

Cochrane Database of Systematic Reviews

Pharmacological and mechanical interventions for labour induction



Vogel JP, Osoti AO, Kelly AJ, Livio S, Norman JE, Alfirevic Z. $Pharmacological\ and\ mechanical\ interventions\ for\ labour\ induction\ in\ outpatient\ settings.$ Cochrane Database of Systematic Reviews 2017, Issue 9. Art. No.: CD007701. DOI: 10.1002/14651858.CD007701.pub3.

www.cochranelibrary.com



[Intervention Review]

Pharmacological and mechanical interventions for labour induction in outpatient settings

Joshua P Vogel¹, Alfred O Osoti², Anthony J Kelly³, Stefania Livio⁴, Jane E Norman⁵, Zarko Alfirevic⁶

¹UNDP/UNFPA/UNICEF/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction (HRP), Department of Reproductive Health and Research, World Health Organization, Geneva, Switzerland. ²Department of Obstetrics and Gynaecology, University of Nairobi, Nairobi, Kenya. ³Department of Obstetrics and Gynaecology, Brighton and Sussex University Hospitals NHS Trust, Brighton, UK. ⁴Department of Obstetrics and Gynaecology, University of Milan, Children's Hospital "V. Buzzi", Milano, Italy. ⁵MRC Centre for Reproductive Health, University of Edinburgh Queen's Medical Research Centre, Edinburgh, UK. ⁶Department of Women's and Children's Health, The University of Liverpool, Liverpool, UK

Contact: Zarko Alfirevic, Department of Women's and Children's Health, The University of Liverpool, First Floor, Liverpool Women's NHS Foundation Trust, Crown Street, Liverpool, L8 7SS, UK. zarko@liverpool.ac.uk.

Editorial group: Cochrane Pregnancy and Childbirth Group.

Publication status and date: New search for studies and content updated (no change to conclusions), published in Issue 9, 2017.

Citation: Vogel JP, Osoti AO, Kelly AJ, Livio S, Norman JE, Alfirevic Z. Pharmacological and mechanical interventions for labour induction in outpatient settings. *Cochrane Database of Systematic Reviews* 2017, Issue 9. Art. No.: CD007701. DOI: 10.1002/14651858.CD007701.pub3.

Copyright © 2017 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

ABSTRACT

Background

Induction of labour is carried out for a variety of indications and using a range of methods. For women at low risk of pregnancy complications, some methods of induction of labour or cervical ripening may be suitable for use in outpatient settings.

Objectives

To examine pharmacological and mechanical interventions to induce labour or ripen the cervix in outpatient settings in terms of effectiveness, maternal satisfaction, healthcare costs and, where information is available, safety.

Search methods

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (30 November 2016) and reference lists of retrieved studies.

Selection criteria

We included randomised controlled trials examining outpatient cervical ripening or induction of labour with pharmacological agents or mechanical methods. Cluster trials were eligible for inclusion.

Data collection and analysis

Two review authors independently assessed trials for inclusion and risk of bias, extracted data and checked them for accuracy. We assessed evidence using the GRADE approach.

Main results

This updated review included 34 studies of 11 different methods for labour induction with 5003 randomised women, where women received treatment at home or were sent home after initial treatment and monitoring in hospital.

Studies examined vaginal and intracervical prostaglandin E₂ (PGE₂), vaginal and oral misoprostol, isosorbide mononitrate, mifepristone, oestrogens, amniotomy and acupuncture, compared with placebo, no treatment, or routine care. Trials generally recruited healthy women



with a term pregnancy. The risk of bias was mostly low or unclear, however, in 16 trials blinding was unclear or not attempted. In general, limited data were available on the review's main and additional outcomes. Evidence was graded low to moderate quality.

1. Vaginal PGE₂ versus expectant management or placebo (5 studies)

Fewer women in the vaginal PGE₂ group needed additional induction agents to induce labour, however, confidence intervals were wide (risk ratio (RR) 0.52, 95% confidence interval (CI) 0.27 to 0.99; 150 women; 2 trials). There were no clear differences between groups in uterine hyperstimulation (with or without fetal heart rate (FHR) changes) (RR 3.76, 95% CI 0.64 to 22.24; 244 women; 4 studies; *low-quality evidence*), caesarean section (RR 0.80, 95% CI 0.49 to 1.31; 288 women; 4 studies; *low-quality evidence*), or admission to a neonatal intensive care unit (NICU) (RR 0.32, 95% CI 0.10 to 1.03; 230 infants; 3 studies; *low-quality evidence*).

There was no information on vaginal birth within 24, 48 or 72 hours, length of hospital stay, use of emergency services or maternal or caregiver satisfaction. Serious maternal and neonatal morbidity or deaths were not reported.

2. Intracervical PGE₂ versus expectant management or placebo (7 studies)

There was no clear difference between women receiving intracervical PGE_2 and no treatment or placebo in terms of need for additional induction agents (RR 0.98, 95% CI 0.74 to 1.32; 445 women; 3 studies), vaginal birth not achieved within 48 to 72 hours (RR 0.83, 95% CI 0.68 to 1.02; 43 women; 1 study; *low-quality evidence*), uterine hyperstimulation (with FHR changes) (RR 2.66, 95% CI 0.63 to 11.25; 488 women; 4 studies; *low-quality evidence*), caesarean section (RR 0.90, 95% CI 0.72 to 1.12; 674 women; 7 studies; *moderate-quality evidence*), or babies admitted to NICU (RR 1.61, 95% CI 0.43 to 6.05; 215 infants; 3 studies; *low-quality evidence*). There were no uterine ruptures in either the PGE_2 group or placebo group.

There was no information on vaginal birth not achieved within 24 hours, length of hospital stay, use of emergency services, mother or caregiver satisfaction, or serious morbidity or neonatal morbidity or perinatal death.

3. Vaginal misoprostol versus placebo (4 studies)

One small study reported on the rate of perinatal death with no clear differences between groups; there were no deaths in the treatment group compared with one stillbirth (reason not reported) in the control group (RR 0.34, 95% CI 0.01 to 8.14; 77 infants; 1 study; *low-quality evidence*).

There was no clear difference between groups in rates of uterine hyperstimulation with FHR changes (RR 1.97, 95% CI 0.43 to 9.00; 265 women; 3 studies; *low-quality evidence*), caesarean section (RR 0.94, 95% CI 0.61 to 1.46; 325 women; 4 studies; *low-quality evidence*), and babies admitted to NICU (RR 0.89, 95% CI 0.54 to 1.47; 325 infants; 4 studies; *low-quality evidence*).

There was no information on vaginal birth not achieved within 24, 48 or 72 hours, additional induction agents required, length of hospital stay, use of emergency services, mother or caregiver satisfaction, serious maternal, and other neonatal, morbidity or death.

No substantive differences were found for other comparisons. One small study found that women who received oral misoprostol were more likely to give birth within 24 hours (RR 0.65, 95% CI 0.48 to 0.86; 87 women; 1 study) and were less likely to require additional induction agents (RR 0.60, 95% CI 0.37 to 0.97; 127 women; 2 studies). Women who received mifepristone were also less likely to require additional induction agents (average RR 0.59, 95% CI 0.37 to 0.95; 311 women; 4 studies; $I^2 = 74\%$); however, this result should be interpreted with caution due to high heterogeneity. One trial each of acupuncture and outpatient amniotomy were included, but few review outcomes were reported.

Authors' conclusions

Induction of labour in outpatient settings appears feasible and important adverse events seem rare, however, in general there is insufficient evidence to detect differences. There was no strong evidence that agents used to induce labour in outpatient settings had an impact (positive or negative) on maternal or neonatal health. There was some evidence that compared to placebo or no treatment, induction agents administered on an outpatient basis reduced the need for further interventions to induce labour, and shortened the interval from intervention to birth.

We do not have sufficient evidence to know which induction methods are preferred by women, the interventions that are most effective and safe to use in outpatient settings, or their cost effectiveness. Further studies where various women-friendly outpatient protocols are compared head-to-head are required. As part of such work, women should be consulted on what sort of management they would prefer.

PLAIN LANGUAGE SUMMARY

Medications and mechanical interventions for induction of labour in outpatient settings

What is the issue?

Induction of labour (starting labour artificially) is often needed for medical reasons, such as when women have passed their due dates. Different induction methods can be used, such as medications (like prostaglandin E_2 , misoprostol or isosorbide mononitrate) or breaking



membranes. Inductions are usually carried out in hospital; some methods may be suitable for use with women treated as outpatients, and allowed to go home to wait for labour to progress. We examined the feasibility, effectiveness and safety of outpatient induction, as well as women's satisfaction and healthcare costs.

Why is this important?

Pregnant women who have reached their due date can be assessed in hospital as outpatients, given the induction treatment followed by monitoring for a short time, and then sent home. Alternatively, they are given the drug or treatment to take at home. Women may be more comfortable waiting for labour to start at home, and outpatient care may be less costly for health services.

What evidence did we find?

This is an updated review that includes six new studies. We included 34 randomised controlled trials involving 5003 pregnant women (search date: November 2016). The women were healthy and at low risk of complications. They were given induction, a fake treatment (placebo) or no treatment. Limited information was available on the outcomes that were of interest, and risk of bias was generally low or unclear. The quality of evidence was judged to be low-quality, with a few moderate-quality findings.

Women at term who were induced as outpatients may be less likely to need further induction, compared to women given placebo or no treatment. Medications like vaginal PGE₂, mifepristone and oral misoprostol appear to be effective. No clear differences were reported for excessive activity of the uterus (hyperstimulation), caesarean section or need for neonatal intensive care.

There were too few women in these trials to determine differences in rare events, such as infant deaths or serious illnesses of mothers or babies. The trials did not report on use of emergency services to return to hospital. Some medications caused side effects (such as headaches). Overall, there was little information on costs of different methods.

What does this mean?

For healthy, low-risk pregnant women at term, outpatient induction and enabling women to return home to wait for labour to start appears to be feasible. Outpatient induction treatments may reduce both need for further drugs and time from treatment to birth. It does not appear to increase the likelihood of needing other interventions in labour. However, there is insufficient evidence to say definitively whether outpatient induction is safe. Future research should focus on which methods women prefer, and are most effective and safe.