of prolonged pregnancy • Studies should be undertaken to compare effectiveness, safety, maternal satisfaction and compliance of different expectant management protocols. • Research is needed to identify babies at particularly high risk of morbidity and mortality who will benefit from induction and therefore avoid induction for babies who do not need it. • Research is needed into racial differences in the UK to identify the possible differences in the distribution of perinatal risk specific to gestational weeks and possible benefits of intervention before 41 weeks.			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Preterm prelabour rupture of membranes • A large study is needed to compare immediate induction of labour with expectant management beyond 34 weeks, taking into account duration of preterm prelabour rupture of membranes, gestational age, and maternal steroid and antibiotic treatment. • Research is needed to compare effectiveness, cost-effectiveness, safety and maternal satisfaction of different management policies for induction of labour.			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Women with a previous caesarean birth			

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
• Studies should compare the effectiveness, cost-effectiveness, safety and maternal satisfaction of induction of labour by different methods, repeat elective lower segment caesarean section and expectant management in women with previous caesarean section.			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Induction of labour at maternal request • Audit research is needed to assess the prevalence of maternal request for induction of labour and the reasons for such request.			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Women with a history of precipitate labour • Studies are needed to quantify the risks for women with history of precipitate labour, and to compare effectiveness, safety and maternal satisfaction of different management policies.			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Pharmacological-based methods in induction of labour - *Vaginal PGE_2* Research is needed to assess the effectiveness, safety, maternal satisfaction and acceptability of different regimens of vaginal PGE2, stratified by clinical indications, cervical and membrane status, parity and previous caesarean section.			
3 yr review Some new evidence found – see	No studies identified.	None identified.	No relevant evidence identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
clinical question. <u>Evidence Update (2013)</u> No new evidence found.			

Non-pharmacological methods of induction of labour
• Research is needed to assess effectiveness, maternal satisfaction and acceptability of:
  ○ multiple versus once-only membrane sweeping, at varying gestational ages, stratifying for parity
  ○ cervical massage when membrane sweeping is not possible, in women with unfavourable cervix.
• Further research is required to evaluate the effectiveness, safety and maternal satisfaction of the use of herbal supplements as a method of induction of labour.
• Further research is required to evaluate the effectiveness, safety and maternal satisfaction of acupuncture as a method of induction of labour.
• Further research is required to evaluate the effectiveness, safety and maternal satisfaction of homeopathy as a method of induction of labour.
• Further research is required to evaluate the effectiveness, safety and maternal satisfaction of the use of castor oil, hot baths and enemas as methods of induction of labour.
• Further research is required to evaluate the effectiveness, safety and maternal satisfaction of sexual intercourse as a method of induction of labour.
• Further research is required to evaluate the effectiveness, timing, methods, frequency, safety and maternal satisfaction of breast stimulation as a method of induction of labour.			

<u>3 yr review</u> Some new evidence found – see clinical question. <u>Evidence Update (2013)</u> No new evidence found.	Some new evidence found – see clinical question.	None identified.	See conclusion under clinical question.
Mechanical methods in women undergoing induction of labour • Future trials on the use of mechanical methods should include women in whom prostaglandins during labour would pose increased risks, such as women with previous caesarean birth. These trials should clearly stratify groups by parity, cervical status and previous vaginal birth.			

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Setting and timing for induction of labour • Studies are needed to assess the safety, efficacy and clinical and cost-effectiveness of outpatient and inpatient induction in the UK setting, taking into account women's views.			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Pain Relief • Research is needed to evaluate the effects of regional analgesia on progress and outcome of induced labour, stratified for differing cervical status. • Studies are needed to assess the role support plays in alleviation of pain during induction of labour.			
3 yr review No new evidence found. Evidence Update (2013) No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.
Complications of induction of labour • Research is needed to establish frequency and interval of vaginal PGE_2 to achieve successful induction of labour. • Research is needed to examine different management policies for failed vaginal PGE_2 induction (additional PGE_2, amniotomy, oxytocin, elective caesarean section or delay of induction if appropriate).			
3 yr review No new evidence found.	No studies identified.	None identified.	No relevant evidence identified.

Conclusions of previous reviews	Is there any new evidence/intelligence identified during this 6-year surveillance review (2014) that may change this conclusion?	Clinical feedback from the GDG	Conclusion of this 6-year surveillance review (2013)
Evidence Update (2013) No new evidence found.			

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