Guideline relative to low risk birth

KCE reports 139C

Federaal Kenniscentrum voor de Gezondheidszorg
Centre fédéral d'expertise des soins de santé
Belgian Health Care Knowledge Centre
2010

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Federaal Kenniscentrum voor de gezondheidszorg - Centre fédéral d'expertise des soins de santé –
Belgian Health Care Knowlegde Centre.
Centre Administratif Botanique, Doorbuilding (10th floor)
Boulevard du Jardin Botanique 55
B-1000 Brussels
Belgium
Tel: +32 [0]2 287 33 88
Fax: +32 [0]2 287 33 85
Email : info@kce.fgov.be
Web : http://www.kce.fgov.be

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FRANÇOISE MAMBOURG, JEANNINE GAILLY, WEI-HONG ZHANG

Belgian Health Care Knowledge Centre
Centre fédéral d'expertise des soins de santé
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Title:	Guideline relative to low risk birth
Authors:	Françoise Mambourg (KCE), Jeannine Gailly (KCE), Wei-Hong Zhang (ULB)
External experts:	Guideline Development Group: Sophie Alexander (ESP-ULB), Pierre Bernard (St Luc-UCL), Bernadette Bijnens (UZ-Leuven), Filip Cools (AZ-VUB), Anne Clercx (SPF Santé Publique), Régine Goemaes (VLOV), Anne Niset (AFSfB), Inge Tency (UG), Bénédicte de Thysebaert (UPAB), Myriam Hanssens (UZ-Leuven), Christine Kirkpatrick (Erasme-ULB), Marlene Reyns (VLOV), Fabienne Roelants (St Luc-UCL), Joeri Vermeulen (VLOV). Stakeholders: Alexander Sophie (ESP-ULB), Bernard Pierre (St Luc-UCL),Brichant Jean-François (CHU-Sart-Tilman), Ceysens Gilles (Hôpital Ambroise Paré), Debonnet Serena (FOD Volksgezondheid), de Thysebaert Bénédicte (UPAB), Dr. Deville Jean-Luc (Centre Hospitalier Peltzer – La Tourelle), Goemaes Régine (Vlaamse Organisatie van Vroedvrouwen vzw), Hanssens Myriam (UZ Gasthuisberg), Huybrechts Lieve, Leleux Dominique (E.D.N.), Lewi Liesbeth (VVOG), Masson Véronique (CHU–Sart-Tilman), Naulaers Gunnar (UZ Leuven), Niset Anne (AFSfB), Pluymaekers Margriet (Vroedvrouwenpraktijk Zwanger in Brussel), Reyns Marlene (Vlaamse Organisatie van Vroedvrouwen vzw), Temmerman Marleen (UZ Gent), Tency Inge (Ugent Vrouwen Kliniek), Vandelannoote Isabelle (Erasmushogeschool), Vercauteren Marcel (UZ-Antwerp)
Acknowledgements:	Joan Vlayen (KCE), Regine Goemaes, Marlene Reyns and Marie-Catherine Mambourg.
External validators:	François Goffinet (gynécologue à Hôpital Cochin Saint-Vincent-de-Paul, Paris et chercheur à l'unité de recherche épidémiologique en santé périnatale et en santé des femmes et des enfants, INSERM, Paris, France), Geert Page (gynaecoloog, Jan Yperman ziekenhuis, Belgium), Chris Vanhole (UZ Leuven, Belgium)
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Summary

INTRODUCTION

The present report is a clinical practice guideline (CPG) concerning normal birth in healthy pregnant women at low obstetric risks. Normal birth is defined as: spontaneous labour and delivery. The infant is born spontaneously in the vertex position between 37 and 42 completed weeks of pregnancy. After birth mother and infant are in good condition. The guideline starts with the information given to the mother at the end of pregnancy and ends one hour after the birth of the baby. The indications for induction of labour and national data illustrating the current obstetrician practice were added to this guideline at the request from the experts from the guidelines development group (GDG). The guideline development group chose to refer to the Belgian recommendation regarding the prevention of early-onset neonatal group B streptococcal disease in Belgian maternity units, without literature update. This recommendation, issued by the Belgian health council, regarding will be soon updated.

The guideline primarily aims at the maternity team as well as at all care providers involved in maternal care[a]. Given the fact that the evidence on which this guideline is based may evolve, it is very likely that an update will be needed after five years .

METHODS

The present Clinical Practice Guideline (CPG) was developed using the ADAPTE methodology. First, the topics were discussed both with the members of the College of physicians for the mother and the newborn (maternity section) and with the multidisciplinary guideline development group (GDG) consisting of obstetricians, neonatologists, obstetric anaesthetist and midwives

A broad search of electronic databases was conducted in Medline, EMBASE, National Guidelines Clearing House, specific guideline websites and websites of obstetricians and gynaecologist organisations. Seventeen guidelines were identified and their quality appraised by two independent reviewers using the AGREE instrument. The AGREE score is a international tool designed to assess global quality of the guideline process (see point 2.4.1).

For clinical questions selected by the GDR , the evidence – identified through the included CPGs – was updated by searching Medline, the Cochrane Database of Systematic Reviews, and Embase. Each of the selected reviews was assessed using the checklist of the Dutch Cochrane Centre (see point 2.4.1). Evidence support from selected guidelines and systematic reviews were extracted and presented in evidence tables (see appendix, chapter 6). Based on the retrieved evidence, a draft of recommendations was prepared by a GDR. A level of evidence and a grade of recommendation was assigned to each recommendation using the GRADE system (see table below). Some recommendations were assessed as "good clinical practice" (GCP). This concerns recommendations that were adapted for the Belgian context and based on expert opinion of the GDG members or extracted from internationalguidelines that were based on expert opinion due to lack of scientific publications.

The guideline prepared by the GDG were submitted to a panel of key persons issued from scientific and Professional Associations. In appendix 9, an overview is provided of how the comments of the panelists were taken into account.

[a] We did not consider home birth who are not a regular practice in Belgium with 567 home births /111.056 (0,5%) en 2004 à 810/120.083 (0,7%) en 2008)

GRADE

Grade of Recommendation/ Description	Benefit vs. Risk and Burdens	Methodological Quality of Supporting Evidence	Implications
1A/ Strong recommendation, high quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	RCTs without important limitations or overwhelming evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1B/ Strong recommendation, moderate quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1C/ Strong recommendation, low quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	Observational studies or case series	Strong recommendation, but may change when higher quality evidence becomes available
2A/ Weak recommendation, high quality evidence	Benefits closely balanced with risks and burden	RCTs without important limitations or overwhelming evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2B/ Weak recommendation, moderate quality evidence	Benefits closely balanced with risks and burden	RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2C/ Weak recommendation, low quality evidence	Benefits closely balanced with risks and burden	Observational studies or case series	Very weak recommendation, other alternatives may be equally reasonable

Source: http://www.gradeworkinggroup.org/index.htm

GUIDELINE

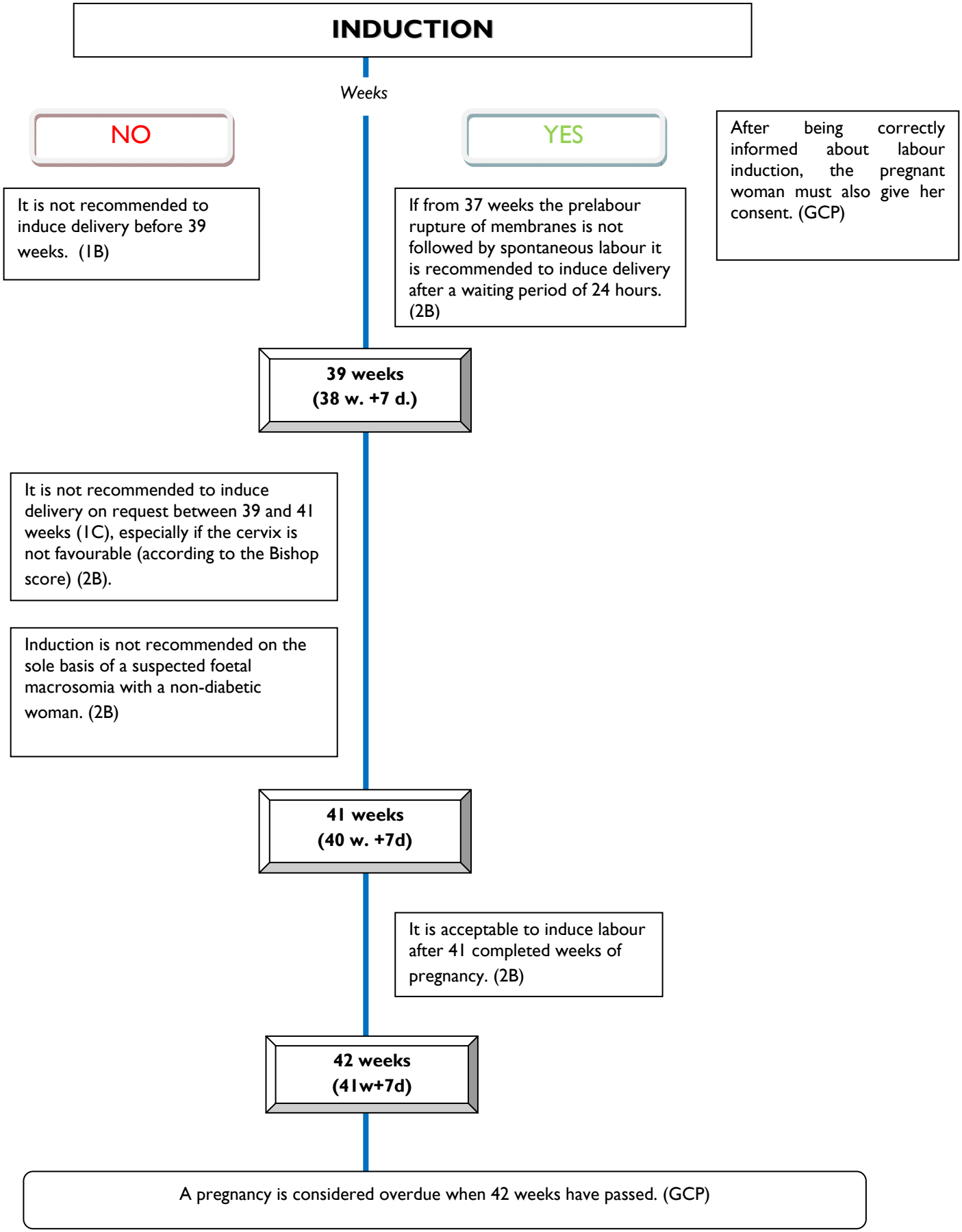
INFORMATION AT THE END OF THE PREGNANCY

Systematically

Support	Pregnant women are stimulated to have them supported by someone of their choice in the maternity clinic. (1A)
Organisation	It is recommended to inform pregnant women about the organisation of the maternity unit (especially during minimum staffing hours), the possibilities and the limits concerning their choice of care provider or the availability of certain methods and techniques. (GCP)
Practices employed	It is recommended to inform pregnant women about the different stages of the delivery and the practices employed in the delivery room to help them to make well-informed choices. (GCP)
Possible interventions	It is recommended to provide objective and full information (preferably by means of a written document at the end of the pregnancy) about induction of labour , possibility of speed up contractions, pain relief strategies and pharmacological analgesia available during the birth. The indications, possibilities, limits and possible risks and contra-indications of the various pharmacological and non-pharmacological methods to alleviate pain should be clearly presented and discussed. (GCP)

On demand

Water birth	It is recommended to inform pregnant women of the fact that we currently do not have any convincing evidence about the benefits linked to water birth. (GCP)
Cord blood	It is recommended to inform parents who raise at their own initiative the question of autologous stem cell transplantation using a cord blood bank that this remains an exceptional technique with limited indications. (GCP)


INDUCTION
Weeks
NO
YES
After being correctly informed about labour induction, the pregnant woman must also give her consent. (GCP)
It is not recommended to induce delivery before 39 weeks. (1B)
If from 37 weeks the prelabour rupture of membranes is not followed by spontaneous labour it is recommended to induce delivery after a waiting period of 24 hours. (2B)
39 weeks
(38 w. +7 d.)
It is not recommended to induce delivery on request between 39 and 41 weeks (1C), especially if the cervix is not favourable (according to the Bishop score) (2B).
Induction is not recommended on the sole basis of a suspected foetal macrosomia with a non-diabetic woman. (2B)
41 weeks
(40 w. +7d)
It is acceptable to induce labour after 41 completed weeks of pregnancy. (2B)
42 weeks
(41w+7d)
A pregnancy is considered overdue when 42 weeks have passed. (GCP)

ADMISSION

Welcoming

It is recommended to welcome pregnant woman to the maternity unit with empathy, inform them progressively about the various stages in labour and delivery and the actions performed, to inquire about their expectations, their possible choices and their possible birth plan. (1C)

Clinical examination

When the pregnant woman arrives at the maternity unit it is recommended to read her medical file and to perform up a supplementary anamnesis. The minimum clinical examination includes: weight, blood pressure, temperature, heart rate of mother and foetus, urine test (protein, glucose), abdominal palpitation, uterine height and full vaginal examination (if membranes are not broken). The state of advancement of labour will thus be assessed. (GCP)

Foetus

On admission, it is recommended to assess the state of the foetus by auscultating the heart rate for at least one minute immediately after a contraction (1B). Such evaluation may be performed using a cardiotocography (CTG). This practice does not increase risks to the foetus, but it does result in a slightly increased risk of instrumental delivery (GCP).

Non active labour

It is recommended to reassure pregnant women whose labour is not active and to inform them of the circumstances in which they should return to the unit.

LABOUR

Support

It is recommended that pregnant women should be accompanied at the maternity unit by a person of their choice. (1A) This person shall be kept informed of the complete process. (GCP) Since it is recommended to ensure a continuous presence at the parturient bedside, it is acceptable under certain circumstances for an additional person (professional or otherwise) chosen by the couple to be present as well, if his or her presence is beneficial to the couple (2B).

Monitoring labour

The use of a partogram is recommended by NICE and by the WHO although there is no convincing evidence to favour or disfavour its use. (GCP)
After rupture of the membranes, vaginal examinations should be limited to a maximum of one every four hours, unless in case of specific indications or at request of the pregnant woman. (1C).

Care

It is recommended to encourage the pregnant woman to adopt the most comfortable position for the progress of labour, for the mother and foetus. (1B)
It is recommended to allow the parturient the possibility to drink clear liquids (possibly with sugar) as long as there is no medical counter-indication. (1B).

Foetal monitoring

Intermittent auscultation of the foetal heart is recommended in case following conditions are met: the auscultation must take place every 15 minutes during at least one minute and immediately after a contraction (1A). Continuous foetal monitoring (by CTG recording) will be performed if staff availability prevents intermittent auscultation, or at the request of the parturient (GCP).

Membranes

The artificial rupture of the membranes is **not recommended** as a routine practice when the labour is progressing normally. (1A)

After correctly informing the parturient and receiving her approval, it is acceptable under specific circumstances to try to speed up the labour by rupturing the membranes, this in combination with an oxytocin perfusion and one-to-one care. (2B)

PAIN

Support

It is recommended for professional caretakers to show empathy for the pain experienced by the pregnant women and to inquire how they want to manage this pain. (1C)

It is recommended to respect the choices of the pregnant woman in regard to pain management and any changes to these choices during the labour stages insofar this is possible within the organisation. (GCP)

Care

If this is the parturient's wish, it is recommended to try to reduce the pain by effecting the labour in a warm bath while respecting hygiene precautions. (1B)

Pain relief

If the parturient requests pharmacological pain relief, a locoregional analgesia is preferable to a systemic analgesia. (1A)

It is recommended to inform the parturient of the fact that loco-regional analgesias requires closer monitoring (placing of venous access, more frequent monitoring), but still permitting a certain mobility. (GCP)

It is recommended to perform locoregional analgesia after the onset of the labour and if the patient feels the need, irrespective of the dilatation stage. (1A)

It is recommended not to interrupt the locoregional analgesia during labour or delivery, nor during the perineal repair. (1A)

EXPULSION

Duration

It is recommended to intervene when the active expulsion stage exceeds two hours in nulliparous women and one hour in multiparous women. (1C)

Without loco regional analgesia

It is recommended to allow parturient who have not received loco regional analgesia and who have reached full dilatation, to push when they feel the need. (1A)

With loco regional analgesia

If a parturient under loco regional analgesia feels no need to push at full dilatation, it is recommended to wait for the foetus to descend and a spontaneous need to push before starting voluntary efforts at expulsion, provided the foetal heart rate remains normal. (1A)

Care

It is recommended to encourage the parturient to adopt the position that she finds the most comfortable for pushing, provided the foetal heart rate remains normal. (1A)
It is recommended to allow the parturient to push in the way she finds it most effective given that the literature provides no basis for concluding that one method is more effective than the other. (GCP)
Literature does not provide a sufficient basis to affirm or refute the fact that manual support of the perineum reduces the number of ruptures or otherwise. (2B)

Fundus pressure

It is recommended **not to** exert any pressure on the fundus during the expulsion stage. (1B)

Episiotomy

It is formally recommended **not to** adopt episiotomy as a routine practice. (1A)
When there is a medical indication (instrumental birth or suspected foetal distress), a mediolateral episiotomy is recommended. (2C)

THIRD STAGE AND POST PARTUM

High risk of haemorrhage

For patients with a high risk of haemorrhage (many previous births, history of bleeding, locoregional analgesia, prolonged labour or instrumental birth), routine use of active delivery management (or coached delivery) is recommended i.e. oxytocin injection at time of birth, cord clamping and cutting followed by cord traction. (1B).

No high risk of haemorrhage

If the woman has no increased risk of postpartum bleeding, it is acceptable to allow the third stage to proceed naturally provided it does not take more than one hour (2C).

Taking care of the mother

It is recommended to observe the physical and psychological state of the woman immediately after the birth. (1C)
The perineum, the vagina and the rectum should be examined carefully. (1C)
If necessary stitching can be carried out under local anaesthetic (if no locoregional analgesia). (GCP)

Key messages concerning the newborn

At the time of birth, the state of the newborn should be assessed according to the following parameters: clarity of amniotic liquid, breathing or crying, skin colour, tone and heart rate (> 100/min). (GCP)

If these parameters are favourable, the newborn should be placed in skin-to-skin contact with the mother and covered in a warm blanket. The Apgar score should be determined at one and five minutes. (GCP)

If these parameters are not favourable, the observation should continue and/or the necessary resuscitation procedures will be applied without delay. (GCP)

A healthy newborn should not be separated from the mother after delivery. Routine procedures such as weighing, measuring and taking the temperature should ideally wait for one hour. (GCP)

The first breastfeeding should be accompanied. (GCP).

Mother and newborn are closely observed and watched during the first hour after the delivery. (GCP).

Scientific summary

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LIST OF ABBREVIATIONS

Abbreviation	Description
CBO	Kwaliteitsinstituut voor de Gezondheidszorg
CEpip	Centre d'Epidémiologie Périnatale
CPG	Clinical Practice Guideline
CTG	cardiotocography
DCC	delayed cord clamping
ECC	early cord clamping or electrocardiography
EFM	electronic foetal monitoring
EL	evidence level
FBS	foetal blood sampling
FHR	foetal heart rate
GBS	group B streptococcal disease
GCP	Good Clinical Practice
GDG	Guideline Development Group
GGOLFB	Groupement des Gynécologues Obstétriciens de Langue Française de Belgique
HAS	Haute autorité de santé
KCE	Belgian Health Care Knowledge Centre
MESH	Medical Subject Headings
M-A	meta-analysis
MMR	maternal mortality ratio
NICE	National Institute for Clinical Excellence
NICU	neonatal intensive care unit
NIHDI	National Institute for Health and Disability Insurance (RIZIV/INAMI)
NHG	Nederlands Huisartsen Genootschap
NHS	National Health Service
OECD	Organisation for Economic Co-operation and Development
ONE	Office de la Naissance et de l'Enfance
PICO	Population Intervention Comparison Outcome
PPH	post partum hemorrhage
PRoM	prelabour rupture of membranes
RA	regional analgesia
RCT	randomized controlled trial
SD	standard deviation
SPE	Studiecentrum voor Perinatale Epidemiologie
SR(s)	systematic review(s)
USA	United States of America
VE	vaginal examination
VVOG	Vlaamse Vereniging voor Obstetrie en Gynaecologie
WHO	World Health Organisation

GLOSSARY OF TERMS

Term	Source	Explanation/Definition
Foetal mortality rate	EURO-PERISTAT[1]	The number of foetal deaths at or after 22 completed weeks of gestation in a given year, expressed per 1 000 live and stillbirths in the same year.
Infant mortality rate	EURO-PERISTAT[1]	The number of infant deaths (days 0-364) after live birth at or after 22 completed weeks of gestation in a given year, expressed per 1 000 live births in the same Year.
Maternal mortality ratio (MMR)	EURO-PERISTAT[1]	All deaths from the first trimester of pregnancy until 42 days post partum, from direct and indirect obstetric causes per 100 000 live births.
Neonatal mortality rate	EURO-PERISTAT[1]	The number of deaths during the neonatal period (up to 28 completed days after birth) at or after 22 completed weeks of gestation in a given year, expressed per 1 000 live births in the same year. Neonatal deaths are subdivided by timing of death into early neonatal deaths: at 0-6 days after live birth); late neonatal deaths: at 7-27 days after live birth.
Perinatal mortality	OECD[2]	The ratio of deaths of children within one week of birth (early neonatal deaths) plus foetal deaths of minimum gestation period 28 weeks or minimum foetal weight of 1 000g, expressed per 1 000 births.
Stages of labour	NICE[3]	**First stage of labour**: • Latent first stage of labour – a period of time, not necessarily continuous, when there are painful contractions, and there is some cervical change, including cervical effacement and dilatation up to 4 cm. • Established first stage of labour – when there are regular painful contractions, and there is progressive cervical dilatation from 4 cm. **Second stage of labour**: • Passive second stage of labour: the finding of full dilatation of the cervix prior to or in the absence of involuntary expulsive contractions. • Onset of the active second stage of labour: the baby is visible; expulsive contractions with a finding of full dilatation of the cervix or other signs of full dilatation of the cervix; active maternal effort following confirmation of full dilatation of the cervix in the absence of expulsive contractions. **Third stage of labour**: is the time from the birth of the baby to the expulsion of the placenta and membranes.

1 INTRODUCTION

1.1 SCOPE

The present report is a clinical practice guideline (CPG) relative to normal birth in healthy pregnant women at low obstetric risks. The guideline begins with the information of the mother at the end of pregnancy and ends one hour after the birth of the baby. The scope covers a broad range of topics such as information before maternity admission, labour induction, care at admission and during labour, management of delivery and first newborn care. The guideline is primarily intended to be used in maternity units by all care providers involved in maternal and newborn care, mainly obstetricians, midwives, anaesthetists and paediatricians composing the maternity team.

1.2 CONTEXT

1.2.1 Introduction

Delivery is globally a safe process in Belgium . In Belgium around 115 000 births are registered every year. Maternal mortality is very low in our country (4.5 to 6.0 / 100 000) and 99.4% of new-born babies are alive at birth. Of these births, 96.2% are single births; 91.7% of babies are born at term (between 37 and 42 weeks). More than 94% of babies are born in the cephalic position and 85.3% have a normal birth weight between 2 500 and 3 999 grams[4]. The large majority of births in Belgium are a physiological process and not a pathological situation.

Guidelines are systematically developed statements to assist practitioner and patient in deciding about appropriate health care for specific clinical circumstances. They are designed to help practitioners to assimilate, evaluate and implement the ever-increasing amount of evidence and opinion on best current practice[5]. This guideline is intended to help reduce the variability of practices amongst healthcare workers in order to improve the quality of care and provide healthcare based on proven data to the largest possible number of patients. This guideline is based on a systematic review of the literature. It can be used as a basis for consultation by health care providers and for writing local clinical pathways. It can also be used as a basis for providing information for future parents.

1.2.2 Scope

For a good comprehension of this report, some precisions regarding the scope should be taken in account.

1.2.2.1 Normal birth

The scope of this report is the normal birth. The World Health Organization (WHO) defines a normal birth as spontaneous in onset, being at low-risk at the start of labour and remaining so throughout labour and delivery. The infant (singleton) is born spontaneously in the vertex position between 37 and 42 completed weeks of pregnancy. After birth, mother and infant are in good condition[6].

Obstetric risk level is assessed by the gynaecologist for each women before the birth process. In healthy women at low obstetric risk, the birth process may be regarded as normal as long as no complication occurs. When a complication occurs during the delivery, the recommendations of this guideline are no longer applicable. In that case, specific scientific references must be followed. However, as the labour and delivery of pregnant women who were labelled high-risk during pregnancy may have a normal course, a number of recommendations for normal birth may apply to these women.

Although the WHO defines a normal birth as spontaneous in onset, the indications of labour induction were added to this guideline at the request from the experts from the guidelines development group (GDG). See chapter 2.2.

1.2.2.2 Population

The targeted population considered in the guideline is defined as healthy pregnant women at low obstetric risk who deliver between ≥ 37 to < 42 weeks. A delivery at a gestational age < 37 weeks or ≥ 42 weeks is not considered as "normal" and is out of the scope of this report.

2 METHODOLOGY

2.1 GENERAL APPROACH

The present Clinical Practice Guideline (CPG) was developed by adapting and updating the existing international and national CPGs to the Belgian context. This approach is being structured in a formal methodology by the ADAPTE collaboration, an international group of guideline developers and researchers. The ADAPTE methodology generally consists of three main phases, which were applied for this report[7]:

1. Set-up Phase: outlines the necessary tasks to be completed prior to beginning the adaptation process (e.g., identifying necessary skills and resources).
2. Adaptation Phase: assists guideline developers in moving from selection of a topic to identification of specific clinical questions; searching for and retrieving guidelines; assessing the guideline quality, currency, content, consistency and applicability, decision making around adaptation, and preparing the draft adapted guideline
3. Finalization Phase: guides guideline developers through getting feedback on the document from stakeholders who will be impacted by the guideline, consulting with the source developers of guidelines used in the adaptation process, establishing a process for review and updating of the adapted guideline and the process of creating a final document.

2.2 CLINICAL QUESTIONS

First, the topics were discussed both with the members of the College for the mother and the newborn (maternity section) (College van geneesheren voor de moeder en de pasgeborene / Collège de médecins pour la mère et le nouveau-né)[a] and with the multidisciplinary guideline development group (GDG). Second, the indications of labour induction were added to the scope of the study. Third, it was decided to refer to the Belgian health council consensus for the recommendations on the prevention of early-onset neonatal group B streptococcal disease.[8]

This clinical practice guideline addresses the following clinical questions:

1. Information before maternity admission

- What is the value of information given to the pregnant woman and her partner before admission to maternity?

2. Labour induction

- What is the impact of medical or elective labour induction in women at term (>39 to ≤ 42 weeks) on maternal and newborn outcomes?

3. Latent first stage and maternity admission

- Has early assessment of labour stage before admission of the woman to the maternity unit an impact on maternal and newborn outcomes?
- What is the value of communication between women and healthcare professionals at first contact and at admission?
- What is the value of the initial assessment at admission?
    - What is the value of the clinical assessment?
    - What is recommended by the Belgian health council regarding the prevention of early-onset neonatal group B streptococcal disease in Belgian maternity units?
    - Is the use of admission cardiotocography in low risk women associated with better outcomes?

[a] https://portal.health.fgov.be/portal/page?_pageid=56,512701&_dad=portal&_schema=PORTAL

4. Established first stage labour

- Care
  - What is the impact of care (i.e. supportive care and information related to the woman's position) for women in established labour on maternal and newborn outcomes?
- Monitoring
  - What is the impact of monitoring on maternal and newborn outcomes?
  - Is the use of continuous monitoring versus intermittent auscultation associated with better outcomes?
  - What is the impact of foetal blood sampling?
  - What is the impact of continuous foetal electrocardiogram adjunct to cardiotocography?
- Amniotomy
  - What is the impact of amniotomy combined (or not) with oxytocin on maternal and newborn outcomes?
- Pain
  - What is the impact of non-pharmacological interventions to reduce pain during labour and birth?
  - What is the trade-off between benefit and risk of regional analgesia and general analgesia during labour and birth?

5. Second stage

- What is the impact of the care (i.e. woman's position, pushing delay, pushing technique and uterine fundal pressure) in second stage on maternal and newborn outcomes?
- What is the impact of local interventions (i.e. perineal massage, warm pads, hand position, anaesthetic spray) on pain or perineal trauma?
- Is the use of routine episiotomy associated with better outcomes?

6. Third stage

- Mother
  - Is the use of active management associated with better outcomes?
  - What is the impact of the maternal care immediately after birth?
- Newborn
  - What is the impact of late cord clamping on newborn outcomes?
  - What is the value of the newborn assessment immediately after birth?
  - What is the impact of early skin-to-skin contact?

2.3 SEARCH FOR EVIDENCE AND INCLUSION CRITERIA

The search was performed step by step.

1. A first search of guidelines was done based on the comprehensive clinical question.
2. An additional search for meta-analyses (M-A) and systematic reviews (SRs), to perform an update of the best quality guidelines, was first performed for the comprehensive clinical question (normal birth, labour, delivery) and then completed for each specific clinical question.
3. Given the large scope and the high number of studies available, the update was most often limited to systematic reviews and meta-analyses.

Potential biases due to identified new publications not included in reviews are also discussed in specific sections. Moreover, some Belgian major publications such as the Belgian consensus about group B streptococcus screening, were added and discussed in specific sections.

2.3.1 Clinical practice guidelines

2.3.1.1 Sources and search terms

A broad search of electronic databases (Medline, EMBASE), specific guideline websites and websites of obstetricians and gynaecologist organisations was conducted in January 2009 (see appendixes 1 and 2 for more details).

For the search in guidelines websites, free search terms were used according to the language of the website: "bevalling" for Kwaliteitsinstituut voor de Gezondheidszorg (CBO) and Nederlands Huisartsen Genootschap (NHG), "accouchement" for Haute autorité de santé (HAS), "delivery", "labour (or labor)", "parturition or birth" for the other databases.

For the search in the Medline database, the following MeSH terms were used: Labour Stage, Second/ or "Trial of Labour"/ or Labour Pain/ or Labour Stage, Third/ or Obstetric Labour Complications/ or labour.mp, or Labour Onset/ or Labour, Obstetric/ or Labour Presentation/ or Labour, Induced/ or Labour Stage, First/ or Delivery, Obstetric/ or *Term Birth/ or *Parturition/ in combination with Guideline [pt] OR Practice guideline.

For this search in the EMBASE database, the following terms were used: 'obstetric anesthesia'/exp or 'labour induction'/exp/mj or 'placental delivery'/exp/mj or 'spontaneous placental delivery'/exp/mj or 'labour pain'/exp/mj or 'vaginal delivery'/exp/mj or 'labour stage'/exp in combination with 'clinical pathway' or 'instrumental delivery'.

2.3.1.2 In- and exclusion criteria

Publications were selected if relevant to define the key question, by 3 reviewers independently (FM, SA, WZ). Both national and international CPGs on childbirth (or intrapartum care, parturition and obstetric labour/labor) were included. Thirty nine publications were found as potential guidelines about delivery.

Language (English, Dutch, and French) and date restriction (2004 – January 2009) were used. Duplicates were excluded, as well as CPGs without references and CPGs without description of used methodology for search or for selecting the evidence. In case of publications without methodology described (but potentially relevant as guidelines), additional information was asked to the authors (or associations) before exclusion. This way, 22 CPGs were excluded. This implies that 17 guidelines were selected for critical appraisal (see appendix 1).

2.3.2 Systematic reviews and meta-analyses

2.3.2.1 Sources and search terms

The evidence identified through the selected CPGs was updated by searching Medline, Embase and the Cochrane Database of Systematic Reviews (CDSR). This search for additional evidence was done in two steps: an overall search (based on the comprehensive health question) followed by specific searches (based on specific clinical questions). A combination of appropriate MeSH terms and free text words was used (see appendix 2). The last search was performed in December 2009.

2.3.2.2 Inclusion/ exclusion criteria

Meta-analysis (MA) and systematic reviews (SR), with a clear description of the methodology and based on a search data realized after this of the NICE guideline about intrapartum care (24 April 2006) were selected, if potentially relevant to define the clinical questions, by 2 reviewers independently (FM, JG). Fifty-one reviews were first selected based on title and abstract. For all eligible studies, the full-text was retrieved. Reviews out of the scope and meta-analyses withdrawn in the Cochrane library at 3 December 2009 were excluded. Reviews about methods (for example methods to induce labour) and reviews with a topic limited to complications (for example treatment of postpartum haemorrhage) were also excluded, because out of the field of predefined

clinical questions. After this first screening, twenty-five meta-analyses or systematic reviews were selected (see appendix 3).

2.4 QUALITY APPRAISAL

2.4.1 Quality appraisal of guidelines

Seventeen guidelines were quality appraised by two independent reviewers (FM, WZ) using the AGREE instrument. Disagreement was discussed face-to-face. At the end, agreement was reached for all CPGs. The AGREE score was performed using a standardized methodology allowing to present the result as a percentage of the total AGREE score. Five CPG scoring ≥ 70% and presenting a clear methodology description were assessed as "recommended". Five others scoring ≥ 70% and presenting an unclear methodology description were assessed as "recommended with alterations". Seven guidelines scoring less than 70% were assessed as "not recommended" and were subsequently not used for this report (see appendix 4).

2.4.2 Quality appraisal of systematic reviews

Each of the 32 selected reviews was assessed using the checklist of the Dutch Cochrane center (www.cochrane.nl) which considers the quality appraisal of 8 methodological processes: search question, search strategy, selection process, quality appraisal, data extraction, description of the original studies, heterogeneity and data pooling. Twenty three reviews were fully or partly selected (see appendix 5).

2.5 DATA EXTRACTION

Recommendations and evidence support from selected guidelines including topics relevant for each clinical question were extracted and presented in evidence tables in each chapter. Data from systematic reviews and meta-analyses were also extracted regarding each clinical question and synthesized in evidence table. If available, only results based on RCTs were extracted from the review. In their absence or in case of inconclusive data due to, for example, a lack of power of RCT, results of observational studies were also considered.

The following levels of evidence are used in the evidence tables:

- Regarding guidelines, the level of evidence assigned by the original guideline is retained and explained in each table.
- Regarding systematic reviews or meta-analyses, the following levels of evidence were assigned, according to the type and the quality of included studies:
  - High: RCT's without important limitations or overwhelming evidence from observational studies
  - Moderate: RCTs with important limitations or exceptionally strong evidence from observational studies
  - Low: observational studies or case series.

  Discrepant results between guidelines or reviews are discussed. Evidence is summarized for each clinical question and key points are drawn up.
- Regarding key points, the following levels of evidence (issued from the GRADE system http://www.gradeworkinggroup.org/) are used:
  - A for high level of evidence based on RCT's without important limitations or overwhelming evidence from observational studies,
  - B for moderate level of evidence based on RCTs with important limitations or exceptionally strong evidence from observational studies
  - C for low level of evidence based on observational studies or cases series.

2.6 FORMULATION AND GRADES OF RECOMMENDATIONS

Based on the retrieved evidence, a first draft of recommendations was prepared by a small working group. A first draft of recommendations and evidence tables including available literature for each clinical question was send to the guideline development group 2 weeks prior to the first face-to-face meeting. The guideline development group met on several occasions to discuss the draft. Recommendations were only changed if supported by evidence that was at least equal or higher than the evidence already included. Based on the discussion meetings a second draft of recommendations was prepared.

A grade of recommendation was assigned to each recommendation using the GRADE system (appendix 7). Recommendations were graded as "1" for strong recommendation and "2" for weak recommendation with the level of evidence on which the recommendation is based as described previously for the key points ("1A" means a strong recommendation based on a high level of evidence). "GCP" was assigned when there was no evidence available to support the recommendation. The second draft was once more circulated to the guideline development group for final approval.

2.7 TAKS OF KCE EXPERTS, GUIDELINE DEVELOPMENT GROUP AND STAKEHOLDERS

The guideline was developed by a multi-professional working group i.e. the Guideline Development Group or GDG that consisted of four obstetricians, two neonatologists, an obstetric anaesthetist and five midwives. The tasks of the GDG are the following: to verify that the research is complete and that the interpretation of the articles is correct; to assess the relevance of the conclusions of the selected studies in relation to the Belgian context and to participate in drawing up recommendations.

KCE-experts provided methodological support for the guideline development process, undertook systematic searches, retrieval and appraisal of the evidence and wrote successive drafts of the guideline. Drafts were sent to the members of the GDG 14 days before each meeting. After each meeting, modifications were sent back to GDC. They also received a final version for approval.

As the scientific summary is based on available literature, counter-arguments have to be evidence based; key points were only changed if supported by evidence that was at least equal or higher than the evidence already included. The analysis of the members of the GDG is summarised under the heading 'other considerations'. Adaptation of clinical recommendations to Belgian context was done during expert and stakeholders meetings.

The recommendations prepared by the GDG were circulated to the Professional Associations and all Belgian Universities. Those associations were : College for the mother and the newborn (maternity section, Ministry of Health), Vlaamse Organisatie van Voedvrouwen (VLOV), L'Union Professionnelle des Sages-femmes Belges (UPSfB), Vlaamse vereniging voor obstetrie en gynecologie (VVOG), Groupement des Gynécologues Obstétriciens de langue française (GGOLFB), UPKOGRP asbl / BGKVGPR vzw. Union Professionnelle des Kinésithérapeutes diplômés, section Obstétrique, Gynécologie et Rééducation Pelvienne/ Beroepsvereniging van Gediplomeerde Kinesitherapeuten, afdeling Perinatale Kinesitherapie, Gynaecologische en Pelvische Reëducatie.

Each association was asked to assign 2 key persons to discuss the recommendations during an open meeting. These panellists received the recommendations 2 months prior to this meeting. As a preparation of the meeting all invited panellists were asked to score each recommendation on a 5-point scale to indicate their agreement with the recommendation, with a score of '1' indicating 'completely disagree', '2' indicating 'somewhat disagree', '3' indicating 'unsure', '4' indicating 'somewhat agree', and '5' indicating 'completely agree' (the panellists were also able to answer 'not applicable' in case they were not familiar with the underlying evidence). In case a panellist disagreed with the recommendation (score '1' or '2'), (s)he was asked to provide appropriate evidence. All scores (n = to be completed) were than anonymized and summarized into a mean score, standard deviation and % of 'agree'-scores (score '4' and '5') to allow a targeted discussion (see appendix 8). The recommendations were then discussed during a face-to-face meeting on 12 July 2010. Based on this discussion a final draft of the recommendations was prepared, and discussed by the guideline development group by email. In appendix 9, an overview is provided of how the comments of the experts were taken into account. For final recommendations, see appendix 10.

3 INFORMATION DURING ANTENATAL PERIOD

3.1 INTRODUCTION

The importance of actual communication between women and caregivers during intrapartum care has been identified by the NICE guideline development group as one of the most important themes of the guideline. Some information may be given during the last weeks of the antenatal period on the occasion of practitioner consultation and if necessary repeated during intrapartum care[3].

The choice of subjects to treat was made by the members of this study's guideline development group. They diverged from the general methodology by adding certain concepts of the Belgian patients' rights act and by taking into account certain local practices.

3.2 GENERAL INFORMATION - THE BELGIAN PATIENT'S RIGHTS ACT

The right to be informed (Article 7) and the right to an informed consent (Article 8) are part of the Belgian patients' rights act[9].

3.2.1 The right to be informed

The patients' rights act regulates the right to information about the health status (e.g. the diagnosis). The right to be informed about the health status has to be distinguished from the right to informed consent. Whereas the right to informed consent is linked to a decision, the right to information about the health status is not. The patient has the right to be informed by the health care provider about all information concerning him/her that is required to understand his health status and the probable evolution. The information has to be communicated in a clear language. In principle, information is given orally but the patient can request that the information is confirmed in writing.

3.2.2 The right to an informed consent

The right to informed consent can be derived from the right to physical integrity and to self-determination. The right to receive information prior to consent concerns every medical intervention. According to the content of the information a non exhaustive list is enumerated by the law: the patient has to be informed about the nature, the purpose, the urgency, the frequency, the follow – up care of the intervention, the relevant contra indications, the risks and the side effects of the intervention, alternatives and the financial information. The explanatory memorandum of the law states that consent has to be given explicitly, except when the physician, after having sufficiently informed the patient, can reasonably deduce from the behaviour of the patient that he/she consents[10]. Explicit consent implies that consent can be given orally as well as written. The intention of the legislator was to promote oral consent in order to prevent the increasing use of consent forms, because of the risk of standardisation and uniformisation. Moreover, information has to be given in advance and timely[11].

3.3 SPECIFIC INFORMATION DURING ANTENATAL PERIOD

This section contains information given during the last weeks of antenatal period: on induction of labour, on the woman's support during the birth process and on pain management. In order to give practitioners some objective information, the Belgian GDG chose to focus additionally on the constraints linked to the organisation of the maternity unit. On request of some members of the GDG, a summary of the evidence available on water birth and cord blood banking was added.

3.3.1 Induction

Induction as such is treated in chapter 4. Information about induction was studied in two guidelines[12, 13]. The update of the literature did not find any more recent systematic review about induction.

Because of the limited evidence in favour of induction, the NICE GDG emphasized the need of informing women about induction. This information must include the reasons, methods and options of induction of labour and should be given to all women at the 38 week antenatal visit[12]. The HAS guideline recommends to inform all women about the benefits and risks of induction of labour (medical and elective indications)[13].

This study's GDG has sent a request to the organisations representing Belgian gynaecologists (VVOG-GGOLFB) asking them to draft a document to be used to obtain a proper informed consent of parturient. These organisations have agreed to this but the timing was not specified.

3.3.2 Woman's support during birth process

In accordance with the conclusions of section 5.1.2, the GDG chose to recommend one-to-one care performed by a relative (chosen by the women) with or without adjunction of professional one-to-one care. In order to promote this opportunity, this relative should receive information at the same time as the pregnant women.

3.3.3 Pain management/analgesia

In accordance with the conclusions of chapter 6, the GDG chose to recommend that the maternity team (in collaboration with the anaesthesiologist) should provide a leaflet containing information on the pain management strategy and analgesic methods available at the unit. The leaflet will also describe benefits and risks of each method.

3.3.4 Organisation of the maternity unit

Problems related to constrains of the maternity unit and to limited availability of the providers were cited by members of the GDG. Some women prefer female healthcare professionals, others ask for some pain relief modality. Unfortunately, constrains related to availability of the providers on the maternity unit do not allow satisfying all particular requirements of the women 24/24 hours and 7/7 days.

In this section, the guideline development group chose to refer to the recommendations of the National Council of the Order of Belgian Physicians (see Table 1).

Table 1: Recommendations of the National Council of the Order of Belgian Physicians

Source	Date	Recommendation	Comment	Level of evidence
Avis du Conseil national de l'Ordre des médecins de Belgique 2006 (National Council of the Order of Physicians) (www.ordomedic.be)	July 2006	Le Conseil national marque son approbation vis-à-vis des mesures que le médecin a prises pour accéder aux demandes des patientes sans mettre en difficulté le fonctionnement du service et les soins aux autres patients, à savoir, informer dès le premier contact, la patiente et éventuellement sa famille: • de l'organisation du service, des médecins qui y prestent et de la possibilité d'une prise en charge personnalisée dans le cadre des heures habituelles de prestation. • de l'organisation de la prise en charge des urgences et du service de garde et des limites qu'elle impose au libre choix intégral d'un praticien.	Not in selected guideline according AGREE	Expert advice
Nationale Raad van de Orde van geneesheren van België (www.ordomedic.be)	July 2006	In dit opzicht gaat de Nationale Raad akkoord met de door u genomen maatregelen om tegemoet te komen aan de wensen van de patiënten zonder de werking van de dienst en de zorg aan de andere patiënten in het gedrang te brengen, met name de patiënte, en eventueel haar familie van bij het eerste contact op de hoogte brengen: • van de organisatie van de dienst, van de artsen die er werken en van de mogelijkheid een gepersonaliseerde behandeling te krijgen in het kader van de gebruikelijke prestatie-uren; • van de organisatie van de spoedbehandeling en van de wachtdienst met de beperkingen die ze inhouden voor de integrale vrije keuze van een beoefenaar.	Not in selected guideline according AGREE	Expert advice

In Belgium, the National Council of the Order of Physicians approves that healthcare professionals give information about the availability of the staff during night and week-end. The same information should also be given about some particular treatments such as, for example, hypnotherapy or epidural anaesthesia.

3.3.5 Water birth

In accordance with the conclusions of section 8.3.4, the GDG chose to recommend that the gynaecologist or the maternity team provides information on the lack of high-quality evidence to support giving birth in water.

3.3.6 Cord Blood Banking

Cord blood banking for potential future transplantation is now proposed in Belgium to (future) parents. There are five not-for-profit public institutions (i.e. university hospitals) and one private for-profit organisation that organize cord blood banking. Stem cells can be used for treatment of rare paediatric genetic, hematologic, and oncologic disorders. In university hospitals stem cells (donated for free by parents) will be used for allogenic transplantation while in the private organisation stem cells are stored for autologous transplantation.

In this section, the GDG chose to refer to the recommendations of the American Academy of Pediatrics and to describe the current situation in Belgium (see Table 2).

Table 2: Cord Blood Banking

Cord Blood Banking for Potential Future Transplantation			
CPG ID	Ref	**Recommendation**	**Supporting evidence**
American Academy of Pediatrics: Work Group on Cord Blood Banking	[14]	• The procedure at this time is considered investigational • Indications for autologous transplantation are limited • Private storage of cord blood as "biological insurance" is unwise, unless a family member needs to undergo a stem cell transplantation as leukemia or severe hemoglobinopathy • Philanthropic donation of cord blood for banking at no cost for allogeneic transplantation is encouraged.	Work group statement : not submitted to AGREE

The Work Group on Cord Blood Banking from the American Academy of Pediatrics formulated in 1999 recommendations regarding this subject. The academy stated that cord blood stem cell transplantation remain investigational. Parenthood goes with possible emotional vulnerability ; efforts should be made to minimize the effect of this vulnerability on recruitment decisions. Accurate information about the epidemiology of the diseases concerned, potential benefits and limitations of allogenic and autologous cord transplantation must be provided to (future) parents. Therefore, written permission should be obtained during prenatal care, and before the onset of labour. Nevertheless, philanthropic donation of cord blood for banking at no cost for allogenic transplantation is encouraged and the parents should be informed of the appropriate operational principles recommended for the bank[14] (see Table 2).

Recommandations

- **Pregnant women are stimulated to have them supported by someone of their choice in the maternity clinic. (1A)**
- **It is recommended to inform pregnant women about the organisation of the maternity unit (especially during minimum staffing hours), the possibilities and the limits concerning their choice of care provider or the availability of certain methods and techniques. (GCP)**
- **It is recommended to inform pregnant women about the different stages of the delivery and the practices employed in the delivery room to help them to make well-informed choices. (GCP)**
- **It is recommended to provide objective and full information (preferably by means of a written document at the end of the pregnancy) about induction of labour, possibility of speed up the labour, pain relief strategies and pharmacological analgesia available during the birth. The indications, possibilities, limits and possible risks and contra-indications of the various pharmacological and non-pharmacological methods to alleviate pain should be clearly presented and discussed. (GCP)**
- **On request: It is recommended to inform pregnant women of the fact that we currently do not have any convincing evidence about the benefits linked to water birth (GCP).**
- **On request: It is recommended to inform parents who raise at their own initiative the question of autologous stem cell transplantation using a cord blood bank that this remains an exceptional technique with limited indications (GCP).**

4 INDUCTION

4.1 INTRODUCTION

Reasons for labour induction are medical indications or elective delivery. Standard medical indications are prevention of prolonged pregnancy, suspected foetal macrosomia and prelabour rupture of membranes (PRoM) at term [12]. Other potential indications such as previous caesarean birth or breech presentations are out of the scope of this report. Elective induction is defined as performed at maternal request without either maternal or foetal indication for the induction[15]; National Institute for Health and Clinical Excellence (NICE), 2001 #206}.

In this section we summarize the available evidence regarding the impact of labour induction in women at term (>37 to <42 weeks) on maternal and newborn outcomes. Methods for induction, predictors of induction success and specific complications were excluded in accordance with the GDG.

4.2 RESULTS

The systematic search selected two guidelines[12, 13] and 4 systematic reviews[15-18] which were relevant for the clinical question (one SR was already included in the guidelines[18]).

The results are described according to medical indication (prevention of prolonged pregnancy, suspected foetal macrosomia, and prelabour rupture of membranes at term) or elective induction. Finally, the pelvic scoring is discussed.

4.3 MEDICAL INDICATIONS FOR INDUCTION

4.3.1 Prevention of prolonged pregnancy

4.3.1.1 Introduction

Prolonged pregnancy is defined as a pregnancy that continues beyond 42 weeks. It occurs in 5 to 10% of all women. There is strong epidemiological evidence pointing to an increased risk for mother and baby as a pregnancy continues beyond 40 weeks. The overall risks of perinatal death associated with prolonged pregnancy remain small (2-3/1000). There are some racial variations i.e. the risk of increased perinatal mortality is higher for Asian women and this suggests that policy of induction may not be the same for all women[12]. This section concerns the harms and benefits of induction of labour for prevention of prolonged pregnancy in women with uncomplicated pregnancy at 41 weeks (up to 41 weeks + 6 days). Induction of labour is compared with expectant management (with or without serial antenatal monitoring such as, for example, counting of foetal kicks and assessments of amniotic-fluid volume). Clinical outcomes are maternal and foetal mortality or morbidity and women satisfaction.

4.3.1.2 Results

Results from guidelines are described in Table 9 (see Appendix 6) and those from systematic reviews in Table 10: Induction in women at 41 weeks. The impact of performing an induction in pregnant women between 41 and 42 weeks to prevent prolonged pregnancy is not clear.

The NICE guideline recommends offering induction of labour between 41+ 0 and 42+ 0 (weeks+ day) except when the woman chooses to wait[12]. The HAS guideline recommends not to perform induction up to 41+ 6 except in case the woman chooses to induce[13]. Concerning prevention of prolonged pregnancy, the usability of the two guidelines is, however, limited by the inclusion of one systematic review of which updating is in progress since July 2009[18]. The authors of this SR mentioned that their conclusion may be altered after inclusion of the results of new trials. Furthermore, the HAS guideline is based on the first version of the NICE guideline who is not yet available because updated since this time and of one withdrawn Cochrane SR [19].

The 3 systematic reviews[16],[15],[18] found conflicting results for maternal and for foetal outcomes.

- With regard to maternal outcomes, there is no significant difference between induction and expectant management in caesarean section rate in the systematic review (SR) of Gulmezoglu [18]. However, since an update is in progress, current results must be considered with caution. The SR from Wennerholm [16] found a result in favour of induction, with fewer caesarean sections in this group. The third SR (by Caughey) [15] found that there was a statistically significant increase in caesarean delivery for women managed expectantly. No significant difference was found for assisted vaginal delivery rate and post partum haemorrhage in any SR. Maternal satisfaction is studied in one SR[16] and supported only by the RCT of Heimstad, based on phone interviews (n=500, 6 months after delivery). Maternal satisfaction was statistically significantly higher in the induction group[20].
- With regard to foetal outcomes, no significant difference was found for early or late neonatal deaths or newborn intensive care admission. Regarding meconium aspiration syndromes, there were conflicting results between the SRs. Two found a significant decrease of meconium aspiration syndrome in case of induction[16, 18] and one[15] did not find significant differences.

A partial explanation of inconsistent findings between results regarding caesarean delivery may be that the studies included by each SR are not the same. One French-language study (Bréart, n => 700) was included by Gulmezoglu and excluded by Wennerhom and Caughey. In this study, among women who were induced, 19 of 481 (4%) had caesarean delivery versus 16 of 235 (7%) women with expectant management[21]. Caughey underlines that generalizing these study findings to current obstetric practice is difficult because this study was conducted more than 25 years ago during a time when the caesarean delivery rate was 3 to 5 times lower than it is today. Caughey underlines furthermore that there are relatively few (+/- 10 in each SR) well-designed, adequately powered studies reporting on the maternal and foetal outcomes[15]. In addition, the SRs included different methods of induction and multiple management styles what can influence the outcomes. Concerning the newborn, meconium aspiration may conduct to newborn intensive care admission. Nevertheless, admission to neonate care unit is not significantly higher in case of meconium aspiration syndrome in selected SR.

In conclusion, in pregnant women who are at 41 weeks up to 41 weeks + 6 days of gestation the impact of an induction on maternal or foetal outcomes is currently not clear. Induction may reduce the number of caesarean sections but there remain divergences between results of systematic reviews. Induction may also increase the maternal satisfaction but there is an important risk of biased result due to the fact that only one RCT based on retrospective phone interviews is available. There are also divergences regarding meconium aspiration syndromes. Results are not significant for other maternal or foetal outcomes.

4.3.2 Suspected foetal macrosomia

4.3.2.1 Introduction

Macrosomia is defined as a large foetus with a birth weight above 4 000g which occurs in about 2-10% of births at term in the UK. Foetal macrosomia may be associated with maternal and perinatal morbidity but accurately assessing foetal weight is difficult and the diagnosis of foetal macrosomia is problematic. The probability of detecting a macrosomic foetus in an uncomplicated pregnancy ranges from 15% to 79% with sonographic estimates and from 40 to 52% with clinical estimates[12].

This section concerns the harms and benefits of induction of labour in case of suspected foetal macrosomia in women with uncomplicated pregnancy (from >37 to < 42 weeks). Induction of labour is compared with expectant management regarding the impact on foetal and maternal outcomes.

4.3.2.2 Results

This topic was studied in two guidelines (see Table 3)[12, 13]. The update of the literature did not find any later systematic review about it (see Table 11 (see Appendix 6)).

Both guidelines recommend against induction of labour in the case of suspected foetal macrosomia[12, 13]. They underline that induction may increase caesarean deliveries (conflicting results between observational studies and RCTs for this outcome) and does not improve other outcomes.

In conclusion, induction is not recommended in case of suspected macrosomia in pregnant women (from >37 to <42 weeks).

4.3.3 Prelabour rupture of membranes at term

4.3.3.1 Introduction

Prelabour rupture of membranes (PRoM) at term is defined as rupture of the membranes prior to the onset of labour in women at or over 37 weeks of gestation, with an overall incidence of 8-12% of all pregnancies in UK[12]. This section considers the harms and benefits of induction of labour in women with uncomplicated pregnancy (from >37 to <42 weeks) and with prelabour rupture of membrane. Induction of labour is compared with expectant management regarding the impact on foetal and maternal outcomes.

4.3.3.2 Results

This topic was studied in two guidelines (see Table 12 (see Appendix 6))[12, 13]. The update of the literature found one systematic review (see Table 13 (see Appendix 6))[17].

The two guidelines (NICE and HAS) recommend to offer induction of labour to avoid the risks of complications after prelabour rupture of membrane at term. There are however divergences about the moment to perform the induction: NICE recommends "approximately 24 hours after prelabour rupture of the membranes at term" and HAS "before 48 hours".

The SR (Dare 2006) includes twelve trials (RCTs and quasi RCTs for a total of 6 814 women) comparing planned induction within 24 hours versus a delay of at least 24 hours. Results showed significantly less cases of chorioamnionitis, endometritis and more maternal satisfaction in favour of planned induction within 24 hours. Moreover, there was significantly less admission to neonate care unit in this case. Other maternal and foetal outcomes were not significant.

In conclusion, induction is recommended in case of prelabour rupture of membranes at term. An induction planned within 24 hours improves significantly the maternal and foetal outcomes. The evidence is moderate due to the presence of quasi RCTs in the systematic review.

4.4 ELECTIVE INDUCTION

4.4.1 Introduction

Elective induction is defined as induction at maternal request (for pragmatic, social or emotional reasons) without medical indication. This section considers the harms and benefits of elective induction in pregnant women who are between > 37 to < 41 weeks of gestation and its impact on maternal and foetal outcomes in comparison with expectant management.

4.4.2 Results

This topic was studied in two guidelines[12, 13] and our update found 2 systematic reviews[15];[18]. Results are described in Table 14 and Table 15 (see Appendix 6).

The NICE guideline[12] does not support induction without medical indication, except after 40 weeks and under exceptional circumstances. The HAS guideline[13] requires conditions such as a gestation of more than 39 weeks and a favourable cervical status (see below in paragraph 4.5). The conclusions of HAS are, however, mainly based on observational studies and the first (2001) version (not yet available).

The SR of Caughey[15] concluded that there is a lack of good quality studies in the case of pregnant women at < 41 weeks. The SR of Gülmezoglu[18] studied a subgroup of 3 RCTs including women induced at 37 to 40 completed weeks and stated that there is less likely a caesarean section but more assisted vaginal delivery in case of induction than with expectant management. The trade-off must include the fact that women are likely to find induced labour more painful than spontaneous labour[12], that foetal outcomes are unknown and that economical aspects were not studied. Moreover, results concerning elective induction are based on the SR performed by Gülmezoglu of whom limits are described above. Furthermore, the three RCTs[21-23] included for this question were of poor quality. One included women at 37-39 weeks[21], another[22] included women at 39-40 weeks and the third study included women at > 40 weeks[23]. These three trials that intervened at 38 to 40 weeks were all conducted before 1990.

In conclusion, elective induction (without medical indication) is not recommended except under exceptional circumstances and not before 39 or even 40 weeks. Induction in pregnant women (≤ 40 weeks) may reduce the number of caesarean rates but may increase the number of assisted vaginal delivery. Available evidence ≤ 40 weeks is, however, very limited and of poor quality. The trade-off must include the fact that women are likely to find induced labour more painful than spontaneous labour and that foetal outcomes are unknown. Because of this the GDG choose to follow the NICE recommendation. The group of stakeholders and in particular the members of the College for the mother and the newborn of Belgian Ministry did not agree with this recommendation. However, no evidence was found to support this point of view.

4.5 INDUCTION AND PELVIC SCORING

4.5.1 Introduction

The Bishop score (see figure 1) is the main pre-labour scoring system used to assess the cervical status i.e. ripeness. The total score is achieved by assessing the following five components at internal examination: cervical dilatation, cervical effacement, cervical consistency, cervical position and foetal station. Components are given a score of 0-2 or 0-3. The highest possible score is 13.

The pelvic scoring at the moment of induction may predict the results of induction. The bishop score defined as "favourable cervical status" varies between 5 and 7, depending on the publication.

Our clinical question is about the available evidence about Bishop score and induction regarding maternal and foetal outcomes (Table 16 (see Appendix 6)).

4.5.2 Results

For this section two guidelines were found (NICE and HAS)[12, 13]. Our update found the SR of Gulmezoglu[18]. Results are presented in Table 11 and Table 17 (see Appendix 6).

The NICE guideline[12] considers the Bishop score as an assessment of the effect of induction. The score is realized before induction and during the first stage of the labour. For NICE, the bishop score is not used as a pre-assessment tool for induction. In the HAS guideline[13], however, a Bishop score > 7 is used as a strict condition before induction can be performed. This is based on an update of NICE 2001. One RCT[24] showed no significant difference (attributed to a lack of power of the study) in caesarean rate between induction and expectant management in women with a favourable cervical status (defined as Bishop of 5 or more in nulliparous patients and of 4 or more in multiparous patients). Observational studies (prospective and retrospective)[25-27] show that an unfavourable cervical status (defined as Bishop <5) may be associated with a higher rate of caesarean sections in case of induction (with or without medical indication). There is a lack of information regarding other maternal or foetal outcomes.

One subgroup analysis of the Gülmezoglu meta-analysis[18] deals with this topic. Most trials of the SR did not mention or specify cervix status as a criterion for induction. But six selected trials included women with unfavourable cervix (Bishop score less than six) and one with favourable cervical status (Bishop score six or more). Studies included mainly pregnant women at 41 completed weeks. Because a few number of RCTs specified the cervical status of women, results are only estimable for some outcomes. When compared with expectant management, there is no evidence that induction has an impact on maternal or foetal outcomes in case of favourable cervix, but only one RCT[28] is available for this topic. In case of unfavourable cervical status, available data did not allow to assess maternal outcomes. Regarding foetal outcomes, induction reduces the number of meconium aspiration syndromes in comparison with expectant management. The ongoing update of the current version of the Cochrane systematic review of Gulmezoglu has already been discussed in paragraph 4.3.1.2.

In conclusion, in women > 37 weeks and scheduled for induction, an unfavourable cervical status (defined as Bishop <5) may be associated with a higher rate of caesarean sections (observational studies). Only a small RCT is available for favourable cervical status and it fails to produce significant results. In women at 41 completed weeks, there is no evidence of an impact of induction compared with expectant management on maternal or foetal outcomes in case of a favourable cervix (bishop > 6) (only one RCT available) but in case of unfavourable cervical status, induction is associated with less meconium aspiration syndromes (RCTs)

4.5.3 Other considerations

A very recent retrospective cohort study [29]including 7.804 pregnant women between 37 and 42 weeks – in which labor induction was used in 43,6% of cases - showed that the use of labor induction was associated with an increase odds of cesarean delivery (crude odds ratio 2.67, 2.40-2.96) and that the association remained significant (OR 1.93, 1.71 – 2.2) after adjustment for maternal demographic characteristics, medical risk, and pregnancy complications. This result however does not change our conclusions, based on RCTs with a higher level of evidence than a retrospective observational study.

Key points based on literature search on medical indications for induction

- **The following medical indications for induction in pregnant women (>37 up to < 42 weeks) were considered in this report: prevention of prolonged pregnancy, suspected foetal macrosomia and prelabour rupture of membranes at term.**

Prevention of prolonged pregnancy

- **The impact of an induction of labour in pregnant women at or beyond 41 weeks (up to 41 weeks + 6 days) is currently not clear because there are conflicting results (either in favour of induction, either not significant) regarding caesarean sections and meconium aspiration syndromes. Maternal satisfaction may be improved by induction. There is no significant evidence for other outcomes. An update of the Gulmezoglu Cochrane systematic review is in progress and may change this conclusion.**

Suspected foetal macrosomia

- **In case of suspected macrosomia in pregnant women (from >37 to <42 weeks), there is no evidence that induction improves maternal or foetal outcomes (B). It may increase the caesarean section rate (C).**

Prelabour rupture of membranes (PRoM) at term

- **In case of PRoM at term, compared with a delay of at least 24 hours, induction of labour planned within 24 hours reduces chorioamnionitis, endometritis, and admissions to a neonatal intensive care unit (B).**

Key points based on literature search on elective induction

- **Elective induction is defined as an induction at maternal request without medical indication.**
- **Recommendations between guidelines are discrepant regarding gestational age (HAS allowed elective induction from 39 weeks and NICE only at 40 weeks and under exceptional circumstances) and associated conditions (for example, HAS recommends a bishop score > 7 and NICE does not consider the cervical status as condition for induction).**
- **Elective induction in pregnant women (between 37 to 41 weeks) may reduce the number of caesarean sections but may increase the number of assisted vaginal deliveries (C). Literature available for induction in pregnant women before 40 weeks is however old and of poor quality. Moreover, foetal outcomes are unknown and women are likely to find induced labour more painful than spontaneous labour.**

Key points based on literature search on induction and pelvic scoring

- **An unfavourable cervical status is associated with unfavourable maternal outcomes (more caesarean rates) in elective induction in women < 41 weeks and with favourable foetal outcomes (less meconium aspiration syndrome) after 41 weeks.**
- **In pregnant women (37 to 40 completed weeks) scheduled for induction, RCTs show no significant evidence (B) on the caesarean rate in case of favourable cervical status (defined as Bishop score of 5 or more in nulliparous patients and of 4 or more in multiparous patients). Observational studies show an association between an unfavourable cervical status (defined as Bishop <5) and a higher rate of caesarean sections in case of induction (C).**
- **At 41 completed weeks, there is no evidence of an impact of induction compared with expectant management on maternal or foetal outcomes in case of favourable cervix (bishop > 6) (but only one RCT available) but induction may reduce the number of meconium aspiration syndromes in case of unfavourable cervix (Bishop < 6) (B).**

Recommandations

- **After being correctly informed about labour induction, the pregnant woman must also give her consent (GCP).**
- **If from the 37th week of pregnancy the prelabour rupture of membranes is not followed by spontaneous labour it is recommended to induce delivery after a waiting period of 24 hours (2B).**
- **It is not recommended to induce delivery before the end of the 39th week of pregnancy (38 weeks and 7 days) (1B)**
- **It is not recommended to induce delivery on request between 39 and 41 weeks of completed pregnancy (1C), especially if the cervix is not favourable (according to the Bishop score) (2B).**
- **Induction is not recommended on the sole basis of a suspected foetal macrosomia with a non-diabetic woman (2B).**
- **It is acceptable to induce labour after 41 completed weeks of pregnancy (2B).**
- **A pregnancy is considered overdue when 42 weeks have passed (GCP).**

5 ADMISSION

Traditionally, a number of routine observations are carried out in pregnant women who are suspected to be in labour. These are aimed at assessing maternal and foetal health, determining the stage of labour and evaluating the woman's needs. This section studied questions related to the first maternal contact, including the optimal timing for admission, the communication between women and healthcare professionals and the initial assessment.

5.1 SUSPECTED LABOUR, EARLY ASSESSMENT AND OPTIMAL TIMING FOR MATERNITY ADMISSION

5.1.1 Introduction

The first question concerns pregnant women in suspected labour and their admission at the maternity. Theoretically, women at term enter the maternity unit when labour begins. But, establishing the stage of labour and optimal timing to enter at maternity by the women her-self is not so simple. Currently, a midwife assesses the stage of labour before admission and some women may return to home and come back later to maternity when labour is more advanced. The optimal timing for maternity admission is questioned in this section as well as the impact of this timing on maternal and newborn outcomes.

Latent stage (before maternity admission) has to be distinguished from established stage of labour (timing for admission at maternity). For this, an accurate definition is needed. According to the NICE guideline, latent first stage of labour is defined as a period of time, not necessarily continuous, when there are painful contractions, and there is some cervical change, including cervical effacement and dilatation up to 4 cm. First stage of labour is defined as established when there are regular painful contractions, and there is progressive cervical dilatation from 4 cm[3].

5.1.2 Results

There is, however, no relevant study that investigates outcomes of different definitions of established labour. This topic is only studied in one guideline (NICE 2007)[3] and the update of the literature did not find any later systematic review about it.

Another question at this moment is the clinical utility of the early assessment by a midwife before the maternity admission. This topic is described in NICE guideline[3] (see Table 18 (see Appendix 6)).

The NICE guideline found that early assessment by a midwife, compared with early admission to maternity units, appeared to reduce medical intervention rates. One RCT(n = 209) performed in 1998 by Mc Niven compared outcome for women receiving early assessment by a midwife compared with women immediately admitted to the maternity unit[30]. Women in the Labour Assessment group were less likely to receive intrapartum oxytocics and analgesia. Mothers reported higher levels of control during labour and birth. Another RCT(n = 237) performed in 2003 by Janssen (Canada) compared outcome for women receiving home visit by a midwife with women receiving phone assessment. Women in the labour assessment group were less likely to receive opiate analgesia. Less newborns in this group were admitted in neonatal intensive care unit (NICU)[31]. There is however a high risk of bias in the two RCTs and the evidence is thus limited.

5.1.3 Communication

5.1.3.1 Introduction

Besides the clinical care, the communication with the health care professional may affect the perception of the women and her family about quality of care and childbirth experience. Involvement in decision making, informed explanations and meeting personal expectations are also fundamental. This section concerns the effect of communication between women and healthcare professional at first contact and at admission. Outcomes may include women satisfaction, postnatal depression and post traumatic stress disorder.

5.1.3.2 Results

This topic is studied in NICE guidelines and recommendations are described in Table *19* (see Appendix 6) (NICE 2007)[3]. The update of the literature did not find any later systematic review about it. Only outcomes about women satisfaction were identified.

In the studies included in NICE guidelines, some factors appear as related with positive birth experience or not. Waldenström summarized risk factors influencing women's evaluations of their childbirth experiences in one longitudinal cohort study of 2 541 women. Seven percent of the women had a negative birth experience. Factors related to unexpected medical problems and social factors were the most cited. Nevertheless, factors related to the woman's feelings during labour (pain and lack of control) and factors that may be easier for caregivers to influence, such as lack of support in labour and administration of analgesia may be underestimated by professionals[32]. Based on individual questionnaire (1 146 women, 6 weeks after birth), Green stated that the feeling of being in control was related primarily to being able to get comfortable, the feeling of being treated with respect and as an individual, and perceiving staff to be considerate[33]. Hodnett (SR of 137 observational trials) summarized factors influencing women's evaluations of their childbirth experiences. Four factors were identified as very important: personal expectations, the amount of support from caregivers, the quality of caregiver-patient relationship, and the involvement in decision making[34]. However, observational studies were only available to support this topic and the evidence level is thus limited.

5.1.4 Initial assessment

The initial assessment of a woman at maternity unit admission involves three parts: clinical assessment, biological investigations (including prevention of early-onset neonatal GBS if not performed before) and foetal heart rate assessment.

5.1.4.1 Value of clinical assessment

Introduction

Routine observations or examinations are performed on first presentation to health care professionals of women in suspected labour. This section studied the value of the clinical assessment.

Results

The topic is described in NICE guideline (see Table 20 (see Appendix 6)) (NICE 2007)[3].

There is little evidence for the use of routine observations or examinations on first presentation to health care professionals of women in suspected labour[3].

5.1.4.2 *Prevention of early-onset neonatal group B streptococcus GBS*

In this section, the guideline development group chose to refer to the recommendations of the Belgian health council regarding the prevention of early-onset neonatal group B streptococcal disease in Belgian maternity units, without literature updating[8].

Prevention of early-onset neonatal group B streptococcal disease varies between countries. USA, Canada and Belgium chose to screen all pregnant women late in pregnancy (at 35-37 weeks) for maternal group B streptococcus[35,36,8]. On the other hand, UK and New Zealand focus the screening on a risk population[37].

The Belgian recommendation implies the screening of all pregnant women at 35-37 weeks. If no previous result is available at maternity admission, screening is performed at admission in the maternity (see Table 21 (see Appendix 6)). This late modality requires disposing of a rapid antigenic test. In case of a positive test, antibiotic prophylaxis is given during labour.

One Belgian retrospective study evaluated the clinical adherence to the guideline and the screening efficacy. It was performed in one academic hospital in 2002 on 1 249 consecutive pregnancies. In general, the screening rate was very high (97.8%), but only 28.8% was performed at 35-37 weeks versus 90.3% during labour. Furthermore, the observed sensitivity of the rapid antigenic test was 20.4%. Consequently, only one third of women that screened positive at labour received an antibiotic versus 2/3 of women screened positive at 35-37 weeks. Finally, 2.4% of newborns were infected and 2.9% colonized[38].

There is, however, a lack of randomized controlled trials (RCTs) comparing antenatal screening (whether universal or risk factor based), with no antenatal screening. Estimates of the efficacy of the screening strategies are based on observational studies. The guideline developing group of this KCE report has chosen to refer to the conclusions of the Belgian Health council 2003 for this topic[8].

5.1.4.3 *Admission cardiotocography*

Among routine observations or examinations performed on first presentation to health care professionals of women in suspected labour, foetal heart rate (FHR) assessment is recommended to identify signs of foetal distress. NICE recommends to auscultate the foetal heart rate for at least 1 minute immediately after a contraction[3]. Cardiotocography (CTG) is also used to identify signs of foetal distress. CTG is a technical means of recording simultaneously the foetal heartbeat and the uterine contractions, using an external monitor. In this section, we summarize the available evidence regarding the impact of cardiotocography (CTG) on maternal or foetal outcomes at admission in low risk pregnant women (37 up to 41 weeks), compared with the auscultation of the foetal heart rate.

We found 2 guidelines[3, 39] and 1 systematic review[40]. Results are described in Table 22 and Table 23: (see Appendix 6).

The 2 guidelines have the same conclusion, based on the review of Blix[41]: cardiotocography (CTG) is not recommended at admission in stead of auscultation. Blix performed one meta-analysis (3 RCTs including 11 259 women) comparing CTG (20 minutes at admission) with auscultation using a hand-held Doppler device during and immediately after at least one contraction. Women in the CTG group were more likely to have minor obstetric interventions like epidural analgesia [relative risk (RR) 1.2, 95% confidence interval (95% CI) 1.1-1.4], continuous electronic foetal monitoring (RR 1.3, 95% CI 1.2-1.5) and foetal blood sampling (RR 1.3, 95% CI 1.1-1.5) compared with women randomized to auscultation on admission. There were no significant differences in any of the other outcomes either maternal (operative delivery, caesarean section) or foetal (perinatal mortality, Apgar score, seizures, resuscitation and admission to neonatal unit)[41]

Our update found one systematic review[41] which includes the same RCTs as the M-A of Blix but analyses only 3 outcomes (cesarean section, instrumental delivery and Apgar score) and has the same conclusions (see Table 22 (see Appendix 6)).

Key points based on literature search on suspected labour and optimal timing for maternity admission

- **Optimal timing at maternity admission may be defined as the beginning of established first stage of labour (regular painful contractions and progressive cervical dilatation from 4cm). There is, however, no evidence that it affects maternal or foetal outcomes.**
- **Early assessment by a midwife before maternity admission, compared with early admission to maternity units, appeared to reduce medical intervention rates (C).**

Key points based on literature search on communication with childbearing women at admission

- **The influence of the attitudes and behaviours of the caregivers appear important on subsequent satisfaction of childbearing women (C).**
- **All women in labour should be treated with respect and should be involved in what is happening to them.**

Key points based on literature search on clinical assessment at admission

Value of initial assessment

- **Routine observations or examinations are recommended at admission. Initial assessment content is currently based on expert consensus, in absence of relevant studies (GCP).**

Prevention of early-onset neonatal group B streptococcal disease

- **As prevention of early-onset neonatal group B streptococcal disease, the Belgian Health council 2003 chose to screen all childbearing women (expert consensus). If a screening has not been realized before admission, the screening is realized at admission (GCP).**

Cardiotocography at admission

- **Low risk women are more likely to have obstetric interventions during labour in case of cardiotocography at admission, although there were no statistical differences in perinatal outcomes (B). Auscultation of foetal heart rate should be used to identify foetal distress at admission.**

Recommandations

- **It is recommended to reassure pregnant women whose labour is not active and to inform them of the circumstances in which they should return to the unit (1C).**
- **It is recommended to welcome pregnant woman to the maternity unit with empathy, inform them progressively about the various stages in labour and delivery and the actions performed, to inquire about their expectations, their possible choices and their possible birth plan (1C).**
- **When the pregnant woman arrives at the maternity unit it is recommended to read her medical file and to perform up a supplementary anamnesis. The minimum clinical examination includes: weight, blood pressure, temperature, heart rate of mother and foetus, urine test (protein, glucose), abdominal palpitation, uterine height and full vaginal examination (if membranes are not broken). The state of advancement of labour will thus be assessed (GCP).**
- **On admission, it is recommended to assess the state of the foetus by auscultating the heart rate for at least one minute immediately after a contraction (1B). Such evaluation may be performed using a cardiotocography (CTG). This practice does not increase risks to the foetus, but it does result in a slightly increased risk of instrumental delivery (GCP).**

6 FIRST STAGE

For this report we adopt the definition of NICE guideline[3] in which first stage labour is divided in 2 stages: latent stage of labour (painful contractions, cervical effacement and dilatation up to 4 cm) and established first stage (regular painful contractions and progressive cervical dilatation from 4 cm). First stage ends when cervical dilatation is full (10cm).

The NICE guideline studied the question of what is the "normal" duration (to distinguish from "abnormal" duration) of established first stage and found that it varies from woman to woman, and is influenced by parity. Progress is not necessarily linear. In established labour, most women in their first labour will reach the second stage within 18 hours (range 1- 19.4) without intervention. In their second and subsequent labours, most women will reach the second stage within 12 hours (range 0.5- 14.9) without intervention.

This chapter concerns women admitted at maternity who are in an established first stage of labour (cervical dilatation 4 cm up to 10 cm). This chapter synthesizes literature evidence about three topics (woman care, foetal monitoring and amniotomy) in low obstetric risk pregnant women at term and scheduled for normal birth.

6.1 WOMAN CARE

In accordance with the guideline development group (GDG), topics studied in this section were limited to clinical observations (using partogram or not), one-to-one care, and women position and alimentation during established labour.

6.1.1 Clinical observations

6.1.1.1 Introduction

Routine observations or examinations are usually performed by health care professionals in women in established labour to detect a change in maternal or foetal health. Observations can be recorded in a pre-designed chart called a partogram. The partogram (or partograph) is a simple, inexpensive tool to provide a continuous pictorial overview of labour. It is a pre-printed form, usually in paper version, on which midwives and obstetricians record labour observations. Most partograms have three distinct sections where observations are entered on maternal condition, foetal condition and labour progress; this last section assists in the detection of prolonged labour[42].

This section studies the impact of the clinical observations (using a partogram or not) on maternal and foetal outcomes in women during established first stage.

6.1.1.2 Results

This topic is only discussed in one guideline[3] and one SR[42]. Guideline recommendations and evidence from systematic review are described below in Table 24: and Table 25 (see Appendix 6).

In the NICE guideline, recommendations regarding clinical observations are based on expert opinion because there is a lack of relevant studies. The recommendation regarding vaginal examination is based on the fact that there was no significant difference between 2 hourly and 4 hourly vaginal examinations (VEs) in one little RCT[43] involving 109 nulliparous women. There was, however, no difference in the number of VEs performed between the two groups. On the other hand, the number of digital examinations was identified as an independent predictor of neonatal infection but this analysis was performed on data acquired in one study that compared induction of labour with expectant management for PROM[44]. NICE recommends that vaginal examination should be performed 4 hourly, or more frequently when there is concern about progress or in response to the woman's wishes (after abdominal palpation and assessment of vaginal loss) (C)[3].

The NICE recommendation on the partogram use is based on one large study performed by the WHO of which the conclusions were widely diffused and accepted[45]. This cluster RCT was conducted in South-East Asia. In 2008, Lavender published one SR comparing the use of a partogram versus no partogram. This review found neither an advantage nor a disadvantage associated to the use of a partogram[42]. Where the partogram includes an action line, the World Health Organization's recommendation of a 4 hour action line should be used[3]. One subgroup meta-analysis[42] showed that the rate of caesarean sections was lower in case of a 4 hours action line (compared with 3 hours) but it is based on only one study. In other cases (2 hours versus 3 hours and 2 hours versus 4 hours) there is no significant difference.

6.1.1.3 Other considerations

In general, current practice in Belgium is to limit the number of vaginal examinations to one every two hours. There is no significant difference in duration of labour in case of 2 hourly versus 4 hourly vaginal examinations. Based on Seaward, NICE underlines that the number of vaginal digital examinations may predict neonatal infection. But this study is limited to infants born to patients with premature rupture of membranes at term (PRoM) who are out of the scope of this guideline (complicated delivery)[44]. Therefore, the GDG found no sufficient evidence to change current practice in Belgium.

The partogram is widely used in Belgium notably as a coordination tool between health care professionals. Regarding the fact that the recent review found neither an advantage nor a disadvantage associated to the use of a partogram, the GDG found no reason to change current practice in Belgium (see Table 24 (see Appendix 6)).

Key points based on literature search on the clinical observations during the first stage of labour

- **Clinical observations during established first stage are based on expert opinion due to a lack of relevant studies (GCP).**
- **NICE recommends to offer a vaginal examination every 4 hours or more frequently in case of clinical or personal (woman in labour) reasons. There is no difference between 2 hourly and 4 hourly vaginal examinations regarding the duration of labour but in case of PRoM, the number of digital examinations may be associated with neonatal and maternal sepsis (C).**
- **The use of a partogram is currently recommended. There is no evidence of advantage or disadvantage associated to the use of partogram (B). Where the partogram includes an action line, the World Health Organization recommends a 4 hour action line.**

Recommandations

- **After rupture of the membranes, vaginal examinations should be limited to a maximum of one every four hours, unless in case of specific indications or at request of the pregnant woman (1C).**
- **The use of a partogram is recommended by NICE and by the WHO although there is no convincing evidence to favour or disfavour its use (GCP).**

6.1.2 One-to-one care

6.1.2.1 Introduction

Traditionally, women have been attended and supported by other women during labour and birth. However, continuous support has now become the exception rather than standard care. In today's Europe, most women are supported during labour by their partners providing them physical and emotional support, but for some women this may be insufficient. One-to-one care is defined by NICE as continuous presence and support either by husband/partners, midwives or other birth supporters during labour and childbirth[3]. This section studied the impact of one-to-one care (also called supportive care or continuous close care) compared with usual care for women in established first stage labour on maternal and foetal outcomes.

6.1.2.2 Results

The systematic search found two guidelines[3, 39] and one SR which is an update of the SR included in the two guidelines[46]. Guideline recommendations and evidence from systematic review are described below in Table 26 and Table 27 (see Appendix 6).

The two guidelines are based on the same systematic review and recommend a close support for women. There is, however, a discussion about who should provide the labour support. According to NICE, the impact becomes more apparent when non-professional staff members, rather than professional staff members, care for women. The non –professional providers of one-to-one care in labour within included studies varied in their level of training, background and context of care. The SOGC guideline, however, recommends an appropriately trained person.

The update of the systematic review of Hodnett includes 16 trials (13 391 women) and compares one-to-one support with usual care. Results of the meta-analysis including all selected trials showed favourable results in favour of one-to-one care (see table 27). In addition, women who had continuous intrapartum support were more likely to have a slightly shorter labour (weighted mean difference - 0.43 hours, 95% CI -0.83 to -0.04).

There is, however, discussion about the potential extrapolation of the overall results to the Belgian situation because studies are from a range of countries with different practices. In the meta-analysis of Hodnett, authors realized subgroup analyses according to the variations in institutional policies and practices, the type of care provider and the timing of onset of continuous support. Results showed that continuous intrapartum support was associated with greater benefit when the provider was not a member of the hospital staff, when it began early in labour and in settings in which epidural anaesthesia was not routinely available. For example, regarding spontaneous vaginal birth, the effects of continuous support appeared to be stronger in settings where other support (such as husband or family) was not permitted (RR 1.11, 95% CI 1.04 to 1.19) compared with settings where other support was permitted (RR 1.03, 95% CI 1.00 to 1.06) (P< 0.01). Regarding caesarean sections, a significant reduction in the likelihood was only seen when support providers were not members of the staff (RR 0.80, 95%CI 0.68 to 0.95). In case of members of the staff, reduction (RR 0.95, 95%CI 0.86 to 1.06) is not significant. Finally, regarding the report dissatisfaction with their childbirth experiences, the reduction is not significant when the providers of continuous support were members of the staff (RR 0.83, 95%CI 0.67 to 1.02) but was significant (RR 0.67, 95% CI 0.58 to 0.78) when support providers were not staff members [46].

Given the lack (or the very small number) of doulas[b] in Belgium, the habit of a relative being present during the delivery (depending on the woman's choice) during labour and the routinely available epidural analgesia, the GDG wished to know if a one-to-one care support realized by midwives in such conditions was effective. In order to adapt the Hodnett study to the Belgian setting, a subgroup analysis was performed. This subgroup analysis of Hodnett, taking into account the variations in institutional policies and practices, selected 7 studies comparing continuous support during labour versus usual care and in which other additional support was permitted. The relative risk to use analgesia or anaesthesia was in favour of continuous support (RR = 0.98 (95%CI 0.96 to 0.99) in this subgroup analysis[46]. Six studies included trained midwives or midwife students but one[47] included a doula acting as continuous intrapartum support. After exclusion of this last study, the result of the meta-analysis (realized by KCE and detailed in appendix 10) remains in favour of continuous care (RR 0.97, 95% CI 0.95 to 0.99) at borderline limit of significance. The same way, another subgroup analysis in the meta-analysis of Hodnett (9 studies with other support permitted) found a favourable relative risk (RR 0.90, 95% CI 0.84 to 0.97) in favour of one-to-one care regarding instrumental vaginal birth. After exclusion of the study about the doula[47], the result remains favourable (RR 0.92, 95% CI 0.85 to 0.99) at borderline limit of significance in a meta-analysis including 8 of 9 studies and realized by KCE (see appendix 10).

Another subgroup analysis of Hodnett included 11 studies in settings where epidural analgesia was routinely available (but in some studies, continuous care was not realized by midwives) and results were in favour of one-to-one support care (RR 0.85, 95% CI 0.75 to 0.96).

6.1.2.3 Other considerations

The applicability of such results is questionable in the Belgian setting where support of the woman by her partner during labour is current practice and where epidural analgesia routinely available.

Regarding the effect of continuous professional support versus usual care (including birth partner support) on the use of intrapartum analgesia, the number needed to treat (NNT) was calculated on the basis of the methods of the Cochrane handbook for systematic reviews and using our data on the Belgian situation as an estimation of the baseline risk and using risk difference and its CI as effect measure. . For intrapartum analgesia, NNT is 50 (CI : 25-100). That means that 50 women must benefit from continuous intrapartum professional support in order to avoid one intrapartum analgesia.

Regarding the effect of continuous professional support versus usual care on the rate of instrumental vaginal birth (calculated on the basis of the meta-analysis realized by KCE) the NNT is50 (CI : 33-∞).. That means that 50 women must benefit from continuous professional intrapartum support in order to avoid one instrumental vaginal birth. Furthermore, some members of the GDG, who are responsible for maternity units, underlined that actual maternity staffing does not allow a continuous one-to-one support care for each woman during delivery (Table 26 (see Appendix 6)).

[b] A doula is an assistant who provides various forms of non-medical and non-midwifery support (physical and emotional) in the childbirth process. A birth doula provides support during labour.

Key points based on literature search on one-to-one care during the first stage of labour

- **One-to-one care is defined in the literature as continuous presence and support either by husband/partners, midwives or other birth supporters (trained or not) during labour and childbirth.**
- **NICE recommends one-to-one care for women in established labour (A). The SGOC guideline also recommends one-to-one care (A), but adds that it should be done by an appropriately trained person (GCP).**
- **In comparison with usual care, there is high-level evidence that one-to-one care (performed by a professional or not, trained or not) improves maternal outcomes. Such support increases the number of spontaneous vaginal births, reduces the rate of caesarean sections and of instrumental birth, reduces the use of analgesia and increases the mother's satisfaction rate (A). There are few changes in studied foetal outcomes (less electronic foetal monitoring and no change in Apgar scores) (A).**
- **In a subgroup analysis and compared with usual care, continuous intrapartum support is associated with greater benefits when the provider is not a member of the hospital staff, when the support begins early in labour and in settings in which epidural analgesia is not routinely available (C).**
- **The two options of care-to-care (professional or not) give better outcomes than usual care. There is, however, a lack of trials comparing directly one-to-one care realized by a health professional with one-to-one care realized by a trained (or not) non professional.**

Applicability in Belgian setting

- **The applicability in Belgium may be discussed given the differences in care organization with countries studied. In a subgroup analysis which includes settings where other support (partner, friend, family) is permitted or where epidural analgesia is routinely available such as in Belgium, results remain at borderline limit in favour of one-to-one care, compared with usual care.**
- **In some countries such as North America or Canada, one-to-one care is realized by a doula who is a trained non professional. The applicability is also discussed because there are few doulas in Belgium and this function is currently not recognized. After exclusion of studies with a doula, in a subgroup analysis including studies with trained midwives or midwife students in settings allowing other support (according to the woman's choice), results remains at borderline limit in favour of one-to-one care.**

Recommandations

- **It is recommended that pregnant women should be accompanied at the maternity unit by a person of their choice (1A). This person shall be kept informed of the complete process (GCP). Since it is recommended to ensure a continuous presence at the parturient bedside, it is acceptable under certain circumstances for an additional person (professional or otherwise) chosen by the couple to be present as well, if his or her presence is beneficial to the couple (2B).**

6.1.3 Women position and alimentation

6.1.3.1 Introduction

Traditionally, women in the developed world labour in bed inside as well as outside maternity units. Discouraging women to drink or eat during labour has become common in health facilities because of the increase in caesarean section rate. Questions relative to birth position and alimentation during labour are addressed here.

6.1.3.2 Results

About this topic, the systematic search found one guideline[3] and one SR published in 2009[48]. Guideline recommendations and evidence from systematic review are described below in Table 28 and Table 29 (see Appendix 6).

Regarding the woman's position, the NICE guideline recommends whatever position that women find most comfortable during the established first stage of labour. The meta-analysis[48] showed a high level of heterogeneity between included studies. Only results based on random effect analysis were subsequently considered. There were no significant differences between the 2 groups.

Regarding the woman's alimentation during the established first stage of labour, the NICE guideline allows women to drink and eat a light diet. Isotonic drinks are preferred with the objective to prevent ketosis[3]. A Cochrane systematic review published after the date of our systematic search[49] confirms that the evidence in available literature (5 studies) shows no benefits or harms and that there is no justification for the restriction of fluids and food in labour in women at low risks complications. In this review, there is conflicting results about carbohydrate drinks in labour compared with water only (Table 30 (see Appendix 6))

Key points based on literature search on the woman's position and alimentation during the first stage of labour

- **During established labour, women may drink and eat unless they develop complications making a general anaesthesia more likely (B)**
- **Women are encouraged to adopt whatever position they find comfortable (B).**

Recommandations

- **It is recommended to encourage the pregnant woman to adopt the most comfortable position for the progress of labour, for the mother and foetus (1B).**
- **It is recommended to allow the parturient the possibility to drink clear liquids (possibly with sugar) as long as there is no medical counter-indication (1B).**

6.2 MONITORING

6.2.1 Introduction

The intermittent use of the foetal (Pinard) stethoscope was the earliest method of monitoring foetal wellbeing during labour. During the 1960s and 1970s, electronic systems were developed to allow monitoring of the foetal heart rate. Pinard's stethoscope is no longer used in Belgium. Two methods are available to detect signs of foetal distress: the Doppler ultrasound focusing on foetal heart rate (FHR) alone or the cardiotocography (CTG) monitoring the FHR and the mother's uterine contractions simultaneously. Monitoring may be either intermittent or continuous.

However, CTG monitoring may be difficult to interpret, resulting in an unnecessary operative intervention, while some significant changes are unrecognised. Consequently, adjunctive tests have been developed such as foetal blood sampling (FBS) and foetal electrocardiographic (ECG) monitoring.

Foetal blood sampling (FBS) is a vaginal procedure performed in order to measure the scalp's pH which helps assessing if the baby is getting enough oxygen[3].

Foetal electrocardiographic (ECG) waveform monitoring during labour has the potential advantage of providing continuous information as well as being less invasive than foetal scalp sampling although it is not non-invasive because it requires a signal obtained from an electrode embedded in the foetal scalp[50].

This section questions the place of available techniques allowing the surveillance of foetal health during labour: intermittent auscultation, continuous cardiotocography, foetal blood sampling and foetal electrocardiographic waveform. The GDG decided to exclude specific questions about the interpretation of the results of each technique as well as questions about the clinical interventions resulting from these techniques. One technique (foetal pulse oxymetry) was excluded because it is not used in Belgium.

6.2.2 Intermittent auscultation versus continuous cardiotocography

6.2.2.1 Introduction

The monitoring of the foetal heart rate (FHR) in labour aims to identify hypoxia before it leads to long-term poor neurological outcomes for babies[3]. It may be realized by intermittent auscultation (Pinard stethoscope or Doppler) or continuous electronic foetal monitoring (EFM) realized by cardiotocography (CTG).

Although there is a lack of empirical evidence on the optimal frequency of intermittent auscultation, there is a consensus in the guidelines from professional bodies that the foetal heart should be auscultated at least every 15 minutes in the first stage of labour with each auscultation lasting at least 60 seconds. It appears that these auscultation protocols were initially developed in the context of clinical trials and were based on 'common sense' rather than on research evidence. Compliance with these guidelines, whilst maintaining contemporaneous records, poses quite a challenge for caregivers during labour who usually have multiple tasks to fulfil simultaneously[51].

This section aims to synthesize the available evidence regarding the impact of continuous monitoring versus intermittent auscultation on maternal and foetal outcomes in obstetrical low risk women during established first stage at the maternity.

6.2.2.2 Results

The systematic search found two guidelines[3, 39] and one SR who is one updated of the SR included in the NICE guideline [51]. Guideline recommendations and evidence from systematic review are described below in Table 31 and Table 32 (see Appendix 6).

The two guidelines agree to recommend intermittent auscultation because compared with continuous electronic foetal monitoring (EFM) using cardiotocography, this method has lower maternal intervention rates without evidence of compromising neonatal outcome[3]. The last update (2006) of the SR published in Cochrane Library by Alfirevic involved 37 000 women. Women who had continuous EFM were significantly more likely to have caesarean sections and instrumental vaginal births than women with intermittent auscultation. Newborns included in the continuous EFM group were less likely to present neonatal seizures. There was no significant difference in the number of babies who died during or shortly after labour (about 1 in 300) and no difference in the incidence of cerebral palsy and neurodevelopment disability at at least 12 months. The meta-analysis of Alfirevic included studies with high risk women but data issued from trials involving only women who could be classed as 'low risk' were consistent with overall results.

Key points based on literature search on intermittent auscultation versus continuous cardiotocography during the first stage of labour

- **Guidelines agree to recommend intermittent auscultation (with Pinard stethoscope or Doppler) to monitor foetal heart rate during established first labour in pregnant woman without complication.**
- **Cardiotocography should be envisaged in case of clinical reasons (complications) or at the woman's request.**
- **Woman who are followed with continuous electronic foetal monitoring (using cardiotocography) have significantly more caesarean sections and instrumental vaginal births. Regarding foetal outcomes, there are more neonatal seizures in case of intermittent auscultation but no significant differences were found regarding other outcomes (including cerebral palsy and neurodevelopment disability at at least 12 months) (B).**

Recommandations

- **Intermittent auscultation of the foetal heart is recommended in case following conditions are met: the auscultation must take place every 15 minutes during at least one minute and immediately after a contraction (1A). Continuous foetal monitoring (by CTG recording) will be performed if staff availability prevents intermittent auscultation, or at the request of the parturient. (GCP).**

6.2.3 Continuous cardiotocography plus foetal blood sampling

6.2.3.1 Introduction

Foetal blood sampling (FBS) is a procedure whereby a small amount of blood is taken from the baby, usually from the scalp. Performing foetal blood sampling and then measuring the parameters of acid base balance (pH, base excess/deficit, etc) has been introduced in an effort to identify those babies who are truly compromised and need to be delivered immediately from those who are not truly compromised. It is important to establish the value of this test as an adjunct to CTG[51].

This section aims to synthesize the available evidence regarding the impact of continuous monitoring (electronic foetal monitoring) plus foetal blood sampling versus intermittent auscultation (or versus CTG alone) on maternal and foetal outcomes in obstetrical low risk women during established first stage at the maternity.

6.2.3.2 Results

The systematic search found two guidelines[3, 39] and one subgroup analysis in one SR (who is one updated of the SR included in the NICE guideline)[51]. Guideline recommendations and evidence from systematic review are described below in Table 33 and Table 34: (see Appendix 6).

The two guidelines recommend advising FBS in addition to CTG in case of a pathological heart rate trace unless there is clear evidence for acute compromise [3, 39]. Compared with CTG only, there was only low-level evidence (one cohort study) on the use of FBS for continuous EFM. This showed that the use of FBS with continuous EFM may reduce the rate of instrumental vaginal birth, but there was no evidence of differences in other outcomes[3];

In the update of the meta-analysis of Alfirevic[51], there is a subgroup analysis comparing intermittent auscultation with continuous monitoring (CTG) plus FBS. There were significantly less caesarean sections and instrumental deliveries in case of intermittent auscultation but the likelihood of neonatal seizures was increased; there was no difference for other foetal outcomes (including cerebral palsy and neurodevelopment disability at at least 12 months). There is no statistical increase in damage or infection from scalp electrode or scalp sampling in this review.

Key points based on literature search on continuous cardiotocography plus foetal blood sampling during the first stage of labour

- **Continuous cardiotocography plus foetal blood sampling is not recommended in established first stage in low risk woman scheduled for a normal birth.**
- **When a decision has been made to undertake continuous electronic foetal heart rate monitoring during labour (complications or woman request), the two guidelines agree to advise foetal blood sampling in case of abnormal foetal heart rate unless there is clear evidence for acute compromise.**
- **Comparing CTG + FBS with CTG alone, there is little evidence that it decreases the rate of instrumental vaginal birth but there is no evidence of differences in other outcome (C).**
- **Comparing CTG + FBS with intermittent auscultation (Pinard stethoscope or Doppler), woman who are followed with CTG + FBS have significantly more caesarean sections and instrumental vaginal births. Regarding foetal outcomes, there are less neonatal seizures but no significant differences are found regarding other outcomes (including cerebral palsy and neurodevelopment disability at at least 12 months) (B).**

6.2.4 Continuous cardiotocography plus continuous foetal electrocardiogram

6.2.4.1 Introduction

Recently combined assessment of the standard foetal heart rate (FHR) tracing with an automated analysis of the foetal electrocardiogram has been developed. The analyses included ST analysis, and PR interval analysis. These are computerised methods to analyse the ST and PR segments of foetal electrocardiogram (ECG), respectively[3].

This section aims to synthesize the available evidence regarding the impact of continuous monitoring (electronic foetal monitoring) plus continuous foetal ECG versus intermittent auscultation (or versus CTG alone, or versus CTG + FBS) on maternal and foetal outcomes in obstetrical low risk women during established first stage at the maternity.

6.2.4.2 Results

The systematic search found two guidelines[3, 39] and one SR who is the most recent update of the SR included in the two guidelines[50]. Guideline recommendations are described below in Table 35 (see Appendix 6). Data of the SR were not extracted because concerning women at high risk of complications.

The two guidelines agree to not recommend continuous cardiotocography plus continuous foetal cardiogram for routine use at this moment[3, 39]. Moreover, available literature mostly concerns high risk women, who are out of the scope of this report. The update of the meta-analysis of Neilson includes also high risk populations defined as pregnant women in labour with a perceived need for continuous electronic foetal heart rate monitoring.

Key points based on literature search on continuous cardiotocography plus continuous foetal ECG during the first stage of labour

- **Guidelines agree to not recommend continuous cardiotocography plus continuous foetal electrocardiogram in established first stage in low risk woman scheduled for a normal birth.**
- **Guidelines agree to not recommend ST waveform analysis for routine use at this time. Currently available literature concerns women with a high risk of complications (out of the scope of the report).**

6.2.4.3 Other considerations

Applicability of review results to the Belgian context is limited. First, the review is dominated by one large, well-conducted trial named the Dublin trial of almost 13 000 women receiving care from one person throughout labour and where systematic amniotomy is applied. Early amniotomy allows to assess the presence of meconium and then apply a particular surveillance. Adherence to the intermittent auscultation schedule was a priority in this academic setting[51]. In Belgian setting, one-to-one care may not be available in all circumstances because of organizational limitations.

The risk benefit debate is focused on the conflict between the risk for the mother and the benefit for the baby. Seizures may be a "sentinel event" for peripartum adversity and have long term consequences. Data must be interpreted cautiously and long-term follow-up data including neuropsychological outcomes are therefore needed[51]. The risk benefit assessment may vary between individuals, policy makers, healthcare settings and circumstances.

In conclusion, the GDG recommends intermittent auscultation as standard care for foetal heart surveillance. Nevertheless, there are two possible scenarios: either the mother asks for a continuous monitoring, or there are not enough midwives to guarantee optimum intermittent surveillance. In both cases, the use of continuous monitoring is acceptable according to the GDG (Table 22 (see Appendix 6)).

6.3 AMNIOTOMY

6.3.1 Introduction

Amniotomy (i.e. intentional artificial rupture of the amniotic membranes during labour) is one of the most commonly performed procedures in modern obstetrics. The primary aim of an amniotomy is to speed up contractions and, therefore, shorten the length of labour. Amniotomy has been standard practice in recent years in many countries and may be performed either routinely in all women or for women with prolonged labour. Furthermore, amniotomy with early oxytocin administration applied sequentially have been proposed as an alternative approach to the problem of dystocia, as well as a strategy to reduce the high rate of caesarean sections.

There are three different kinds of amniotomy:

- "Routine amniotomy" is defined as routine early amniotomy with oxytocin if labour becomes slow.
- "Routine amniotomy and oxytocin" is defined as routine use of oxytocin, in addition to early routine amniotomy for normal healthy women at the beginning of labour.
- Amniotomy is also considered as part of "active management" which is defined as a package that includes one-to-one continuous support, strict definition of established labour, early routine amniotomy, routine 2 hourly cervical examinations and oxytocin when labour becomes slow[3].

This section studies the impact of amniotomy (routine amniotomy, routine amniotomy and oxytocin, active management) on maternal and foetal outcomes compared with conservative management (defined as no routine amniotomy).

6.3.2 Results

The systematic search found one guideline[3] and our update found three Cochrane SR[52-54]. Guideline recommendations and evidence from systematic review are described below in Table 36 and Table 37 (see Appendix 6).

The NICE guideline[3] recommends that routine amniotomy (or routine amniotomy and oxytocin, or as a part of active management) should not be offered routinely in woman without delay in the first stage labour.

The meta-analysis of Smyth[53] compared amniotomy applied alone for shortening labour (normal or prolonged) versus routine care. In general, there are no significant results for maternal and foetal outcomes except less dysfunctional labour (defined as no progress in cervical dilatation in two hours or ineffective uterine contractions) at two hours. There were no changes in first stage duration and second stage duration. In a subgroup analysis of primiparous women, there were fewer newborn with an Apgar score < 7 at 5 minutes and second stage duration was 6 minutes shorter. The authors concluded: *"On the basis of the findings of this review, we cannot recommend that amniotomy should be introduced routinely as part of standard labour management and care. We do recommend that the evidence presented in this review should be made available to women offered an amniotomy and may be useful as a foundation for discussion and any resulting decisions made between women and their caregivers".*

The meta-analysis of Wei[54] studied the effects of early augmentation with amniotomy and oxytocin (versus more conservative management) either for prevention in unselected pregnant women in spontaneous labour, or for therapy in woman with delay in labour progress. Results showed that in prevention trials, there was no significant difference for maternal and foetal outcomes except for the total length of labour after admission and the rate of caesarean section which were reduced in the amniotomy/oxytocin group. The significant positive effect regarding caesarean section disappeared however when studies in which "amniotomy + ocytocin" is a part of active management were excluded.

The meta-analysis of Brown[52] studied the effects of the active management (defined as a package of more than two interventions between the following: amniotomy and early augmentation with oxytocin; strict criteria for the diagnosis of labour and for abnormal progress in labour and foetal compromise; continual presence of a midwife/ nurse during labour; peer review of assisted deliveries and progress of labour plotted using a graph) versus routine care. Results showed that for the women included in the intervention group, the length of first stage of labour was reduced and they were less prolonged (>12 hours) labour. There were no significant results for other maternal or foetal outcomes. Regarding cesarean sections, there were no significant results between the two groups but in the sensitivity analysis, however, this result becomes significant for cesarean sections, in favour of active management, if one trial[55] (presenting a high number of post randomisation exclusions) was excluded.

In conclusion, there are conflicting results and the impact of amniotomy may be discussed.

- Regarding routine amniotomy (amniotomy alone), there is no significant clinical impact for global women population in first stage labour. In primiparous women, however, amniotomy may reduce the number of newborn with an Apgar score < 7 at 5 minutes but positive results are based on studies including woman with normal or prolonged labour. Further evidence is needed to recommend it routinely.
- Regarding routine amniotomy and oxytocin, it reduces the length of labour. It may reduce the rate of cesarean sections but the significant positive effect disappeared when studies in which "amniotomy + ocytocin" is a part of active management are excluded.
- Regarding active management, it reduces the length of labour. There may be no impact about caesarean rate (if all studies are included), but after exclusion of one RCT (with a risk of bias) the reduction of caesarean rate becomes significant. In case of active management, impact over caesarean rate may however be due to other component of the package, such as one-to-one care.

There is no clear evidence to routinely offer amniotomy (plus ocytocin or not) in women without delay in labour progress.

Key points based on literature search on amniotomy during the first stage of labour

- **There is no evidence to support that an amniotomy (either alone, either with ocytocin, either as part of active management) should be routinely performed in woman without delay in labour progress.**

Routine amniotomy alone

- **If all women are considered (primiparous and multiparous) there is no clinical impact of amniotomy alone on maternal and foetal outcomes (A).**
- **In primiparous woman, amniotomy alone may reduce the length of second stage labour (6 minutes) and the number of newborns with an Apgar score < 7 at 5 minutes. These positive results are based on studies including women with normal or prolonged labour. Amniotomy may be considered in primiparous women but further evidence is needed to recommend it in routine (A).**

Routine amniotomy and oxytocin

- **In women without delay in labour progress, there is no significant difference for maternal and foetal outcomes except for the total length of labour after admission and the rate of caesarean section which were reduced. The significant impact on caesarean section disappears however when studies in which "amniotomy & ocytocin" is a part of active management are excluded (B).**

Active management (including routine early amniotomy plus oxytocin, and one to one support)

- **In healthy women in spontaneous labour, active management reduces the length of the labour. There are no significant results for other maternal or foetal outcomes (B).**
- **Regarding caesarean sections, there were no significant results between the two groups but in the sensitivity analysis, however, this result becomes significant for caesarean sections in favour of active management, if one trial (with a risk of bias) was excluded (C).**
- **In case of active management, impact on maternal or foetal outcomes may be due to another component of the package i.e. one-to-one care (C).**

6.3.2.1 Other considerations

The GDG's discussion was focused on the active package that seems to reduce the caesarean section rate and the length of labour. These advantages must be weighed against the interventional character of these interventions. Rare risks associated with amniotomy, such as problems with a prolapsed umbilical cord or a variation of the baby's heart rate, did not appear in the selected studies but are still possible. Furthermore, maternal pain was not assessed and there is insufficient evidence to conclude about maternal satisfaction (Table 36 (see Appendix 6)).

Recommandations

- **The artificial rupture of the membranes is not recommended as a routine practice when the labour is progressing normally (1A).**
- **After correctly informing the parturient and receiving her approval, it is acceptable under specific circumstances to try to speed up the labour by rupturing the membranes, this in combination with an oxytocin perfusion and one-to-one care (2B).**

7 PAIN IN LABOUR

7.1 INTRODUCTION

There are a lot of strategies aiming to cope with pain; which one is chosen often depends more on the woman's beliefs than on the efficacy to reduce the pain. The NICE guideline underlines that there are two schools of thought around how women might cope with the pain of labour. The first suggests that there is no need to suffer unnecessarily during labour and that effective analgesia should be offered. The second sees pain as part of the experience of birth and advocates that women should be supported and encouraged to 'work with the pain' of labour. While individual women or care givers may identify with either view, the reality for most women is probably somewhere in between. Healthcare professionals should consider how their own values and beliefs influence their attitude to coping with pain in labour and ensure their care supports the woman's choice[3]

This chapter synthesizes literature evidence about non-pharmacological and pharmacological interventions performed in order to reduce pain during labour and birth in low obstetric risk pregnant women at term and scheduled for normal birth.

7.2 NON-PHARMACOLOGICAL PAIN-RELIEF STRATEGIES

7.2.1 Introduction

Non-pharmacological strategies that aim to reduce pain during labour are numerous: breathing and relaxation, massage, complementary and alternative therapies, birth balls, injected water papules, water including temperature regulation and transcutaneous electrical nerve stimulation (TENS). The GDG chose to limit the scope. All pain strategies described in guidelines are retained in the evidence tables, but the update of non-pharmacological strategies is limited to those currently used in Belgium.

This section studies the impact of non-pharmacological strategies performed in order to reduce pain during labour and birth in low obstetric risk pregnant women at term and scheduled for normal birth.

7.2.2 Results

The systematic search found one guideline[3] and the update found four SR[56,57-59]. One of them is selected which is an updated of one SR included in the NICE guideline[56]. The three other reviews were excluded because they study strategies that are currently not used in Belgium, according to the GDG: TENS[58], water papules[59] and complementary and alternative therapies for pain management in labour[57]. For these topics, only evidence from NICE guideline was extracted.

Guideline recommendations and evidence from systematic review are described below in Table 38 and Table 39 (see Appendix 6).

Despite a lack of evidence for some of these techniques, the NICE guideline recommends supporting women's choice regarding breathing and relaxation, massages, labour in water, acupuncture, acupressure, hypnosis or playing music. Only the use of injected water papules is not recommended. There is no available evidence for birth balls. The available evidence suggests that massage and reassuring touching reduces a woman's measured pain and expressed anxieties during labour. Labouring in water reduces pain and the use of regional analgesia. Acupuncture, acupressure and hypnosis may also reduce pain[3].

The update of the meta-analysis of Cluett concerning labour in water, confirmed that women that were included during first stage in the water immersion group were less likely to use epidural/spinal/paracervical analgesia/anaesthesia (based on 6 RCTs) and that pain perception is reduced in this group. NNT for avoiding one epidural/spinal/paracervical analgesia/anaesthesia is 21 (CI : 12-200). The results about pain are based on less robust data (one small RCT). There is no evidence of increased adverse effects to the foetus/neonate or woman from labouring in water or waterbirth.

However, the M-A is underpowered to assess accurately neonatal infection rate of the newborn. Water immersion is, however, a care package which includes the actual water and the associated environment, together with the interactions of the woman and her caregivers. It may be that this last factor, linking midwives/ caregivers who support the tranquil, no-obstetric-intervention, salutogenic philosophy espoused by labour and birth in water with like-minded women is the most important component[56].

Key points based on literature search on non-pharmacological pain relief strategies

- **The NICE guideline recommends supporting women's choice regarding breathing and relaxation, massages, first stage labour in water, acupuncture, acupressure, and hypnosis or playing music .**
- **The NICE guideline does not recommend injected water papules, birth balls and transcutaneous electrical nerve stimulation (TENS).**
- **There is a lack of evidence about efficacy of breathing and relaxation techniques, birth balls, and injected water papules.**
- **Massage and reassuring touching may reduce pain and anxieties (C). Acupuncture, acupressure and hypnosis may reduce pain (C).**
- **Labour in water (first stage) reduces pain and the use of analgesia (B) but water immersion is a part of a care package and the favourable effect for the mother may be due to the associated environment. There is no change in foetal outcomes in available literature, although the current meta-analysis is underpowered to accurately assess the neonatal infection rate .**

7.2.2.1 Other considerations

Neonatal infection of the newborn is fortunately a rare event : the rate measured by Cluett is 0.8%. Since the meta-analysis is underpowered to accurately assess this complication, confidence interval (0.50 to 8.07) is wide. Because of the potentially serious consequences of neonatal newborn infection, the GDG chose to inform (future) parents that there is insufficient high-quality evidence to assess this potential risk (of newborn infection) related to labouring in water (Table 38 (see Appendix 6)).

Recommandations

- **It is recommended for professional caretakers to show empathy for the pain experienced by the pregnant women and to inquire how they want to manage this pain (1C).**
- **It is recommended to respect the choices of the pregnant woman in regard to pain management and any changes to these choices during the labour stages insofar this is possible within the organisation (GCP).**
- **If this is the parturient's wish, it is recommended to try to reduce the pain by effecting the labour in a warm bath while respecting hygiene precautions (1B).**

7.3 PHARMACOLOGICAL ANALGESIA

Pharmacological interventions performed to reduce pain during labour are either regional (peridural or epidural) either general analgesia. The GDG chose to limit the search regarding pharmacological interventions to the following topics: impact of pharmacological regional analgesia or general analgesia on maternal and foetal outcomes, impact of epidural fentanyl analgesia on breastfeeding, and specific questions regarding the management of regional analgesia.

7.3.1 Regional analgesia

7.3.1.1 Introduction

Regional analgesia is known since the sixties and is currently widespread. Several techniques are available (such as spinal, combined spinal-epidural, epidural and mobile epidural) and several drugs may be used (anaesthetic solutions, fentanyl, opioids). To reduce the scope, modes of administration, types of regional analgesia (RA), choice of drug, and maintenance of RA were excluded in accordance with the GDG. For this reason, a specific search has not be done on fentanyl derivates (su or remi-fentanyl) currently used in Belgium.

This section studies the impact of regional analgesia on maternal and foetal outcomes in women with a low obstetrical risk and scheduled for normal birth, compared with general analgesia or non-pharmacological pain coping strategies.

7.3.1.2 Results

The systematic search found two guidelines[3,60]. There was no systematic review found by our update. Guideline recommendations are described below in Table 40 (see Appendix 6).

Based on the same systematic review[61], NICE and CBO (Centraal BegeleidingsOrgaan van Kwaliteitsinstituut voor de Gezondheidszorg, Nederlands)[3,60] agree on the fact that epidural analgesia provides more effective pain relief in labour than other non epidural pharmacological analgesia. The SR involved 21 trials (n= 6664), twenty compared epidural with opioids and one compared epidural with one-to-one midwifery support. Concerns about women's perception of pain relief are based on one study including 105 women. The use of various outcome measures and other technical reasons explain this restriction[61].

Regarding other maternal outcomes, epidural analgesia is associated with a longer second stage of labour (16 minutes) and an increase in ocytocin use and in instrumental birth, although this last effect could be due to the package of care currently practised. There is no evidence of a longer first stage of labour and of an increase in caesarean section[3,60].

Regarding foetal outcomes, epidural analgesia has a positive effect on neonatal acid–base status, a higher Apgar score 1 minute post-partum, a similar Apgar score 5 minutes post-partum[3,60].

7.3.2 General analgesia

7.3.2.1 Introduction

General analgesia may be performed by inhalation of nitrous oxide or by injection of opioids (either intra muscular, either intravenous). Nitrous oxide and intramuscular opioids are not used in Belgium and were excluded in accordance with the GDG. As for regional analgesia, mode of administration (by patient controlled or not), choice of the drug and maintenance were excluded in accordance with the GDG.

The clinical question was thus limited to the impact of intravenous opioids on maternal and foetal outcomes in women at low obstetrical risk scheduled for normal birth.

7.3.2.2 Results

The systematic search found two guidelines[3,60]. There was no systematic review found by our update. Guideline recommendations are described below in Table 41 (see Appendix 6).

Regional analgesia is not recommended in clinical conditions like some low back pathology or coagulations diseases. In those cases, efficacy and side effects of general analgesia were summarized by both guidelines: parenteral opioids have a limited effect on pain in labour irrespective of the agent; opioids may have significant side effects for both the woman (drowsiness, nausea and vomiting) and her baby (short-term respiratory depression and drowsiness which may last several days).

7.3.3 Impact of epidural fentanyl analgesia on breastfeeding

7.3.3.1 Introduction

As previously seen, the use of pethidine, diamorphine or other opioids may interfere with breastfeeding[3]. This section studies the impact of epidural fentanyl on breastfeeding.

7.3.3.2 Results

One guideline studied this question[3]. Results are described in Table 42 (see Appendix 6).

There are only one small RCT and one retrospective observational study that show a link between epidural fentanyl and the duration and success of breastfeeding. It is possible that other factors than fentanyl may influence the results. NICE guideline recommends further research to assess the impact of low-dose epidurals with fentanyl on neonatal outcomes including breastfeeding.

7.3.3.3 Other considerations

One new RCT (Wilson 2010) published after our search date compared epidural analgesia with fentanyl added to bupivacaïne and bupivacaïne alone. A similar proportion of women in each epidural group initiated breastfeeding. Mean duration of breastfeeding was similar across epidural groups.

7.3.4 Management of epidural analgesia

7.3.4.1 Introduction

Some questions about the management of epidural analgesia have been selected in this section such as the ideal timing, the preloading with intravenous infusions, the clinical observation needed, the position and the mobilisation of woman, the use of ocytocin and the use of continuous cardiotocography. The efficacy of pushing delay after full dilatation is treated in section 8.2.1.

7.3.4.2 Results

The systematic search found two guidelines[3],[60]. For these topics, there was no additional update performed. Guideline recommendations are described below in Table 43 (see Appendix 6).

The two guidelines agree about following recommendations regarding the timing of epidural analgesia:

> Timing of epidural analgesia must be dependent on pain and not on cervical dilatation. There is indeed a high level of evidence that intrathecal or epidural analgesia administered during the early first stage of labour in primiparous does not affect the progress of labour, mode of birth or immediate neonatal condition compared with administration later in labour (high level of evidence). Epidural analgesia may be continued until after completion of the third stage of labour and any necessary perineal repair. There is evidence that discontinuing epidural analgesia late in labour does not improve the rate of spontaneous birth, or any other clinical outcome, and can cause distress to the woman[3].

There are some divergences between guidelines regarding clinical observations needed in women with epidural analgesia.

- Management of epidural analgesia is accompanied by a more intensive level of monitoring in each guideline but recommendations are based on good clinical practice. Evidence was found on the side effects of epidural analgesia. These were: hypotension (mainly derived from studies of high-dose local anaesthetic techniques), urinary retention, pyrexia and pruritus.
- NICE[3] recommends to perform electro foetal monitoring for at least 30 minutes during establishment of regional analgesia and after administration of each further bolus while cardiotocography is recommended to be continuous by CBO[60]. Evidence shows that there is a higher incidence of foetal bradycardia within one hour of analgesia.

Some questions are only studied in the NICE guideline:

- Intravenous access should always be secured prior to commencing regional analgesia. For high-dose epidural anaesthesia, preloading infusion may reduce the incidence of maternal hypotension and foetal heart rate abnormality. There was no evidence of differences in other outcomes. In women receiving combined spinal epidural or low-dose epidural analgesia, there was no evidence that IV fluid preloads influenced maternal hypotension and foetal heart rate abnormalities.
- Women with regional analgesia should be encouraged to move, and adopt whatever upright positions they find comfortable throughout labour. There is no effect of mobilization following epidural analgesia on any maternal or neonatal outcomes.
- Oxytocin should not be used as a matter of routine in the second stage of labour for women with regional analgesia. Limited evidence showed a high-dose oxytocin infusion shortened the duration of the second stage and reduced the rate of non-rotational forceps births[3].
- (Table 40 (see Appendix 6))

Key points based on literature search on regional analgesia versus other analgesia

- **Regarding maternal outcomes, epidural analgesia provides more effective pain relief in labour than other non epidural pharmacological analgesia. It is associated with a longer second stage, an increase in oxytocin use and in instrumental birth although this last effect could be due to the package of care (A).**
- **Regarding foetal outcomes, epidural analgesia has a small positive effect on Apgar score and neonatal acid-base status (A).**

Key points based on literature search on general opioid analgesia

- **General analgesia may be discussed in case of contra indications of regional analgesia.**
- **Parenteral opioids have however a limited effect on pain in labour (B).**
- **Opioids may have significant side effects for both the woman and her baby (B).**

Key points based on literature search on the management of epidural analgesia

- **Guidelines agree to recommend that the timing of epidural analgesia must be dependent on pain and not on cervical dilatation (A). Epidural analgesia may be continued until after completion of the third stage of labour and any necessary perineal repair.**
- **Management of epidural analgesia is accompanied by a more intensive level of monitoring (intravenous access, electro foetal monitoring and others clinical observations) than in case of labour without regional anesthesia (GCP). There is a higher incidence of foetal bradycardia within one hour of analgesia.**
- **Women with regional analgesia should be encouraged to adopt whatever upright positions they find comfortable throughout labour.**
- **Oxytocin augmentation is not recommended by NICE as a routine procedure in the second stage. Oxytocin infusion at high dose may shorten the duration of the second stage and may reduce the rate of non-rotational forceps births (C).**

Recommandations

- **If the parturient requests pharmacological pain relief, a locoregional analgesia is preferable to a systemic analgesia (1A).**
- **It is recommended to inform the parturient of the fact that loco-regional analgesias requires closer monitoring (placing of venous access, more frequent monitoring), but still permitting a certain mobility (GCP).**
- **It is recommended to perform locoregional analgesia after the onset of the labour and if the patient feels the need, irrespective of the dilatation stage (1A).**
- **It is recommended not to interrupt the locoregional analgesia during labour or delivery, nor during the perineal repair (1A).**

8 SECOND STAGE

8.1 INTRODUCTION

This chapter concerns women admitted at maternity who are in the second stage of labour. For this report we adopt the definition of NICE guideline[3] in which second stage is the period comprised between complete dilatation of the cervix until natural birth. Second stage comprises two parts: passive and active. Passive second stage begins with full dilatation of cervix. Active second stage begins when the baby head is visible.

This chapter studies three topics in low obstetric risk pregnant women at term and scheduled for normal birth:

- optimal duration of the second stage,
- woman care and second stage management,
- episiotomy and other interventions to reduce perineal trauma.

8.2 OPTIMAL DURATION OF SECOND STAGE

What is the normal/ abnormal duration of second stage of labour? Is it an optimal time before pushing? Has the duration of second stage an impact on maternal or foetal outcomes? In this section, two questions are treated: what is the optimal delay of pushing after full dilatation and what is the definition of a normal duration of a second stage of labour?

8.2.1 Pushing delay after full dilatation

8.2.1.1 Introduction

Passive second stage begins with full cervix dilatation (10cm) prior to or in the absence of involuntary expulsive contractions. The descent and rotation of the foetus during this first part of second stage requires time, what may induce a delay of pushing after full dilatation.

This section studies the impact of the delay of pushing after full dilatation on maternal and foetal outcomes. The question is divided in two parts: with or without epidural analgesia.

8.2.1.2 Results

Those topics are discussed in two guidelines[3],[62] and in one SR[63] found during the update search. Guideline recommendations and evidence from systematic review are described below in Table 44 and Table 45 (see Appendix 6).

In women without regional anaesthesia, guidelines agree to recommend women may commence pushing when the urge is present[3],[62]. There is indeed no high-level evidence that directed pushing affects outcomes.

In women with regional analgesia, guidelines agree to delay the pushing for at least one hour after complete cervix dilatation or earlier if the woman has an involuntary urge to push. There is high-level evidence that delaying directed pushing (1 to 3 hours, or earlier if the woman has an involuntary urge to push), compared with directed pushing at diagnosis of second stage, reduces the risk of a mid-pelvic or rotational instrumental birth[3]. Moreover, the systematic review of Brancato shows that for women in the delayed pushing group, the chance of having a spontaneous vaginal birth increased, the risk of having an instrument-assisted delivery and the pushing time decreased. No other significant effects were found (risk of caesarean births, lacerations or episiotomies). There are no results found for foetal outcomes. Most of the studies reported that women in the delayed pushing group began to push within 1 hour after full dilatation[63].

Key points based on literature search on pushing delay after full dilatation

- **Women without regional anaesthesia may commence pushing when the urge is present. There is indeed no high-level evidence that delayed pushing affects outcomes (A).**
- **For women with epidural analgesia, pushing at full cervical dilatation should be delayed for at least 1 hour unless the woman has an involuntary urge to push. Delaying directed pushing (1 to 3 hours, or earlier if the woman has an involuntary urge to push), compared with directed pushing at diagnosis of second stage, reduces the risk of a mid-pelvic or rotational instrumental birth, reduces the pushing time and increases the chance of having a spontaneous vaginal birth (A). There are no results for foetal outcomes.**

Recommandations

- **It is recommended to allow parturients who have not received locoregional analgesia and who have reached full dilatation, to push when they feel the need (1A).**
- **If a parturient under locoregional analgesia feels no need to push at full dilatation, it is recommended to wait for the foetus to descend and a spontaneous need to push before starting voluntary efforts at expulsion, provided the foetal heart rate remains normal (1A).**

8.2.2 Definition and risk of prolonged active second stage

8.2.2.1 Introduction

The active second stage begins when the baby's head is visible; there are expulsive contractions with a finding of full dilatation of the cervix or other signs of full dilatation of the cervix; and there is active maternal effort following confirmation of full dilatation of the cervix in the absence of expulsive contractions[3]. The active second stage ends with the birth.

It is unclear if there is an optimal duration of the active second stage and if a prolonged active second stage increases the rate of some complications. This section studies the impact of the duration of the active second stage on maternal and foetal outcomes in woman scheduled for a normal birth.

8.2.2.2 Results

Those topics are discussed in two guidelines[3,62] and one SR[64] found during our update search. Guideline recommendations and evidence from systematic review are described below in Table 46 and Table 47 (see Appendix 6).

According to the NICE guideline, in women without epidural analgesia and without oxytocin, mean duration of the second stage of labour, calculated using data from three descriptive studies, was 54 (44) (Mean (SD) in minutes) in nulliparous women (n = 3 664) and 18 (21) in multiparous (n = 6 389). The upper limits for the duration was 142 minutes (mean + 2SDs) in nulliparous women and 60 in multiparous woman. Unfortunately, the upper limits are calculated using standard deviations, the use of which assumes a normal distribution, which is not the case when considering the duration of labour.

The GDG of the NICE guideline estimated that the range of upper limits for the normal duration of the active second stage of labour was as follows:

- women giving birth to their first baby – about 0.5–2.5 hours for women without epidural, and 1–3 hours for women with epidural
- women giving birth to second or subsequent babies – up to about 1 hour for women without epidural, and 2 hours for women with epidural[3].

The two guidelines agree on the fact that after the start of the active second stage, birth must take place within 3 hours in nulliparous women and within 2 hours in multiparous women (based on observational studies)[3,62]. One hour may be added in case of epidural analgesia for the Canadian guideline[62], which is not the case in the NICE guideline. For the NICE guideline, a diagnosis of delay in the active second stage should be made when it has lasted 2 hours in nulliparous woman and 1 hour in multiparous woman.
The SR of Altman included observational studies and shows that there is an increased risk of operative or caesarean delivery in case of prolonged second stage > 3 hours. Some other maternal outcomes were also increased but evidence is inconsistent for those. No association between prolonged second stage and adverse neonatal outcomes was found in this review[64]. (Table 46 (see Appendix 6))

Key points based on literature search on the delay in the active second stage of labour

- **A diagnosis of delay in the active second stage should be made when it has lasted 2 hours in nulliparous women and 1 hour in multiparous women. (C)**

Recommandation

- **It is recommended to intervene when the active expulsion stage exceeds two hours in nulliparous women and one hour in multiparous women. (1C)**

8.3 WOMAN'S CARE AND SECOND STAGE MANAGEMENT

8.3.1 Introduction

This chapter concerns women's care during the second stage. Specific clinical questions were taken into account such as clinical observations needed, favourable maternal position, impact of water birth, instructions for bearing down and current place of uterine fundal pressure.

8.3.2 Clinical observations

8.3.2.1 Introduction

This section studied the impact of the clinical observations on maternal and foetal outcomes in women during the second stage.

Routine observations or examinations are usually performed by health care professionals in women during the second stage, to detect a change in maternal or foetal health. Observations can be recorded in a pre-designed chart called partogram.

8.3.2.2 Results

This topic is discussed in the NICE guideline[3]. Guideline recommendations are described below in Table 48 (see Appendix 6) The effect of the partogram is studied in one systematic review[42] previously described in the section about clinical observations during first stage.

In de NICE guideline, recommendations on clinical observations are based on expert opinion because there is a lack of relevant studies. In the systematic review of Lavender[42], there was no evidence of any difference between using a partogram (pictorial overview of labour) and not using a partogram during labour regarding clinical outcomes.

Key points based on literature search on the clinical observations during the second stage of labour

- **Clinical observations during second stage are based on expert opinion due to a lack of relevant studies (GCP).**
- **The use of a partogram is currently recommended by guidelines. There is however no evidence of an impact on maternal and foetal outcomes associated to the use of a partogram (B).**

Recommandation

- **The use of a partogram is recommended by NICE and by the WHO although there is no convincing evidence to favour or disfavour its use (GCP).**

8.3.3 Maternal position

8.3.3.1 Introduction

This section studies the impact of the maternal position during the second stage of labour on maternal and foetal outcomes.

8.3.3.2 Results

This topic is discussed in two guidelines[3,62]. Guidelines recommendations are described below in Table 49 (see Appendix 6). The update search does not find any recent systematic review about this topic.

The guidelines[3,62] agree on the fact that women should avoid a supine or semi supine position during second stage labour. The NICE guideline found indeed high-level evidence that remaining supine in the second stage of labour increases vaginal instrumental birth, increases pain and may increase the incidence of foetal heart rate abnormalities although there is no information on how women pushed. There is no difference in the proportion of women who give birth with an intact perineum. There is also some high-level evidence that using the hands-and-knees position in the second stage of labour, reduces women's reported pain and has no adverse effects on maternal or neonatal outcomes. The use of a rigid birthing chair or stool, but not upright positions per se, is associated with recorded blood loss greater than 500 ml[3]. In 2005, the systematic review of Gupta (included in the NICE guideline) concluded that several benefits are possible with upright posture, with the possibility of increased risk of blood loss greater than 500 ml. Results should, however, be interpreted with caution as the methodological quality of the 20 included studies was variable[65]. Finally, taking also in account women's expectations and cultural particularity, the two guidelines recommend that women in labour should choose a position that is comfortable for them and enhances pushing efforts.

Key points based on literature search on the maternal position during the second stage of labour

- **Labouring women should choose a position that is comfortable for them and enhances pushing efforts (B).**
- **Remaining supine in the second stage of labour increases vaginal instrumental birth, increases pain and may increase the incidence of foetal heart rate abnormalities. (C)**
- **Upright position may reduce the number of assisted deliveries and pain during second stage but it may increase the risk of blood loss greater than 500 ml. (C)**

Recommandation

- **It is recommended to encourage the parturient to adopt the position that she finds the most comfortable for pushing, provided the foetal heart rate remains normal (1A).**

8.3.4 Water birth

8.3.4.1 Introduction

Immersion in water during the first stage of labour has been discussed in paragraph 3.3.5 (page 16). This section studied the impact of water birth on maternal and foetal outcomes.

8.3.4.2 Results

This topic is discussed in one guideline[3] and one SR[56] which is an update of SR included by NICE. Guidelines recommendations and evidence from systematic review are described below in Table 50 and Table 51: (see Appendix 6).

NICE guideline concluded that there is insufficient evidence on the use of water in the second stage of labour, particularly its effect on neonatal outcomes. The update of the meta-analysis of Cluett failed to show a significant difference in maternal and foetal outcomes and confirmed that it may be due to insufficient data (2 trials including 180 women) allowing robust conclusions.

8.3.4.3 Other considerations

Case reports (Nguyen 2002, Kassim 2005) show that water birth may induce rare but serious adverse outcomes for the baby such water aspiration, hypoxia and infection.

Key points based on literature search on water birth during the second stage of labour

- **Women should be informed that there is insufficient high-quality evidence to support giving birth in water (B).**
- **Robust conclusions about an eventual impact on foetal outcomes are not possible due to a lack of sufficient data.**

Recommandation

- **It is recommended to inform pregnant women of the fact that we currently do not have any convincing evidence about the benefits linked to water birth (GCP).**

8.3.5 Instruction for bearing down

8.3.5.1 Introduction

This section addresses the question of the effectiveness of pushing techniques in the second stage of labour and their impact on foetal and maternal outcomes. Pushing may be spontaneous (uncoached) or directed (coached). Coaching or directing means that women receive standardized closed glottis pushing instructions by certified nurse-midwives with proper ventilation encouraged between contractions[3].

8.3.5.2 Results

This topic is discussed in one guideline[3]. Guideline recommendations are described in Table 52: (see Appendix 6).

The NICE guideline concludes that there is no high-level evidence that directed pushing affects outcomes.

Key points based on literature search on instructions for bearing down during second stage of labour

- **Women should be informed that there is insufficient high-quality evidence to either support or discourage a directed or coached pushing technique in stead of spontaneous pushing (GCP).**

Recommandation

- **It is recommended to allow the parturient to push in the way she finds it most effective given that the literature provides no basis for concluding that one method is more effective than the other (GCP).**

8.3.6 Uterine fundal pressure

8.3.6.1 Introduction

Uterine fundal pressure is an old procedure aiming at shortening the second stage of labour. Fundal pressure during the second stage of labour involves application of manual pressure to the uppermost part of the uterus directed towards the birth canal in an attempt to assist spontaneous vaginal delivery and avoid prolonged second stage. Fundal pressure may also be applied using an inflatable girdle[66]. This section studies maternal and neonatal outcomes associated with manual or mediated (by an inflatable belt) fundal pressure.

8.3.6.2 Results

This topic is discussed in one guideline[67] and one Cochrane review[66]. Guideline recommendations and evidence from systematic review are described below in Table 53: and Table 54: (see Appendix 6).

Fundal pressure is not discussed and not recommended in the NICE guideline[3]. The HAS guideline recommends to stop using manual fundal pressure, arguing that there are no trials that evaluate the effectiveness of fundal pressure in shortening the second stage of labour, and that rare but serious complications (for example uterine rupture or perineal injuries) may occur[67]. Perineal injuries were indeed described in one population-based observational study including 284 783 vaginal deliveries (1994 and 1995) recorded in the Dutch National Obstetric Database. De Leeuw found that uterine fundal expression was applied in 4.6% of all vaginal deliveries, either alone or in combination with other types of intervention, and appeared to be significantly associated with an increased risk of anal sphincter damage (RR 1.23, IC 1.83 (1.57±2.14) [68].

The systematic review included only one RCT (with important quality limitations such as lack of blinding) regarding the inflatable girdle and no RCT regarding manual pushing. The SR showed an important negative impact on the anal damage (RR = 15.69) due to inflatable pushing girdle but a small increase (RR =1.07) in the number of intact perineum. The use of an inflatable belt does not appear to increase the rate of spontaneous vaginal births in women and there is no significant evidence regarding outcomes for the baby[66]. The lack of blinding and the limited number of participants (500 women) in studies may, however, interfere with the validity of results.

Key points based on literature search on fundal pressure during the second stage of labour

- **There is no evidence that uterine fundal pressure on a delivering woman is effective in shortening the second stage of labour and it may bring about rare but serious complications (for example perineal injuries).**
- **There is a lack of RCTs about manual fundal pressure, but perineal injuries (sphincter damage) are described in observational studies (B).**
- **One RCT (without blinding) shows that the use of an inflatable pushing girdle in second stage of labour has no impact on operative deliveries, increases highly the risk of anal damage but increases also to a lesser extent the number of intact perineum. There is no change in foetal outcomes. (C)**

Recommandation

- **It is recommended not to exert any pressure on the fundus during the expulsion stage (1B).**

8.4 EPSIOTOMY AND OTHER INTERVENTIONS TO REDUCE PERINEAL TRAUMA

8.4.1 Introduction

Vaginal tears are one of the most frequent complications of a normal birth. Vaginal tears occur most often at the vaginal opening as the baby's head passes through. Tears can involve the perineal skin or can extend to the muscles and the anal sphincter and anus. Perineal tears may be prevented by episiotomy or by other interventions such as intrapartum perineal massage, hand positioning, pads applied on the perineum or local analgesia.

8.4.2 Episiotomy

8.4.2.1 Introduction

Episiotomy is a surgical cut made to the perineum with scissors or scalpel by the midwife or obstetrician in order to make the baby's birth easier and prevent severe tears. The cut is repaired with stitches (sutures). Some maternal hospital units have a policy of routine episiotomy[69].

This section assesses the impact of routine versus restricted use of episiotomy during the second stage of labour in low obstetric risk pregnant women at term and scheduled for normal birth. The choice of the angle of episiotomy is also assessed.

8.4.2.2 Results

These topics are discussed in one guideline[3] and one SR[69] which is an update of one SR included by NICE. Guideline recommendations and evidence from systematic review are described below in Table 55 and Table 56 (see Appendix 6).

The NICE guideline found that there is considerable high-level evidence that the routine use of episiotomy (trial mean 71.6%; range 44.9% to 93.7%) is not of benefit to women either in the short or longer term, compared with restricted use (trial mean 29.1%; range 7.6% to 53.0%).

Carroli updated her SR in 2009 and found that restrictive use of episiotomy resulted at short term in less severe perineal trauma, less suturing, fewer healing complications and more anterior perineal trauma. No significant differences were found for other outcomes such as severe vaginal/perineal trauma, dyspareunia, urinary incontinence or several pain measures[69].

Key points based on literature search on episiotomy during the second stage of labour

- **A routine episiotomy should not be carried out during a spontaneous vaginal birth.**
- **An episiotomy should be performed if there is a clinical need such as instrumental birth or suspected foetal compromise.**
- **Restrictive use of episiotomy resulted at short term in less perineal trauma, less suturing, fewer healing complications but more anterior perineal trauma without changes in severe vaginal/perineal trauma, dyspareunia, urinary incontinence or several pain measures (A).**
- **If episiotomy is required, the recommended technique is a mediolateral episiotomy usually directed to the right side between 45 and 60 degrees (C).**

Recommandation

- **It is formally recommended not to adopt episiotomy as a routine practice (1A).**
- **When there is a medical indication (instrumental birth or suspected foetal distress), a mediolateral episiotomy is recommended (2C).**

8.4.3 Other interventions to reduce perineal trauma

8.4.3.1 Introduction

There are a lot of strategies aiming to reduce perineal trauma; their use is often depending from local habits or customs. NICE studied some of these interventions[3]. This report's GDG chose to limit the search at interventions described in NICE guideline.

This section studies the impact of local interventions (intrapartum perineal massage, hand position, pads applied on the perineum and local analgesia) performed in order to reduce perineal trauma or perineal pain during the second stage of labour in low obstetric risk pregnant women at term and scheduled for normal birth.

8.4.3.2 Results

This topic is discussed in one guideline[3]. Guideline recommendations are described below in Table 57 (see Appendix 6).

In the NICE guideline, perineal massage during labour, applications of warm pads and local anaesthetic spray were not recommended. There is high-level evidence that perineal massages or application of warm compresses in the second stage of labour does not improve perineal outcomes. The use of lidocaine spray during the second stage of labour is not associated with a reduction in perineal pain, but may be associated with a reduction in perineal trauma during birth. Benefits/risks of the two most usual hand positions may be discussed: the rates of reported perineal trauma (including episiotomy) were similar between the two groups but episiotomy was higher in the 'hands on' group although women allocated to that group reported less mild pain at 10 days[3].

Key points based on literature search on intrapartum interventions to reduce perineal trauma during the second stage of labour

- **Perineal massage during delivery did not achieve any statistically significant difference in perineal outcomes (A).**
- **There are no statistically significant differences in perineal trauma (including episiotomy) between the "hands off" and "hands on" technique but with "hands on" technique there is less mild pain at 10 days. (B)**
- **Application of warm compresses in the second stage of labour does not improve perineal outcomes (A).**
- **The use of local anaesthetic spray did not reduce pain during spontaneous vaginal delivery (B) but it may be associated with a reduction in perineal trauma during birth.**

Recommandation

- **Literature does not provide a sufficient basis to affirm or refute the fact that manual support of the perineum ("hands on") reduces the number of ruptures or otherwise (2B).**

9 THIRD STAGE

9.1 INTRODUCTION

For this report we adopt the definition of NICE guideline in which third stage is the period comprised from the birth of the baby to the expulsion of the placenta and membranes[3]. According to our guideline definition, we follow mother and newborn dyads as less as one hour after the baby birth.

9.2 MOTHER

This chapter synthesizes literature evidence about four topics regarding normal healthy women with normal birth: active management of the third stage, duration of the third stage, timing of cord clamping and maternal care.

9.2.1 Active management

9.2.1.1 Introduction

Management of the third stage may be active or physiological.

- Guidelines[3 70 71] agree to define active management as a package including the following three components: routine use of uterotonic drugs, early clamping and cutting of the cord, and controlled cord traction. In the WHO guideline, uterine massage is added as a fourth component of active management[71].
- Physiological management is defined as no routine use of uterotonic drugs, no clamping of the cord until pulsation has ceased, and delivery of the placenta by maternal effort.

This paragraph addresses the question of the efficacy of physiological versus active management on maternal and foetal outcomes.

In accordance with the GDG, the choice of uterotonic drugs (oxytocin, prostaglandins or ergots-alkaloids) as well as their administration mode (IM, IV, intraumbilical) were excluded from this guideline. However, in the evidence table the drug cited by the guideline is mentioned.

The timing of cord clamping is discussed in paragraph 9.2.3. Uterine massage after placenta delivery is discussed in paragraph 0.

9.2.1.2 Results

Those topics are discussed in three guidelines[3,71,70]. Guideline recommendations are described below in Table 58 (see Appendix 6).

NICE and HAS recommend active management including routine use of uterotonic drugs (5 to 10 international units [IU] by intramuscular injection), followed by early clamping and cutting of the cord, and controlled cord traction. The same definition of active management is given by the 3 guidelines but there are some differences regarding the timing of cord clamping, the timing of uterotonic drugs injection and the addition of a uterine massage[3,70,71]

NICE and HAS guidelines underline that women should be informed that active management of the third stage reduces the risk of maternal haemorrhage and shortens the third stage. Nevertheless, women at low risk of postpartum haemorrhage who request physiological management of the third stage should be supported in their choice until third stage should be prolonged[3].

Benefits of active management are, however, mainly based on one systematic review[72] which is replaced by an update published in june 2010[73] in the Cochrane library. See table 59. In the subgroup of women at high risk of haemorrhage (> 35 y, parity > 5, previous history of PPH, first stage > 15hr, epidural anaesthesia, operative birth) active management of the third stage reduces the risk of severe (>1000ml) primary maternal haemorrhage (NNT 25 CI : 19-128), maternal haemoglobin <9 g/dl at 24-48h.

In other women (at low risk of haemorrhage), the difference was significant for primary maternal blood loss > 500 ml (but not for severe haemorrhage) balanced with an increase of after pains, a greater use of analgesia and an augmentation of the return to hospital due to a vaginal bleeding.

Key points based on literature search on active management during the third stage of labour

- **Active management is defined as a package of interventions including routine use of uterotonic drugs, early clamping and cutting of the cord, and controlled cord traction (NICE).**
- **Women should be informed that for women at high risk (> 35 y, parity > 5, previous history of PPH, first stage > 15hr, epidural anaesthesia, operative birth) active management of the third stage reduces the risk of severe primary maternal haemorrhage (NNT = 25).**
- **In women at low risk of bleeding, there was no significant difference identified for severe haemorrhage.**

Recommandations

- **For patients with a high risk of haemorrhage (many previous births, history of bleeding, locoregional analgesia, prolonged labour or instrumental birth), routine use of active delivery management (or coached delivery) is recommended i.e. oxytocin injection at time of birth, cord clamping and cutting followed by cord traction (1B).**
- **If the woman has no increased risk of postpartum bleeding, it is acceptable to allow the third stage to proceed naturally provided it does not take more than one hour (2C).**

9.2.2 Duration of the third stage

9.2.2.1 Introduction

This section considered the optimal duration of the third stage. Indeed, a prolonged third stage implies the risk of a retained placenta which can be followed by post partum hemorrhages (PPH)[71].

9.2.2.2 Results

This topic is discussed in one guideline[3] and in Table 60 (see Appendix 6).

Key points based on literature search on the duration of the third stage of labour

The third stage of labour is diagnosed as prolonged if not completed within 30 minutes of the birth of the baby in case of active management (B) and 60 minutes with physiological management (C).

9.2.3 Timing of cord clamping

9.2.3.1 Introduction

A delayed cord clamping allows placental transfusion to the baby and may thus contribute to reduce iron deficiency anaemia in baby.

This section assesses the effect of delayed cord clamping (DCC), compared with early cord clamping (ECC), on the wellbeing of women and babies.

9.2.3.2 Results

This topic is discussed in two guidelines[3],[71] and our update found two SRs[74],[75]. Guideline recommendations and evidence from SR are described below in Table 61 and Table 62 (see Appendix 6).

The guidelines disagree about the timing of cord clamping. NICE recommends an early cord clamping as part of the package of active management[3]. The WHO guideline recommends managing cord clamping not earlier than necessary for applying cord traction (around 3 minutes)[71].This discordance may be explained by the fact that WHO recommendations are also directed toward low incomes countries where infant anaemia is more prevalent.

Regarding the systematic reviews, the one by McDonald[75] was only based on RCTs while the one by Hutton[74] was based on RCTs and non RCTs (with a higher risk of bias). There was no change in maternal outcomes. Regarding foetal outcomes, there were advantages of delayed cord clamping regarding haematocrit at 2 months[74], newborn haemoglobin[75], ferritin concentration at 2 months[74], at 3 months and at 6 months [75] and anaemia at 2 months[74]. The risk reduction of anaemia was calculated on two trials (one RCT and one non RCT) performed in countries with a higher prevalence of infant anaemia (India and Guatemala). Disadvantages of delayed cord clamping were more polycythemia at 7 days (without clinical symptoms)[74], more neonatal jaundice within the first 24 to 48 hours of life[74], and more phototherapy required for jaundice[75]. This last result is based on 5 RCTs of which 3 took place in Europe (including 1 569 of the 1 762 patients in the systematic review), one in Libya (102 patients) and one in Zambia (91 patients).

Key points based on literature search on the timing of cord clamping during the third stage of labour

- **Guidelines disagree about the timing of cord clamping. NICE recommends an early cord clamping as part of active management and that further studies should be carried out about the timing of cord clamping. WHO recommends a later cord clamping but this may be explained by the fact that this guideline is intended for low incomes countries with a higher prevalence of infant anaemia.**
- **Delayed clamping of the cord reduces the risk of anaemia among infants at ages 2 to 3 months (B) in countries with a higher prevalence of anaemia than in our country. The impact on anaemia in countries with a lower prevalence of anaemia is unknown. The ferritin concentration in babies is increased at 2 months until 6 months. (B)**
- **On the other hand, delayed clamping of the cord increases the need of phototherapy for jaundice in trials realized mostly in European countries.(A)**
- **There are no changes in maternal outcomes in available literature (A).**

9.2.3.3 Other considerations

Since outcome of early clamping versus delayed clamping of the cord are unknown in developed countries, benefits and harms from both methods must be weighed against each other (Table 61 (see Appendix 6)).

9.2.4 Maternal care

9.2.4.1 Introduction

This section studied the impact of the clinical observations or interventions on maternal outcomes in women during the third stage. The topics considered are the initial assessment of the mother following birth, the assessment of perineal trauma and perineal repair, and uterine massage after placenta delivery. Methods used for perineal repair were excluded in accordance with the GDG.

9.2.4.2 *Initial assessment of the mother following birth*

Is there evidence that assessment of clinical observations and examination of the mother immediately after birth have an impact on maternal outcomes?

This topic is discussed in the NICE guideline[3]. Guideline recommendations are described in Table 63 (see Appendix 6).

Key points based on literature search on clinical observations and examinations of the mother following birth

- **Maternal observation includes physical observations, examination of placenta and membranes, assessment of perineal trauma and psychological/emotional assessment after birth**
- **Clinical observations and examination of mother after delivery are based on experts' consensus due to the lack of high level study investigating this field ***

Recommandation

- **It is recommended to observe the physical and psychological state of the woman immediately after the birth (1C).**

9.2.4.3 *Assessment of perineal trauma and perineal repair*

What is the precise definition of perineal or genital trauma and is there evidence that perineal or genital trauma assessment and repair have an impact on maternal outcomes?

This topic is discussed in the NICE guideline[3]. Guideline recommendations are described in Table 64 (see Appendix 6).

Key points based on literature search on the assessment of perineal or genital trauma following birth

- **The NICE guideline recommends the definition of perineal/genital trauma from the Green Top Guideline consensus (1998) (GCP).**
- **There is low-level evidence that suggests that the systematic assessment of the vagina, perineum and rectum is required to adequately assess the extent of perineal trauma (C).**
- **Analgesia should be used for perineal repair (GCP).**

Recommandation

- **The perineum, the vagina and the rectum should be examined carefully (1C).**
- **If necessary stitching can be carried out under local anaesthetic (if no locoregional analgesia) (GCP).**

9.2.4.4 *Uterine massage after placenta delivery*

The impact of uterine massage after placenta delivery on maternal outcomes is studied in this section.

The WHO adds the uterine massage as a fourth component of active management (see section 9.2.1.1) [71].

No other guideline than the one by the WHO recommends a uterine massage. Our update found two reviews[76],[77]. Results are synthesized in Table 65 (see Appendix 6).

Regarding uterine massage after placenta delivery, there is only one small RCT without blinding which shows no difference in postpartum hemorrhage (blood loss > 500 ml) but a small decrease in mean blood loss (mean difference: 41 ml after 30 minutes and 77 ml after 60 minutes). Only one small RCT without blinding is available. (Table 73 (see Appendix 6))

Key points based on literature search on uterine massage after placenta delivery

- **Uterine massage after placenta delivery does not reduce postpartum hemorrhage (C).**

9.3 NEWBORN

9.3.1 Introduction and methodological limits

This chapter synthesizes literature evidence about two topics: the value of the newborn assessment and the impact of early skin-to-skin contact, in case of normal birth.

This section about newborn care has been extended at the explicit demand of the GDG and evidence for these questions is not based on the same methodology as in other parts of this report due to the lack of relevant information found in the selected literature. No systematic review was performed specifically about newborn care. The evidence for this section includes NICE guidelines[3], a Cochrane systematic review[78] (all two found by the systematic search previously made for this report) and additional evidence[79],[80],[81],[82],[83],[84],[85],[86] selected by the GDG group.

9.3.2 Newborn assessment

9.3.2.1 Introduction

This part addresses two questions: What is the definition of a healthy newborn and what is the value of the routine healthy newborn assessment? Indeed, if the baby is assessed as unhealthy, further interventions (not described here) must be undertaken. If the baby is healthy, then routine interventions are undertaken.

9.3.2.2 Results

This topic is discussed in one guideline[3] from the systematic search of this report and two consensus guidelines[79],[80] added by the GDG. Guideline recommendations and evidence are described below in Table 66 (see Appendix 6).

The NICE guideline recommends using the Apgar score at 1 and 5 minutes to assess the baby[87]. The Apgar score is a number arrived at by scoring the heart rate, respiratory effort, muscle tone, skin colour, and response to a catheter in the nostril. Each of these objective signs can receive 0, 1, or 2 points. There is low-level evidence that the Apgar score at 5 minutes is moderately accurate at predicting neonatal death and cerebral palsy with reasonable specificity but low sensitivity. There is, however, no high-level evidence on immediate or longer term neonatal outcomes[3].

Given the limits of the Apgar score to identify babies needing resuscitation, two consensus guidelines defined the healthy baby as he (or she) is born at term, had clear amniotic fluid, and is breathing or crying and has a good tone[79]. The European guideline (European Resuscitation Council) recommends furthermore counting the heart rate of the newborn baby[80].

Key points based on literature search on the assessment of newborn

- **The Apgar score at 1 and 5 minutes should be recorded routinely (GCP).**
- **There is low-level evidence that the Apgar score at 5 minutes is moderately accurate at predicting neonatal death and cerebral palsy with reasonable specificity but low sensitivity. Apgar score at 1 minute has fewer predictive values than at 5 minutes (B).**
- **Given the limits of the Apgar score to identify babies needing resuscitation, a newborn is considered as healthy if he (or she) is born at term, had clear amniotic fluid, is breathing or crying, has a good tone and a heart rate> 100/min (GCP).**

9.3.3 Skin-to-skin contact between mother and baby

9.3.3.1 Introduction

Immediate skin-to-skin contact between mother and baby has been recommended to promote bonding and breastfeeding. This part addresses the question of the impact of early skin-to-skin contact between a mother and her newborn on maternal and newborn outcomes.

9.3.3.2 Results

This topic is discussed in one guideline[3] and one additional SR[78] that were both retrieved from the systematic search of this report. Observational studies about safety [81,82,83,84,85,86] were added by the GDG group. Guideline recommendations and evidence from SR are described below in Table 67 and Table 68 (see Appendix 6). Results from observational studies are included in the discussion.

The NICE guideline recommends encouraging women to have skin-to-skin contact with their babies as soon as possible after the birth[3]. Therefore, separation of a woman and her baby within the first hour of birth for routine postnatal procedures must be avoided and some care like weighing, measuring and bathing the baby should be avoided unless these measures are necessary for the immediate care of the baby. Those recommendations have been extracted by NICE from "Postnatal Care routine postnatal care of women and their babies"[88] that concluded that early skin-to-skin contact appeared to have some clinical benefit especially regarding breastfeeding outcomes and infant crying and had no apparent short or long-term negative effects and that early skin-to-skin contact with suckling is associated with increased duration of breastfeeding.

The SR by Moore [78] showed a higher rate of breastfeeding at one to four months post birth (OR 1.82, 95% CI 1.08 to 3.07), for early skin-to-skin contact compared with usual care. Other outcomes such as duration of breastfeeding, behavioural and psychological adaptation of the mother did not change. Foetal outcomes were not considered in this review.

Observational studies added by the GDG are four case reports[81,82,83,84] and two surveys[85,86]. The case reports show that cardio respiratory arrest, life-threatening events or deaths may occur during the first hours of life in newborns that seemed, at delivery time, to be perfectly well with a normal Apgar score and physical examination. The two surveys investigated this problem in France. Branger performed one retrospective study on the network of "Pays de Loire". He found eleven case reports of apparent life-threatening events with 7 deaths. The incidence rate calculated on those data showed one apparent life-threatening event for 26 000 births and one death for 40 000 births[85]. A prospective study on the same topic was conducted over a 1-year period in all the maternities of the French region of "Provence, Alpes, Cote d'Azur". Overall rate of neonatal apparent life-threatening events found was 0.032 per 1 000 live births. Potential risk factors as described by the author were: skin-to-skin contact, primiparous mother, and mother and baby alone in the delivery room[86].

Key points based on literature search on early skin-to-skin contact between mother and newborn

- **Early skin-to-skin contact is recommended by NICE.**
- **Early skin-to-skin contact resulted in a higher rate of breastfeeding at one to four months post birth (A).**
- **There are conflicting results about the impact on the duration of breastfeeding between guideline and systematic review.**
- **There is no change regarding behavioural and psychological adaptation of the mother (A).**
- **Foetal outcomes were not considered in the systematic review.**
- **Rare cases of death or acute life-threatening events have been described in apparently healthy newborn babies in the first hours of life. Potential risk factors may be skin-to-skin contact, primiparous mother, and mother and baby alone in the delivery room (C).**

9.3.3.3 Other considerations

The GDG concludes that those rare but dramatic events must not lead to a reconsideration of the skin-to-skin contact that has been proven beneficial. The GDG recommends that the maternity staff pays particular attention to a skin-to-skin infant immediately after birth. Care and supervision of babies is necessary not only during the delivery and the 10 first minutes of life, but also later on, especially during the first breast feedings when the baby is lying in a prone position. (Table 67 (see Appendix 6))

Key message concerning the newborn

- **At the time of birth, the state of the newborn should be assessed according to the following parameters: clarity of amniotic liquid, breathing or crying, skin colour, tone and heart rate (> 100/min) (GCP).**
- **If these parameters are favourable, the newborn should be placed in skin-to-skin contact with the mother (1A) and covered in a warm blanket. The Apgar score should be determined at one and five minutes (GCP).**
- **If these parameters are not favourable, the observation should continue and/or the necessary resuscitation procedures will be applied without delay (GCP).**
- **A healthy newborn should not be separated from the mother after delivery. Routine procedures such as weighing, measuring and taking the temperature should ideally wait for one hour (GCP).**
- **The first breastfeeding should be accompanied (GCP).**
- **Mother and newborn are closely observed and watched during the first hour after the delivery (GCP).**

10 NATIONAL AND INTERNATIONAL DATA

10.1 INTRODUCTION

The objective of this chapter is to illustrate the current obstetrician practice with some available national or international data. Intervention rates in practices vary considerably across the world and across countries. Data are presented for Belgium, and three neighbouring countries: Netherlands, France and Germany.

10.2 METHODOLOGY

This analysis contains only published data; we did not perform any original data search for the present guideline. Data were assembled and showed as published by authors. Note that all databases consulted involved normal and complicated deliveries .

We chose to present data based on three data sources:

- for the Belgian Dutch speaking community: the annual report edited by the Studiecentrum voor Perinatale Epidemiologie (SPE)[89]
- for the Belgian French speaking community the annual report edited by ONE (Office de la Naissance et de l'Enfance)[90]
- for the Netherlands, France, Germany and other European countries: the PERISTAT report (European Perinatal Health Report)[1].

The annual report published by SPE is based on the data of all 70 maternity clinics within the Flemish region (and the University Hospital Brussels). Registered parameters are: parity, caesarean section in previous deliveries, origin of conception, hypertension in pregnancy, diabetes, HIV, multiple pregnancies, gestational age, position of the baby, induction of labour, epidural analgesia, group B Streptococcus infection (+ prophylaxis), date and time of birth, mode of delivery, episiotomy, indication for caesarean section, birth weight, sex, Apgar (at 1 & 5 minutes), ventilation of the baby, congenital malformation, transfer to N* or NIC-service, stillbirth, early neonatal death (+ cause), maternal morbidity and maternal mortality.

The annual report published by the ONE is based on data acquired from the "banque de données médico-sociale". One ONE publication entitled "avis de naissance" is focused on delivery and newborn. It summarizes data obtained by ONE collaborators during the first maternity-visit to mothers of all maternity clinics within the French speaking region (Brussels and Wallonia). ONE collaborators obtained data on more than 90% of all deliveries (from 91.4% in 1999 to 97.6 % in 2007). Data were mostly extracted from maternity registers. Data validity may be limited by the fact that maternity collaboration can influence data quality and exhaustivity. Registered parameters are: parity, multiple pregnancies, gestational age, position of the baby, induction of labour, epidural analgesia, date and time of birth, mode of delivery, episiotomy, birth weight, Apgar (at 1 & 5 minutes), stillbirth, early neonatal death, time of first breastfeeding and means of nutrition at newborn discharge from the maternity unit[90]. The French speaking community is currently setting up the CEpip (Centre d'Epidémiologie Périnatale, http://www.cepip.be/), a new organisation that should publish perinatal data in the future. At this moment (April 2010), data were not yet published by CEpip.

The PERISTAT project published one report summarizing data from 2004. This report contains valid and reliable indicators that can be used for monitoring and evaluating perinatal health in the European Union. The project began in 1999 as part of the EU's Health Monitoring Programme and is currently in its third phase, with the ultimate aim of producing a European Perinatal Health Report. Registered parameters are in particular : parity, rate of pregnancies following infertility management, severe maternal morbidity, multiple pregnancies, gestational age, induction of labour, mode of delivery, episiotomy, birth weight, sex, Apgar (at 1 & 5 minutes), congenital malformation, stillbirth, early neonatal death (+ some cause), and maternal mortality.

10.3 RESULTS

Rate of some interventions (mode of onset of labour, rate of regional analgesia, mode of delivery, rate of episiotomy) studied in this guideline are presented as well two major perinatal outcomes (maternal mortality and early neonatal mortality rate)

10.3.1 Mode of onset of labour

Table 3 Table 3: Mode of onset of labour and elective caesarean (percentage of total birthsshows the different ways of starting labour or birth, namely spontaneous labour (Spon), induction of labour (Ind) or elective caesarean section (as alternative way of starting birth).

In PERISTAT report, rates of induced labour ranged from less than 9 % in the Baltic countries and the Czech Republic to 30.7 % in Northern Ireland and 37.9 % in Malta. Furthermore, in eight of the 17 countries or regions with data published for 2004, including Belgium, fewer than three quarters of women started labour spontaneously. The three Belgium neighbouring countries have higher rates of spontaneous onset of labour. Based on data published from 1999 to 2007, the decreasing trend in labour induction is more obvious for the Belgian Dutch speaking Community than for the Belgian French speaking community.

Table 3: Mode of onset of labour and elective caesarean (percentage of total births)

Mode of onset of labour															
Year	Belgium Dutch community [89]			Belgium French community [90]			Netherlands [I]			France [I] (sample of 14 737 births)			Germany [I]		
	Spon	Ind	Caes	Spon	Ind	Caes	Spon	Ind	Caes	Spon	Ind	Caes	Spon	Ind	Caes
1999	58.9	31.9	9.2	59.8	32	8.2									
2004	61.5	27.6	10.8	60.2	29.9	9.9	78.8	14.2	7.0	67.3	19.8	12.9	69.3	17.3	13.4
2007	63.2	25.6	11.2	60.6	29.6	9.8									
Spon = spontaneous onset of labour, Ind = induced labour, Caes = elective caesarean															

10.3.2 Rate of regional analgesia

Table 4 above shows the percentage for regional analgesia (Reg) and the rate of elective and emergency caesarean sections (Caesar).

After 2004, in the Belgian Dutch speaking Community, 90% of all caesarean sections were performed under regional anaesthesia (SPE). Hence, increase in caesarean sections may partly explain the rise in the use of regional analgesia. In Belgium, the trend (from 1999 to 2007) to increase in regional analgesia is obvious for the two communities with a higher starting point for the French community.

Table 4: Percentage for regional analgesia

Rate of all regional analgesia and the rate of all caesarean delivery										
Year	Belgium Dutch community [89]		Belgium French community [90]		Netherlands [I]		France [I] (sample of 14 737 births)		Germany [I]	
	Reg	Caesar	Reg	Caesar	Reg	Caesar	Reg	Caesar	Reg	Caesar
1999	61.3	15.6	66.8	16.2						
2004	61.6	18.3	70.9	19.1		15.1		20.2		27.3
2007	66.6	19	70.8	20.4						

10.3.3 Mode of delivery

Table 5 above gives details of delivery modalities, i.e. spontaneous deliveries (Spon), instrumental deliveries (Instr) and elective and emergency caesareans (Caes).

In the PERISTAT report, rates of caesarean section varied widely from well over 30 % in Italy and Portugal to under 20 % in Slovenia, the Netherlands, Flanders, Brussels (2004), the Czech Republic, Estonia, Latvia, Lithuania, Finland, Sweden and Norway. For Belgium neighbouring countries, Netherlands applied the most conservative policy with the lowest caesarean rate and the highest vaginal birth rate. Conversely, Germany had the highest caesarean rate and the lowest vaginal birth rate. Rates of caesarean section have increased in Belgium since 2004. Although the two Belgian communities registered approximately the same vaginal spontaneous birth rate, there are more vaginal instrumental births and less caesarean sections in the Dutch Community.

Table 5: Mode of delivery

Mode of delivery															
Years	Belgium Dutch community [89]			Belgium French community [90]			Netherlands [I]			France [I] (sample of 14 737 births)			Germany [I]		
	Spon	Instr	Caes	Spon	Instr	Caes	Spon	Instr	Caes	Spon	Instr	Caes	Spon	Instr	Caes
1999	71.5	12.9	15.6	71.9	11.9	16.2									
2004	71.1	10.6	18.3	71.1	9.8	19.1	74.4	10.6	15.1	68.7	11.1	20.2	67.1	5.6	27.3
2007	70.8	10.2	19	70.9	8.7	20.4									
Spon = vaginal spontaneous birth, Instr = vaginal instrumental, Caes = all caesarean,															

10.3.4 Episiotomy rate

Finally, Table 6 shows the episiotomy rate.

In the PERISTAT report, the highest episiotomy rates were found in Spain (Valencia) with 83.2 % of women who delivered vaginally, immediately followed by Belgium (stated on available data). Netherlands and Germany applied a more conservative policy and have lowest episiotomy rates. Nevertheless, episiotomy rate begins to fall in Belgium Dutch Community with less than 50 % of multiparous women who received episiotomy since 2008 (SPE).

Table 6: Episiotomy rate

Episiotomy					
	Belgium Dutch community [89]	**Belgium French community [90]**	**Netherlands [I]**	**France [I] (sample of 14 737 births)**	**Germany [I]**
2001	68.2	-			
2004	62.4	-	24.3	-	30.8
2007	57.8	-			

10.3.5 Maternal mortality ratio

The PERISTAT report defines maternal mortality ratio (MMR) as the number of all maternal deaths, from the first trimester of pregnancy until 42 days post partum, from direct and indirect obstetric causes, per 100 000 live births. Because the number of annual cases is low in most countries, PERISTAT used data covering two years (2003-2004) (Table 7).

In the PERISTAT report only six countries' maternal mortality rates were based on more than twenty deaths. This, together with differences in ascertainment of maternal deaths made comparisons difficult to interpret. In comparison with neighbouring countries, maternal mortality ratio in Belgium is relatively low

Table 7: Maternal mortality ratio/ 100 000 (all causes of deaths) Years 2003-2004

Source	Flanders	Brussels	Netherlands	France	Germany
PERISTAT[1]	4.2	6.2	8.8	7	5.3

10.3.6 Early neonatal mortality rate

PERISTAT report defines early neonatal mortality rate (Table 8) as the number of deaths occurring at 0-6 days after live birth expressed per 1 000 live births in the same year.

Interpretation of those data must be cautious. Rates may be underestimated or overestimated. Underestimation may be the consequence of registration of early neonatal deaths as foetal deaths. On the other hand, overestimation may be the consequence of registration of very preterm or very small babies. Furthermore, neonatal resuscitation policy or recommendations vary across country and may influence the mortality rate.

In the PERISTAT report, early neonatal mortality rates ranged from around 1.5 per 1000 live births in Czech Republic, Luxembourg, Cyprus, Sweden and Norway to over 3.0 in Estonia, Latvia, Lithuania, Hungary, Malta and Poland. The Belgium rates, 2.0 in Dutch Community and 1.5 in French Community is situated near the French and German rates. Early and late neonatal mortality rates are currently under study in Netherlands[91].

Table 8: Early neonatal mortality rate /1 000

Units	Belgium Dutch community [89]	Belgium French community [90]	Netherlands [1]	France [1] (sample of 14 737 births)	Germany [1]
Nbrs					
2004	2.0	1.5	3.0	1.8	2.0
2007	2.1				

11 APPENDIXES

APPENDIXES WITH CHAPTER 2

APPENDIX 1: SEARCH FOR EVIDENCE AND INCLUSION CRITERIA FOR CLINICAL PRACTICE GUIDELINES

Searched guideline websites and websites of organisations

Kwaliteitsinstituut voor de Gezondheidszorg (CBO)	http://www.cbo.nl/
Guideline Finder UK	http://www.library.nhs.uk/GUIDELINESFINDER/
Haute Autorité de Santé (HAS)	http://www.has-sante.fr/portail/jcms/j_5/accueil
Institute for Clinical Systems Improvement (ICSI)	http://www.icsi.org/knowledge/
Nederlands Huisartsen Genootschap (NHG)	http://nhg.artsennet.nl/
National Guideline Clearinghouse (NGC)	http://www.guideline.gov/
National Health and Medical Research Council (NHMRC)	http://www.nhmrc.gov.au/
New Zealand Guidelines Group (NZGG)	http://www.nzgg.org.nz
Scottish Intercollegiate Guidelines Network (SIGN)	http://www.sign.ac.uk/
World Health Organization (WHO)	http://www.who.int/topics/en/
International Federation of Gynecology and Obstetrics (FIGO)	http://www.figo.org/

APPENDIX 2: SEARCH FOR EVIDENCE AND INCLUSION CRITERIA FOR META-ANALYSES AND SYSTEMATIC REVIEWS

Global search for systematic reviews and meta-analyses

Database	Search terms	Number of references
CDSR	Delivery in Title, Abstract or Keywords or Labor in Title, Abstract or Keywords or Birth in Title, Abstract or Keywords, from 2006 to 24 Nov 2009	439
Medline	("Term Birth"[Mesh] OR "Delivery, Obstetric"[Mesh]) OR "Labor, Obstetric"[Mesh] from 2006 to Nov 2009 Limited to meta-analysis	94
Embase	'term birth'/exp OR 'delivery'/exp OR 'labor'/exp from 2006 to 2009 limited to meta-analysis	129

Specific search for systematic reviews and meta-analyses

Subject	Search terms
SR or M-A	meta-analysis.pt,ti,ab,sh., or (meta anal$ or metaanal$).ti,ab,sh., (methodol$ or systematic$ or quantitativ$).ti,ab,sh., ((methodol$ or systematic$ or quantitativ$) adj (review$ or overview$ orsurvey$)).ti,ab,sh., ((pool$ or combined or combining) adj (data or trials or studies or results)).ti,ab., review.pt,sh./ Not Randomized controlled trials.tw./Not Case report.tw./ Letter.pt./ Historical article.pt./Review of reported cases.pt./ Review, multicase.pt.
Induction	Pregnancy, Prolonged/ Labor, Induced/ Risk/ cesarean section.mp. and Cesarean Section/ Infant, Newborn/ Infant Mortality/ Infant, Postmature/ find similar to Induction of labour for improving birth outcomes for women at or beyond term
Communication	Labor/Pain/*Patient Satisfaction
Early assessment	Labor,stage/early assessment*
Evaluation of universal screening	Infant, Newborn, Diseases/*prevention & control/ Streptococcal Infections/*prevention & control/ *Guideline Adherence
Supportive care	*Labor, Obstetric/ Obstetrical Nursing/ or Nursing/ or Maternal-Child Nursing/
Women position during first stage	Labor Stage, First/ Prone Position/ or Supine Position/
Monitoring (CTG)	Labor, Obstetric/ Cardiotocography/mt [Methods]/ fetal heart rate.mp. or Heart Rate, Fetal/
Amniotomy	labor, first stage.mp. or Labor Stage, First/ rupture of membrane.mp. or amniotomy.mp.
Relieve labour pain	labor,obstetric.mp. or Labor, Obstetric/ Natural Childbirth.mp. or Natural Childbirth/ Analgesia, Obstetrical/
Analgesia	Analgesia, Obstetrical/ or Analgesia, Epidural/ Anesthesia, Epidural/ or Anesthesia, Obstetrical/
Breast feeding	breast feeding.mp. or Breast Feeding/
Position	Labor Stage, Second/ Prone Position/ or Supine Position/
Pushing delay	labor, second stage.mp. or Labor Stage, Second/ pushing.mp./ Delivery, Obstetric/mt [Methods]
Pushing technique	labor, second stage.mp. or Labor Stage, Second/ pushing.mp./ Valsalva Maneuver/
Uterine fundal pressure	Delivery, Obstetric/ fundal pressure.mp.
Perineal local interventions	Perineum/ and Delivery, Obstetric/ or Labor Stage, Third/ or Obstetric Labor Complications/
Episiotomy	Episiotomy/
Cord clamping	Umbilical Cord/ clamping.mp./ timing.mp. or Time Factors/
Skin to skin	Mother.mp. or Mothers/ newborn.mp. or Infant, Newborn/ Touch/ or touch.mp.

APPENDIX 3: SELECTION OF SYSTEMATIC REVIEWS AND META-ANALYSIS

Chapter	Subject	Selected	Not relevant for clinical question
Information	Info		
Induction	Induction	Dare 2006 [17] Gulmezoglu 2006 [18] Wennerholm 2009 [16] Caughey 2009 [15]	Alfirevic 2009 Boulvain 2008 Crane 2006 Hapangama 2009 Hatfield 2007 Heinemann 2008 Kavanagh 2006(2) Kelly 2009(2) Souza 2008
Admission	Early assessment		
	Communication		
	Clinical assessment		
	Group B Streptococcus		Honest 2006
	Admission CTG	Gourounti 2007 [40]	
First stage	Supportive care	Hodnett 2007 [46]	Toohil 2008
	Partogram	Lavender 2008 [42]	
	Monitoring	Alfirevic 2006 [51]	Neilson 2006 (high risk women)
	Fetal pulse oxymetry		East 2007
	Amniotomy	Brown 2008 [52] Smyth 2007 [53] Wei 2009 [54]	
	Pain	Cluett 2009 [56] Dowswell 2009 [58] Hutton2009 [59] Smith 2006 [57]	Alpern 2009 Elbourne 2006 Marucci 2007 Simmons 2007
	Position	Lawrence 2009 [48]	Athukorala 2006 Grootscholten 2008
Second stage	Pushing delay	Altman 2006 [64] Brancato 2008 [63]	
	Pushing technique		
	Uterine fundal pressure	Verheijen 2009 [66]	
	Perineal local interventions		East 2007
	Episiotomy	Carroli 2009 [69]	
Third stage	Haemorrhage	Hofmeyr 2008 [77] Pena-Marti 2007 [76]	Mousa Hatem 2007 Gulmezoglu 2007 Liabsuetrakul 2007
	Maternal care		Kettle 2007
	Cord clamping	Hutton 2007 [74] Mac Donald 2008 [75]	
	Skin to skin	Moore 2007 [78]	

Other reasons for exclusion:

Cochrane reviews withdrawn: Fraser 2006, Prendiville 2009 and Thacker 2006

Gap of description of not relevant methodology: Mozurkewich 2009, Graham 2006, Langer 2006

Out of the scope: Gyte 2006 (routine drugs), Haws 2009 and Nabhan 2008 (high-risk), Hunter 2007, Hutton 2006, Kok (3), Nassar 2006 and Vas 2009 (fetal malposition), Reveiz 2007 (enema not used in Belgium).

APPENDIX 4: QUALITY APPRAISAL OF GUIDELINES

Source	Title	Score (Standardised Methodology)	Final Appraisal
Royal College of Midwives (RCM 2008)[92]	Evidence based guidelines for midwifery-led care in labour	70%	Recommended with alterations
National Collaborating Centre for Women's and Children's Health (NICE 2007)[3]	Intrapartum care	89%	Recommended
Coalition for Improving Maternity Services (CIMS)[93]	Evidence Basis for the Ten Steps of Mother-Friendly Care	55%	Not recommended
National Collaborating Centre for Women's and Children's Health (NICE 2008)[12]	Induction of labour	90%	Recommended
Haute Autorité de Santé (HAS 2008)[13]	Déclenchement artificiel du travail à partir de 37 semaines d'aménorrhée	84%	Recommended
Collège National des Gynécologues et Obstétriciens Français (CNGOF 2007)[94]	Modalités de surveillance foetale pendant le travail	37%	Not recommended
Royal Australian and New Zealand College of Obstetricians and Gynecologists (RANZCOG 2006)[95]	Intrapartum fetal surveillance clinical guidelines	63%	Not recommended
Société des Obstétriciens et Gynécologues du Canada (SOGC 2007)[39]	Fetal health surveillance: antepartum and intrapartum consensus guideline	80%	Recommended with alterations
American College of Obstetricians and Gynecologists (ACOG) (2004)[96]	Pain Relief During Labor	65%	Not recommended
CBO en Nederlandse Vereniging voor Anesthesiologie Nederlandse Vereniging voor Obstetrie en Gynaecologie[60]	Richtlijn Medicamenteuze Pijnbehandeling tijdens de bevalling	77%	Recommended
Haute Autorité de Santé (HAS 2007)[67]	L'expression abdominale durant la 2ème phase de l'accouchement	70%	Recommended
Ottawa Hospital's (Sprague 2006)[62]	The Ottawa Hospital's Clinical Practice Guideline for the Second Stage of Labour	74%	Recommended with alterations
Société des Obstétriciens et Gynécologues du Canada (SOGC 2004)[97]	Guidelines for operative vaginal birth	68%	Not recommended
Collège National des Gynécologues et Obstétriciens Français (CNGOF 2005)[98]	L'épisiotomie	52%	Not recommended
Haute Autorité de Santé (HAS 2004)[70]	Recommandations pour la pratique clinique : hémorragies du post-partum immédiat	78%	Recommended
American College of Obstetricians and Gynecologists (ACOG 2006)[99]	Postpartum Hemorrhage	65%	Not recommended
World Health Organization (WHO 2007) [71]	Recommendations for the Prevention of Postpartum Haemorrhage.	81%	Recommended With alterations

APPENDIX 5: QUALITY APPRAISAL OF SYSTEMATIC REVIEWS AND META-ANALYSES

Items	**Alfirevic** [51]	**Altman** [64]	**Brancato** [63]	**Brown** [52]	**Carroli** [69]	**Caughey** [15]	**Cluett** [56]	**Dare** [17]	**Dowswell** [58]	**Gourounti** [40]	**Graham** [100]	**Gülmezoglu** [18]
Search date	04/2006	01/2005	01/2005	02/2008	03/2008	2007	11/2008	09/2005	11/2008	11/2005	April 2006	08/2006
Inter-vention	CTG	Prolonged 2d stage	Pushing delay	Active package	Restrictive episiotomy	Induction	Labour in water	Early birth	TENS	CTG at admission	EFM	induction
Controle	Interm. auscult	Not prolonged 2d stage	Immediate pushing	Standard care	Routine episiotomy	Expectant manage-ment	Labour out water	Expectant manage-ment (PROM)	No TENS	No CTG	Perinatal brain injury	Awaiting spontan labor
1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
2	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes
4	Yes	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Partly	Yes	Yes
6	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**Yes**
Comment									not used in Belgium	CI borderline	M_A of observatio nal studies!	

Legend of items 1 to 9 of the quality appraisal:
1. Is de vraagstelling adequaat geformuleerd?
2. Is de zoekactie adequaat uitgevoerd?
3. Is de selectieprocedure van artikelen adequaat uitgevoerd?
4. Is de kwaliteitsbeoordeling adequaat uitgevoerd?
5. Is adequaat beschreven hoe data-extractie heeft plaatsgevonden?
6. Zijn de belangrijkste kenmerken van de oorspronkelijke onderzoeken beschreven?
7. Is adequaat omgegaan met klinische en statistische heterogeniteit van de onderzoeken ?
8. Is statistische pooling op een correcte manier uitgevoerd ?
9. Zijn de resultaten van de systematische review valide en toepasbaar?

Items	Hodnett [46]	Hofmeyr [77]	Hutton [74]	Lavender [42]	McDonald [75]	Moore [78]	Pena-Marti [76]	Smith [57]	Smyth [53]	Verheijen [66]	Wei [54]	Wennerholm [16]
Search date	04/2007	03/2008	11/2006	March 2008	December 2007	2006	04/ 2006	June 2006	07/2007	May 2009	11/2008	11/2007
Inter-vention	Continuous support	Uterine massage	Late cord clamping	Partogram	Late cord clamping	Skin to skin	Fundal Pressure in third stage	Alternative therapy for pain	amniotomy	Fundal pressure, second stage	Amnioto+ oxytocyn	Induction
Controle	Usual care	No uterine massage	Early cord clamping	No Partogram	Early cord clamping	Routine care	Control cord traction	Control	Standard care	No fundal pressure	Standard care	Expectant manage ment
1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Yes	Yes	Yes	Yes	Yes	Yes	No RCT selected	Yes	Yes	Yes	Yes	Yes
6	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
7	Yes	-	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
8	Yes	-	Yes	Yes	Yes	Yes		Yes	Yes	Yes	Yes	Yes
9	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**
Comment	Some studies are not applicable in Belgian setting		Many trials performed in low income countries				Not usable because no RCT selected			No study found for manual pressure, one for inflatable belt		

Legend of items 1 to 9 of the quality appraisal:
1. Is de vraagstelling adequaat geformuleerd?
2. Is de zoekactie adequaat uitgevoerd?
3. Is de selectieprocedure van artikelen adequaat uitgevoerd?
4. Is de kwaliteitsbeoordeling adequaat uitgevoerd?
5. Is adequaat beschreven hoe data-extractie heeft plaatsgevonden?
6. Zijn de belangrijkste kenmerken van de oorspronkelijke onderzoeken beschreven?
7. Is adequaat omgegaan met klinische en statistische heterogeniteit van de onderzoeken ?
8. Is statistische pooling op een correcte manier uitgevoerd ?
9. Zijn de resultaten van de systematische review valide en toepasbaar?

APPENDIX 6: EVIDENCE TABLE BY CLINICAL QUESTION

Table 9: Induction of delivery between 41 + 0 and 42 +0

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2008	[12]	October 2007	Women with uncomplicated pregnancies should usually be offered induction of labour between 41+ 0 and 42+ 0 (weeks+ day) to avoid the risks of prolonged pregnancy. The exact timing should take into account the woman's preferences and local circumstances. If a woman chooses not to have induction of labour, her decision should be respected. Healthcare professionals should discuss the woman's care with her from then on.	Gülmezoglu AM 2006 (SR 19 RCTs) Comparison induction with expectant management (see table SR below)	NICE 1++ (high quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias)
				Additional RCT: Heimstad R 2007 Comparison induction with antenatal foetal monitoring (no significant difference for maternal and foetal outcomes)	NICE 1+ (well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias)
				Questionnaire survey Roberts 1991 Women acceptability of induction	NICE 3 (Non analytical studies)
HAS 2008	[13]	July 2006	Le risque de complications associées au dépassement de terme impose une surveillance précise à partir du jour du terme. On peut recommander le schéma suivant, les dates étant données à plus ou moins 1 jour : · si la femme enceinte n'a pas accouché à 41 SA + 0 jour, il est recommandé d'initier une surveillance foetale toutes les 48 heures · en l'absence d'accouchement, à 41 SA + 6 jours, il est recommandé de réaliser un déclenchement, éventuellement précédé d'une maturation cervicale par prostaglandines ; · il est possible de réaliser un déclenchement à partir de 41 SA + 0 jour, à condition que le col soit favorable, et d'en avoir informé la femme enceinte et obtenu son accord	NICE 2001 (updated in 2008) Crowley P 2006 (Cochrane SR withdrawn in December 2009) Gülmezoglu AM 2006 (SR 19 RCTs) Comparison with expectant management (see table SR below)	HAS Grade A ("essais comparatifs randomises de forte puissance ou meta-analyse d'essais comparatifs randomisés) ! Some main references supporting the evidence are currently out of date;

Table 10: Induction in women at 41 weeks

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Caughey 2009	[15]	Globally, for the SR: Pregnant women (>37 - <42 weeks) But in subgroup analyses of RCTs = mostly pregnant women ≥ 41 weeks	Elective labour induction (ocytocin, misoprostol, prostaglandin E2 or artificial rupture of membranes) versus expectant management (EM)	Maternal outcomes • *Caesarean section* OR 1.22; 95% CI 1.07 to 1.39; p<0.01 significant in favor of induction • *Assisted vaginal delivery* OR 0.91; 95% CI 0.79 to 1.04 not significant • *Maternal satisfaction* not performed Foetal outcomes • *Death* not performed ("insufficient evidence available") • *Meconium aspiration syndrome* OR 1.39; 95% CI 0.71 to 2.72 not significant • *Admission to neonate care unit* OR 1.24; 95% CI 0.73 to 2.09, p=0.43, not significant	Literature search February 2009 SR including 11 RCTs and 25 observational studies Separate results are available according to study design We selected only results based on RCTs	Moderate (poor quality RCTs are included)
Results from Gülmezoglu 2006 are presented here but update in progress. See comments	[18]	Women at or beyond term (subgroup of 41 completed weeks only considered for this section) Women at low risk of complications	Labour induction (ocytocin, misoprostol, prostaglandin E2 or artificial rupture of membranes) versus awaiting spontaneous labour	Maternal outcomes • *Caesarean section* RR 0.92; 95% CI 0.76 to 1.12 in favor of induction but not significant • *Assisted vaginal delivery* RR 1.05; 95% CI 0.94 to 1.17 not significant • *Post partum hemorrhage* RR 1.01; 95% CI 0.21 to 4.90 not significant	The version 2006 is included in Nice 2008 and HAS 2008 SR including(19 RCTs n = 7984): This SR was published in 2006 and search is updated in July 2009 Results are however not yet updated: the authors	Moderate (poor quality RCTs are included) Update of results in progress (see comments)

				• *Maternal satisfaction* not performed <u>Foetal outcomes</u> • *Perinatal deaths* (all causes) RR 0.25; 95% CI 0.05 to 1.18 not significant • *Stillbirth, Newborn deaths within 7 days, newborn death within 28 days, birth asphyxia* not significant • *Meconium aspiration syndrome* RR 0.29; 95% CI 0.12 to 0.68 significant in favor of induction • *Newborn intensive care admission* RR "not estimable"	mention that "the 10 citations awaiting may alter the conclusion of the review once assessed".	
Wennerholm 2009	[16]	Women at or beyond term (subgroup analysis with women at 41 weeks only considered for this section)	Labour induction (without precision) versus awaiting spontaneous labour	<u>Maternal outcomes</u> • *Caesarean section* RR: 0.87; 95% CI: 0.80 to 0.96 significant in favor of induction • *Assisted vaginal delivery* RR: 1.06; 95% CI: 0.96 to 1.17 Not significant • *Maternal satisfaction* RR 1.93; 95% CI: 1.62 to 2.30 Significant in favor of induction <u>Foetal outcomes</u> • *Perinatal deaths* (all causes) RR: 0.29; 95% CI: 0.06 to1.37 Not significant • *Intrauterine foetal death, early neonatal death (< 7 days), asphyxia*: Not significant • *Meconium aspiration syndrome*	Literature search : Nov 2007 13 RCTs (n= 6216) Reasons for exclusions: interventions before 41 weeks; published <1969; published as abstracts non-English language publication.	Moderate (language bias)

				RR: 0.35; 95% CI: 0.16 to 0.75) Significant in favor of induction • *Newborn intensive care admission* RR: 0.89; 95% CI: 0.77 to1.03 Not significant		

Table 11: Suspicion of macrosomia

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2008	[12]	October 2007	In the absence of any other indications, induction of labour should not be carried out simply because a healthcare professional suspects a baby is large for gestational age (macrosomic).	Irion O 2002 (2 RCTs) No effect on rates of caesarian birth, instrumental birth or spontaneous birth.	NICE 1++ (high quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias);
				Sanchez-Ramos L 2002 (2 RCTs + 9 observational studies) Induction associated with more caesarian, no change in perinatal outcomes.	NICE 2+ (well conducted case-control or cohort studies with a low risk of confounding bias or chance and a moderate probability that the relationship is not causal).
HAS 2008	[13]	July 2006	Les données actuelles ne permettent pas d'affirmer que le déclenchement artificiel du travail chez une femme non diabétique, avec suspicion de macrosomie foetale, contribue à réduire la morbidité maternelle et néonatale.	NICE 2001 and other studies (Sanchez-Ramos L 2002, Raio L 2003, Herbst MA 2005 without any change about recommendation)	HAS Grade : not specified

Table 12: prelabour rupture of membrane

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2008	[12]	October 2007	Women with prelabour rupture of membranes at term (at or over 37 weeks) should be offered a choice of induction of labour or expectant management. Induction of labour is appropriate approximately 24 hours after prelabour rupture of the membranes at term.	Previous Nice intrapartum care guideline: (similar maternal and foetal outcomes)	NICE: No level of evidence specified
HAS 2008	[13]	July 2006	Si les conditions cervicales sont favorables, un déclenchement immédiat peut être envisagé à condition d'avoir réalisé une information de la femme enceinte et obtenu son accord. Le délai d'expectative, sauf exception, ne devrait pas excéder 48 heures.	NICE 2001 (and Cochrane SR: Hannah 1996 , Tan 1997)	HAS Grade : not specified

Table 13: prelabour rupture of membrane

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Dare 2006	[17]	Women with prelabour rupture of membranes of at least 37 weeks' gestation	Planned induction within 24 hours Versus delay of at least 24 hours	Maternal outcomes • *Caesarean section* RR 0.94; 95% CI 0.82 to 1.08 Not significant • *Chorioamniotis* RR 0.74; 95% CI 0.56 to 0.97 Significant in favor of planned induction • *Endometris* RR 0.30; 95% CI 0.12 to 0.74 Significant in favor of planned induction • *Maternal satisfaction (nothing liked)* RR 0.43; 95% CI 0.36 to 0.52 Significant in favor of planned induction • *Maternal mortality, postpartum fever, operative vaginal birth, hospital stay* not significant Foetal outcomes • *Admission to neonate care unit* OR 0.73; 95% CI 0.58 to 0.91 Significant in favor of planned induction • *Foetal or perinatal mortality, neonatal infection:* not significant	Literature search November 2004 Twelve trials (total of 6814 women) Cochrane systematic review of RCTs and quasi RCTs (risk of bias described)	Moderate

Table 14 elective induction between 37 to <41 weeks

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2008	[12]	October 2007	Induction of labour should not routinely be offered on maternal request alone. However, under exceptional circumstances (for example, if the woman's partner is soon to be posted abroad with the armed forces), induction may be considered at or after 40 weeks.	Higher incidence of assisted vaginal birth and lower incidence of caesarian births (Gülmezoglu 2006 see table SR)	NICE 1+ (well conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias)
HAS 2008	[13]	July 2006	Un déclenchement pour une indication non médicale ne pourra être envisagé que si les conditions suivantes sont réunies : · utérus non cicatriciel ; · terme précis ; · à partir de 39 SA + 0 jours (273 jours) ; · col favorable : score de Bishop ≥7 ; · demande ou accord de la patiente et information des modalités et des risques potentiels	NICE 2001 (and observational studies)	Based on expert consensus (« accord professionnel ») HAS Grade II for Bishop score Essais comparatifs randomisés de faible puissance, Études comparatives non randomisées bien menées, Études de cohorte

Table 15: elective induction between 37 to <41 weeks

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Caughey 2009	[15]	Globally, for the SR: Pregnant women (>37 - <42 weeks)	Elective labour induction versus expectant management	Lack of specific results for women < 41 weeks	"The 2 studies conducted at less than 41 weeks of gestation were of poor quality and were not generalizable to current practice" (Caughey 2009)	
Gülmezoglu 2006	[18]	Women at or beyond term (group of 37-40 completed weeks only considered for this section) Women at low risk of complications	Labour induction versus awaiting expectant management	<u>Maternal outcomes</u> • *Caesarean section* RR 0.58; 95% CI 0.34 to 0.99 in favor of induction • *Assisted vaginal delivery* RR 1.71; 95% CI 1.23 to 2.39 In favor of expectant • *Post partum hemorrhage* Not available evidence • *Maternal satisfaction* not performed <u>Foetal outcomes</u> • *Perinatal deaths* (all causes) RR 0.32; 95% CI 0.03 to 3.09 not significant • *Stillbirth, Newborn deaths within 7 days, newborn death within 28 days,* not significant • *Meconium aspiration syndrome, Newborn intensive care admission* Not available evidence	The version 2006 is included in Nice 2008 and HAS 2008 SR including(19 RCTs n = 7984): This SR was published in 2006 and search is updated in July 2009 Results are however not yet updated: the authors mention that "the 10 citations awaiting may alter the conclusion of the review once assessed".	Moderate (poor quality RCTs are included) Update of results in progress (see comments)

Table 16 Bishop score [101]

Bishop score*				
Parameter\Score	0	1	2	3
Position	Posterior	Intermediate	Anterior	-
Consistency	Firm	Intermediate	Soft	-
Effacement	0-30%	31-50%	51-80%	>80%
Dilation	0 cm	1-2 cm	3-4 cm	>5 cm
Foetal station	-3	-2	-1, 0	+1, +2

Table 17: cervical status

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Gülmezoglu 2006	[18]	Women at 41 weeks with favourable cervical status: bishop score ≥ 6 Women at low risk of complications	Labour induction versus awaiting expectant management	Maternal outcomes • *Caesarean section, assisted vaginal delivery, post partum hemorrhage* Not estimable Foetal outcomes • *Birth asphyxia* RR 3.02 95% CI 0.12 to 73.52 not significant • *Newborn intensive care admission* RR 3.02 95% CI 0.12 to 73.52 not significant • *Perinatal deaths, stillbirth, newborn deaths within 7 days, newborn death within 28 days, Meconium aspiration syndrome,* Not estimable	Based on only 1 RCT: Chanrachkul 2003, n = 249) This SR was published in 2006 and search is updated in July 2009 Results are however not yet updated: the authors mention that "the 10 citations awaiting may alter the conclusion of the review once assessed".	Moderate Update of results in progress (see comments)
Gülmezoglu 2006	[18]	Women at 41 weeks with unfavourable cervical status: bishop score < 6 Women at low risk of complications	Labour induction versus awaiting expectant management	Maternal outcomes • *Caesarean section, Assisted vaginal delivery, Post partum hemorrhage* Not estimable Foetal outcomes • *Meconium aspiration syndrome* RR 0.27; 95% CI 0.11 to 0.68 In favor of induction • *Perinatal deaths* (all causes), *stillbirth, Newborn deaths within 7 days, Newborn intensive care admission* not significant • *Newborn death within 28 days, birth asphyxia* Not estimable	6 RCTS available (poor quality RCTs are included)	Moderate

Table 18: Early assessment

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	24 April 2006	Limited qualities of evidence showed that early assessment by a midwife, compared with early admission to maternity units, appeared to reduce medical intervention rates and increase women's satisfaction. There was insufficient evidence on morbidity and mortality of both women and their babies	Two RCTs: McNiven PS 1998 (n = 209) and Janssen PA 2003 (n=237).	NICE 1- (Meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias)

Table 19: Admission

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	All women in labour should be treated with respect and should be in control of and involved in what is happening to them, and the way in which care is given is key to this. To facilitate this, healthcare professionals and other caregivers should establish a rapport with the labouring woman, asking her about her wants and expectations for labour, being aware of the importance of tone and demeanour, and of the actual words they use. This information should be used to support and guide her through her labour. To establish communication with the labouring woman, healthcare professionals should: • Greet the woman with a smile and a personal welcome, establish her language needs, introduce themselves and explain their role in her care. • Maintain a calm and confident approach so that their demeanour reassures the woman that all is going well. • Knock and wait before entering the woman's room, respecting it as her personal space, and ask others to do the same. • Ask how the woman is feeling and whether there is anything in particular she is worried about. • If the woman has a written birth plan, read and discuss it with her. • Assess the woman's knowledge of strategies for coping with pain and provide balanced information to find out which available approaches are acceptable to her. • Encourage the woman to adapt the environment to meet her individual needs. • Ask her permission before all procedures and observations, focusing on the woman rather than the technology or the documentation. • Show the woman and her birth partner how to summon help and reassure her that she may do so whenever and as often as she needs to. When leaving the room, healthcare professionals should let her know when they will return. • Involve the woman in any handover of care to another professional, either when additional expertise has been brought in or at the end of a shift.	Observational studies: cohorts, questionaire survey	NICE 3 (Non analytical studies)

Table 20: Initial assessment

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
Initial assessment					
NICE 2007	[3]	April 2006	The initial assessment of a woman by a midwife should include: • listening to her story, considering her emotional and psychological needs, and reviewing her clinical records • physical observation – temperature, pulse, blood pressure, urinalysis • length, strength and frequency of contractions • abdominal palpation – fundal height, lie, presentation, position and station • vaginal loss – show, liquor, blood • assessment of the woman's pain, including her wishes for coping with labour along with the range of options for pain relief. In addition: • The FHR should be auscultated for a minimum of 1 minute immediately after a contraction. • The maternal pulse should be palpated to differentiate between maternal and FHR. • If the woman does not appear to be in established labour, after a period of assessment it may be helpful to offer a vaginal examination. • If the woman appears to be in established labour, a vaginal examination should be offered. • Healthcare professionals who conduct vaginal examinations should : • be sure that the vaginal examination is really necessary and will add important information to the decision-making process • be aware that for many women who may already be in pain, highly anxious and in an unfamiliar environment, vaginal examinations can be very distressing • ensure the woman's consent, privacy, dignity and comfort • explain the reason for the examination and what will be involved, and • explain the findings and their impact sensitively to the woman.	Lack of relevant studies for the use of routine observations or examinations on first presentation to health care professionals	Expert consensus

Table 21: Prevention of early-onset neonatal group B streptococcal disease

Belgian Health Council 2003[8]	Consensus	**Cultures de dépistage vaginal et rectal de colonisation par GBS à 35-37 semaines de gestation pour TOUTES les femmes enceintes** (sauf si la patiente a présenté une bactériurie à GBS pendant la grossesse en cours ou un enfant précédent ayant développé une infection invasive à GBS). **Une prophylaxie intra-partum EST INDIQUEE pour les femmes ayant** : – Un enfant précédent ayant présenté une infection invasive à GBS – Une bactériurie à GBS pendant la grossesse en cours – Une culture positive de dépistage de colonisation par GBS pendant la grossesse en cours (sauf si l'on procède à un accouchement par césarienne programmée, en l'absence d'un travail ou d'une rupture de la membrane amniotique) – Un test antigénique de dépistage rapide des GBS positif – s'il est réalisé – en début du travail (sauf si un accouchement par césarienne programmée, en l'absence de travail ou de rupture de la membrane amniotique) – Un statut GBS inconnu (culture non réalisée, incomplète, résultats inconnus ou test antigénique de dépistage rapide des GBS effectué au moment du travail négatif) **ET** l'une des caractéristiques suivantes : • Accouchement à < 37 semaines de gestation • Rupture de la membrane amniotique ≥ 18 heures • Température intra-partum ≥ 38° C. **Tant la pénicilline G que l'ampicilline ont été recommandées**, bien que la première soit préférable en raison de son spectre d'activité plus étroit (d'autres antibiotiques sont administrés en cas d'allergie à la pénicilline)	CDC 1996	Belgian consensus

Table 22: Cardiotocography at admission

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	The use of admission cardiotocography in low risk pregnancy is not recommended in any birth setting. There is high level evidence that women who had routine admission CTG were more likely to have interventions during labour, although there were no statistical differences in neonatal outcomes.	Bix 2005 (MA of 3 RCTS)	NICE High level of evidence
SOGC 2007	[39]	March 2007	Admission foetal heart tracings are not recommended for healthy women at term in labour in the absence of risk factors for adverse perinatal outcome, as there is no evident benefit.	Bix 2005	SGOC I-A: evidence obtained from at least one property RCT

Table 23: Cardiotocography at admission

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Gouro unti 2007	[40]	Pregnant women at low obstetric risk between 37 and 42 weeks, on their admission to the labour ward	CTG (20 minutes at admission) versus auscultation using a hand-held Doppler device during and immediately after at least one contraction	<u>Maternal outcomes</u> • *Caesarean section* RR 1.2; 95% CI 1.00 to 1.41 Not or borderline significant in favor of auscultation • *Instrumental delivery* RR 1.1; 95% CI 1.02 to 1.18 Borderline significant in favor of auscultation <u>Foetal outcomes</u> • *Apgar score less than 7 points at 5 minutes after delivery* not significant	Meta- analysis including the same RCTs as Blix 2005 and confirming the results	Moderate

Table 24: Woman care during first stage

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence Grade app
Clinical assessment					
NICE 2007	[3]	April 2006	Observations by a midwife during the first stage of labour include: • 4 hourly temperature and blood pressure • hourly pulse • half-hourly documentation of frequency of contractions • frequency of emptying the bladder • In addition: • Intermittent auscultation of the foetal heart after a contraction should occur for at least 1 minute, at least every 15 minutes, and the rate should be recorded as an average. The maternal pulse should be palpated if an FHR abnormality is detected to differentiate the two heart rates.	Lack of relevant studies for the use of routine observations or examinations	Expert consensus
NICE 2007	[3]	April 2006	Vaginal examination offered 4 hourly, or where there is concern about progress or in response to the woman's wishes (after abdominal palpation and assessment of vaginal loss).	No difference in duration of labour between 2 hourly and 4 hourly. The number of digital examinations is associated with neonatal and maternal sepsis (Low quality evidence)	1☐ Meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias
Partogram					
NICE 2007	[3]	April 2006	A pictorial record of labour (partogram) should be used once labour is established. Where the partogram includes an action line, the World Health Organization recommendation of a 4 hour action line should be used.	Anonymous. World Health Organization partograph in management of labour.1994	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

Table 25: Use of partogram

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Lavender 2008	[42]	Singleton pregnancies and cephalic presentations in spontaneous labour at term. 6 187 women	Partogram versus no partogram The two groups had to differ only in the partogram usage and not in other labour ward interventions, such as psychological support, early amniotomy or use of analgesia. or different partogram designs	<u>Maternal outcomes</u> • *Caesarean section* RR 0.64; 95% CI 0.24 to 1.70 Not significant (subgroup in high resource settings: RR 1.03; 95% CI 0.82 to 1.28 not significant) • *Instrumental vaginal delivery* RR 1.00; 95% CI 0.85 to 1.17 Not significant (subgroup in high resource settings: RR 0.97; 95% CI 0.81 to 1.15 not significant) <u>Foetal outcomes</u> • *Apgar score <7 at 5 mins* RR. 0.77, 95% CI 0.29 to 2.06 No evidence of difference between the two groups	5 RCT's or quasi RCTs No significant between partogram and no partogram for any outcome considered in the meta-analysis Other results No significant difference between partogram with 2 hours action line versus partogram with 4 hours action lines Idem if comparison between 2 hours action line versus 3 hours action lines When the three- and four-hour action line were compared, caesarean section rate was lowest in the four-hour action line group and this difference was statistically significant (RR 1.70, 95% CI 1.07 to 2.70,(n = 613 , one trial Lavender 1998) in favour of 4 hours.	Moderate

Table 26 : One-to-one supportive care

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	A woman in established labour should receive supportive one-to-one care. A woman in established labour should not be left on her own except for short periods or at the woman's request. Women should be encouraged to have support by birth partner(s) of their choice.	SR : Hodnett ED 2004 Hodnett ED 2002 Less cesarean sections or instrumental vaginal births, more maternal satisfaction in case of one-to-one support The non-professional person providing one-to-one care in labour within these studies varied in their level of training, background and in the context of care. There is a lack of high-level evidence to suggest that support by partners, other family members or friend's affects clinical outcomes.	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
SOGC 2007	[39]	2007	Women in active labour should receive continuous close support from an appropriately trained person.	Hodnett ED 2004	Ia: evidence obtained from at least one properly RCT

Table 27: One-to-one supportive care

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Hodnett 2007	[46]	Pregnant women in labour	*One-to-one intrapartum support* defined as continuous presence and support during labour and birth. The person providing the support could have qualifications as a healthcare professional (nurse, midwife) or training as a doula or childbirth educator, or be a family member, friend or stranger with no special training in labour support. *Compared with usual care* as defined by the trialists. In all cases, 'usual care' did not involve continuous intrapartum support, but it could involve other measures, such as routine epidural analgesia, to help women to cope with labour.	• *Spontaneous vaginal birth :* RR 1.07, 95% CI .1.04 to 1.12 Significant (higher in case of one-to-one care) • *Caesarean birth :* RR 0.91, 95% CI .0.83 to 0.99 Significant (fewer in case of one-to –one care) • *Instrumental vaginal birth:* RR 0.89, 95% CI .0.82 to 0.96 Significant (fewer in case of one-to –one care) • *Regional analgesia:* RR 0.92, 95% CI 0.0.85 to 0.99 Significant (fewer in case of one-to –one care) • *Any analgesia:* RR 0.89, 95% CI .0.82 to 0.96 Significant (fewer in case of one-to –one care) • *Report dissatisfaction* : RR 0.73, 95% CI .0.65 to 0.83 Significant (fewer in case of one-to –one care) • *Electronic foetal monitoring* 0.95, 95% CI .0.92 to 0.97 Significant (fewer in case of one-to –one care) • *Apgar score:* Not significant	Literature search February 2007 SR including 16 RCTs (n= 13,391) Applicability may vary in function of setting	High

Table 28: Women position in the first stage

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	Women should be encouraged and helped to move and adopt whatever positions they find most comfortable throughout labour	Lack of high level evidence to suggest that either mobilization or any particular position in the first stage of labour affects outcomes	NICE: no grade of recommendation mentioned
NICE 2007	[3]	April 2006	Women may drink during established labour and be informed that isotonic drinks may be more beneficial than water. Women may eat a light diet in established labour unless they have received opioids or they develop risk factors that make a general anaesthetic more likely.	There is a small amount of evidence to demonstrate that ketosis is prevented by relatively small calorific intake provided by isotonic drinks and that these provide an alternative source of nutrition that is rapidly emptied from the stomach and rapidly absorbed by the gastrointestinal tract. There is limited evidence that labour outcomes were not compromised in either the sports drink group or the water-only group.	NICE: no grade of recommendation mentioned

Table 29 Women position in the first stage

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Lawrence 2009	[48]	Women in the first stage of labour	upright (walking or not, sitting, standing, kneeling, squatting) versus recumbent (supine, semi-recumbent and lateral) positions	We consider only results of random effect analysis in case of forest plot with a high level of heterogeneity between trials No significant difference between the 2 groups	Literature search November 2008 21 studies with a total of 3706 women. SR including randomised and quasi-randomised trials (poor quality RCTs are included)	Moderate

Table 30 Women position in the first stage

21	Il est recommandé de laisser aux parturientes la possibilité de manger légèrement et de boire, aussi longtemps qu'aucune contre-indication médicale ne leur interdit.	**I B**	Het is aanbevolen om een parturiënte de mogelijkheid te geven iets licht verteerbaars te eten en te drinken, zolang er geen medische contra-indicatie bestaat.
22	Il est recommandé d'encourager les parturientes à adopter la position qui leur convient le mieux pendant le travail.	**I B**	Het is aanbevolen om de parturiënte aan te moedigen om de voor haar meest comfortabele houding aan te nemen gedurende de arbeid.

Table 31: intermittent auscultation versus continuous monitoring

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	Intermittent auscultation of the FHR is recommended for low-risk women in established labour in any birth setting. Intermittent auscultation can be undertaken by either Doppler ultrasound or Pinard stethoscope. Changing from intermittent auscultation to continuous EFM in low-risk women should be advised for the following reasons: • significant meconium-stained liquor, and this change should also be considered for light meconium-stained liquor • abnormal FHR detected by intermittent auscultation (less than 110 beats per minute [bpm]; greater than 160 bpm; any decelerations after a contraction) • maternal pyrexia (defined as 38.0 °C once or 37.5 °C on two occasions 2 hours apart) • fresh bleeding developing in labour • oxytocin use for augmentation • the woman's request	Alfirevic Z 2005 There is high-level evidence that continuous EFM reduces the rate of neonatal seizures but has no impact on rates of cerebral palsy. There is high-level evidence that continuous EFM increases the rates of instrumental and caesarean birth.	1+ Well conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
SOGC 2007	[39]	March 2007	Intermittent auscultation following an established protocol of surveillance and response is the recommended method of foetal surveillance;	Compared with EFM, it has lower intervention rates without evidence of compromising neonatal outcome. ACOG 2005 RCOG 2001 Liston R 2002 Killien MG 1989	I: Evidence obtained from at least one properly randomized controlled trial B : There is fair evidence to recommend the clinical preventive action

Table 32: Intermittent auscultation versus continuous monitoring

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Alfirevic 2006	[51]	Pregnant women in labour 37 000 women included in twelve trials .	Continuous cardiotocography discontinued only for short periods (for example, visit to toilet) and the CTG should be used for clinical decision making during labour *Compared with* intermittent auscultation. Control groups of interest include: (a) no foetal monitoring, (b) intermittent auscultation of the foetal heart rate with a Pinard stethoscope or hand-held Doppler ultrasound device or (c) intermittent CTG.	<u>Maternal outcomes</u> • *caesarean sections* (RR 1.66, 95% CI 1.30 to 2.13, n =18,761, 10 trials) Significant higher in case of continuous CTG • *instrumental vaginal birth* (RR 1.16, 95% CI 1.01 to 1.32, n = 18,151, nine trials) Significant higher in case of continuous CTG <u>Foetal outcomes</u> • *Overall perinatal death rate* (RR 0.85, 95% CI 0.59 to 1.23, n = 33,513, 11 trials) Not significant • *Neonatal seizures* (RR 0.50, 95% CI 0.31 to 0.80, n = 32,386, nine trials) Significant fewer in case of continouous CTG • *Cerebral palsy* (RR 1.74, 95% CI 0.97 to 3.11, n = 13,252, two trials) Not significant • *Apgar scores, neonatal ICU admission, hypoxic ischemic encephalopathy, neurodevelopmental disability at at least 12 months of age:* Not significant	Literature search SR including randomised and quasi-randomised trials controlled trials, 2 trials only of high quality	Moderate

Table 33: Foetal scalp blood sampling

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	FBS should be advised in the presence of a pathological foetal heart rate (FHR) trace, unless there is clear evidence for acute compromise.	One cohort study (Weber 1982, n = 96) showed that the use of FBS with continuous EFM (compared with continuous EFM alone) may reduce the rate of instrumental vaginal birth, but there was no evidence of differences in other outcome (low-level evidence). Alfirevic 2005 (see update): comparison with intermittent auscultation	Not level of recommendation in NICE guideline
SOGC 2007	[39]	March 2007	Where facilities and expertise exist, foetal scalp blood sampling for assessment of foetal acid–base status is recommended in women with "atypical/abnormal" foetal heart tracings at gestations > 34 weeks when delivery is not imminent, or if digital foetal scalp stimulation does not result in an acceleratory foetal heart rate response. (III-C)	RCOG 2001 Thacker 2006 (withdrawn)	III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees C : The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making

Table 34: Foetal scalp blood sampling

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Alfirevic 2006	[51]	Pregnant women in labour 37,000 women included in twelve trials .	Continuous cardiotocography discontinued only for short periods (for example, visit to toilet) and the CTG should be used for clinical decision making during labour *Compared with* intermittent auscultation. Control groups of interest include: (a) no foetal monitoring, (b) intermittent auscultation of the foetal heart rate with a Pinard stethoscope or hand-held Doppler ultrasound device or (c) intermittent CTG.	Only subgroup analyses including studies comparing CTG + FBS versus intermittent auscultation are considered in this table. <u>Maternal outcomes</u> • *caesarean sections* (RR 1.50, 95% CI 1.10 to 2.06, n =15,074, 6 trials) Significant higher in case of continuous CTG + FBS • *instrumental vaginal birth* (RR 1.25, 95% CI 1.13 to 1.38, n = 14,828, 5 trials) Significant higher in case of continuous CTG+ FBS <u>Foetal outcomes</u> • *Overall perinatal death rate* Not significant • *Neonatal seizures* (RR 0.49, 95% CI 0.29 to 0.84, n = 15,004, 5 trials) Significant fewer in case of continouous CTG+ FBS • *Cerebral palsy* Not significant • *Apgar scores, neonatal ICU admission, neurodevelopmental disability at at least 12 months of age:* Not significant	Literature search SR including randomised and quasi-randomized trials controlled trials, 2 trials only of high quality	Moderate

Table 35: ST segment analysis (STAN)

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	A further randomized control trial of ST segment analysis should be undertaken.	High-level evidence from three trials of high-risk women that ST analysis reduces instrumental vaginal birth and neonatal encephalopathy, although there was no difference in foetal acid–base. Ojala K 2006 Neilson 2003	1+ Well conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
SOGC 2007	[39]	March 2007	The use of ST waveform analysis for the intrapartum assessment of the compromised foetus is not recommended for routine use at this time.	Neilson, 2006 Dervaitis KL, 2004	I A Evidence obtained from at least one properly randomized controlled trial

Table 36: Amniotomy

Routine amniotomy					
NICE 2007	[3]	April 2006	In normally progressing labour, amniotomy should not be performed routinely.	There is no evidence of differences in mode of birth, use of epidural, length of labour or neonatal outcomes between early routine amniotomy plus selective use of oxytocin, and more conservative management.(2 RCTs : Cammu H 1996, Lopez-Zeno JA 1992)	1+ Well conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Routine amniotomy and oxytocin					
NICE 2007	[3]	April 2006	Combined early amniotomy with use of oxytocin should not be used routinely	Limited evidence showed no substantial benefit for early amniotomy and routine use of oxytocin compared with conservative management of labour. (1 RCT Cohen GR 1987)	1+ Well conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Active management					
NICE 2007	[3]	April 2006	The package known as active management of labour (one-to-one continuous support; strict definition of established labour; early routine amniotomy; routine 2 hourly vaginal examinations; oxytocin if labour becomes slow) should not be offered routinely.	Active management of labour appears to reduce the duration of the first stage of labour but has no effect on the incidence of cesarean sections. There was no assessment of pain for women, nor of neonatal outcomes. Overall, there is no evidence of any other effect from 'the package' to either woman or baby(4 RCTs	1+ Well conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

				Frigoletto 1995, Rogers 1997, Sadler 2000, Tabowei 2003)	
Delay in the first stage of labour					
NICE 2007	[3]	April 2006	If delay in the established first stage of labour is suspected, amniotomy should be considered for all women with intact membranes, following explanation of the procedure and advice that it will shorten her labour by about an hour and may increase the strength and pain of her contractions. Amniotomy alone for suspected delay in the established first stage of labour is not an indication to commence continuous EFM. Where a diagnosis of delay in the established first stage of labour is made, continuous EFM should be offered. Continuous EFM should be used when oxytocin is administered for augmentation. A diagnosis of delay in the established first stage of labour needs to take into consideration all aspects of progress in labour and should include: • cervical dilatation of less than 2 cm in 4 hours for first labours • cervical dilatation of less than 2 cm in 4 hours or a slowing in the progress of labour for second or subsequent labours • descent and rotation of the foetal head • changes in the strength, duration and frequency of uterine contractions.	When there is delay in the established first stage of labour, there is high-level evidence that the duration is shortened by amniotomy. There is evidence that where labour is delayed, amniotomy followed by an oxytocin infusion with a low-dose regimen (0–3 mU per minute) shortens the duration of the first stage of labour but it does not appear to improve the chance of vaginal birth or any other outcome. Where ruptured membranes have occurred, there is no evidence that giving oxytocin in the first 8 hours after this alters anything except the duration of labour. There is no evidence of a difference in abnormal FHR tracing following amniotomy for delay in the first stage of labour. There is no direct evidence of abnormal FHR tracing with the use of oxytocin augmentation. There is no evidence of differences on rate of cesarean sections for foetal distress by oxytocin augmentation. The definition of delay is based on expert opinion (GDG)	1+ Well conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

Table 37: Amniotomy

Systematic review					
Reference	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Smyth[53] UK Lit search : march 2007	4893 women Pregnant women with singleton pregnancies regardless of parity and gestation at trial entry in spontaneous labour (normal or prolonged).	Amniotomy versus intention to preserve the membranes (no amniotomy).	<u>Maternal outcomes</u> • *Length of first stage of labour (minutes) :* 5 trials(n= 1127) (weighted mean difference (WMD) -20.43 minutes, 95% (CI) -95.93 to 55.06) Not significant (and high heterogeneity) • *Caesarean section* : 9 trials (n= 4370) , (RR) 1.26, 95% CI 0.98 to 1.62, Not significant • *Instrumental vaginal birth :* (RR 1.01, 95% CI 0.88 to 1.15). Not significant • *Maternal satisfaction :* SMD : 0.27,95% CI -0.49 to 1.04 Not significant (and high heterogeneity) • *Length of second stage of labour (minutes) :* (WMD -2.38, 95% CI -5.27 to 0.50), Not significant Subgroup of primiparous (WMD -6.59 minutes, 95% CI -12.34 to -0.84) significant in favour of amniotomy • *Dysfunctional labour (at two hours):* (RR 0.75, 95% CI 0.64 to 0.88) significant in favour of amniotomy • *Use of pain relief, epidural/narcotic, ocytiocin augmentation, post partum hemorrhage, cord prolapsed, maternal infection, maternal mortality,* Not significant <u>Foetal outcomes</u>	14 RCT's included Quasi RCTs excluded	High

			• *Apgar score < 7 at 5 minutes :* (RR 0.55, 95% CI 0.29 to 1.05), Not significant Subgroup of primiparous : (RR 0.42, 95% CI 0.20 to 0.88) significant in favour of amniotomy. • *Abnormal foetal rate, admission to neonate unit, meconium aspiration syndrome, cord blood acidosis, neonatal jaundice, seizures, fracture, cephalhematoma,* Not significant		
Wei[54] Canada Lit search : nov 2008	7792 women Pregnant women in spontaneous labour. Types of participants are divided into two separate groups: 1. unselected pregnant women in spontaneous labour; 2. pregnant women in spontaneous labour where there is delay in the first stage;	Early augmentation with amniotomy and oxytocin versus a more conservative form of management in the context of care.	Results in prevention trials : *Maternal outcomes* • *Caesarean section :* (RR) 0.88, 95% CI 0.77 to 0.99 borderline significant in favor of amniotomy + ocytocin • *Instrumental vaginal delivery, length of first stage labour, use of epidural analgesia, postpartum hemorrhage, Postpartum fever of infection, women satisfaction :* Not significant • *Duration of total labour from admission (hours):* (mean difference : MD -1.11hour, 95% CI -1.82 to -0.41) significant in favor of amniotomy + ocytocin *Foetal outcomes* • *Apgar score, acidosis, abnormal foetal rate, foetal distress, admission to special care nursery, seizure, jaundice:* Not significant After exclusion of studies in which amniotomy + ocytocin is a part of "active management", the results in sensitivity analysis were not more significant regarding cesarean sections and remain significant for the reduction of the duration of labour. Results in therapy for delay in first stage labour No significant results (but there are few studies)	10 Rct's and 2 quasi-RCT's	Moderate
Brown[52]	5390 women Healthy pregnant	Any intervention in which a predefined interventionist package	*Maternal outcomes*	7 RCT's included	High

	women with an uncomplicated singleton pregnancy in spontaneous labour at term. Studies where women had been diagnosed with delay in labour at randomisation are not included.	of care during childbirth has been compared to non-interventionist care during childbirth.To be included in the review the predefined package of childbirth care had to be clearly described and had to include some (more than two) or all of the key elements described traditionally as active management of labour: routine (amniotomy and early augmentation with oxytocin; strict criteria for the diagnosis of labour; abnormal progress in labour and foetal compromise; continual presence of a midwife/ nurse during labour; peer review of assisted deliveries and progress of labour plotted using a graph).	• <u>*Caesarean section*</u> : (RR) 0.88, 95% confidence interval (CI) 0.77 to 1.01), not significant If sensitivity analysis without Frigoletto (high number of post randomisation exclusions): (RR 0.77, 95% CI 0.63 to 0.94) Significant in favor of active management • *Prolonged labour (>12hours)* (RR 0.47, 95% CI 0.32 to 0.69). Significant in favor of active management • *Length of first stage of labour (hours) :* (MD -1.56 hours 95%CI -2.17 to -0.96) Significant in favor of active management • *Maternal satisfaction, epidural analgesia, use of other analgesia, assisted vaginal deliveries,maternal complications* Not significant <u>*Foetal outcomes*</u> • *Neonatal outcome, breastfeeding:* Not significant	Quasi RCTs excluded	

Table 38: Pain-relieving strategies

CPG ID	*Ref*	*Search date*	Recommendation	Supporting evidence	Level of evidence
Pain-relieving strategies (breathing and relaxation, massage, water, injected water papules, alternative therapies)					
NICE 2007	[3]	*April 2006*	Women who choose to use breathing and **relaxation techniques** in labour should be supported in their choice.	There is a lack of evidence that breathing and relaxation techniques reduce measured pain in labour or affect any other outcome. (Huntley AL 2004)	1☐ Meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias
			Women who choose to use **massage techniques** in labour that have been taught to birth partners should be supported in their choice.	The limited available evidence suggests that massage and reassuring touch reduces a woman's measured pain and expressed anxieties during labour. There is no high-level evidence that birth outcomes are influenced by massage. (Cheung NF 2005, Huntley AL 2004)	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
			The opportunity to **labour in water** is recommended for pain relief. For women labouring in water, the temperature of the woman and the water should be monitored hourly to ensure that the woman is comfortable and not becoming pyrexial. The temperature of the water should not be above 37.5 °C. Any bath or birthing pool should be kept clean using a protocol agreed with the microbiology department and, in the case of birthing pools, in accordance with the manufacturer's guidelines.	Labouring in water reduces pain and the use of regional analgesia. There is evidence of no significant differences regarding adverse outcomes when comparing labours with and without the use of water. There is insufficient evidence on timing of use of water in labour. There is no good-quality evidence regarding hygiene measures for water birth. (Cluett ER 2004)	1☐ Meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias
			Birth balls	There is no evidence of any effect of birth balls on birth experience or clinical outcomes.	
			The use of **injected water papules** is not recommended.	There is a lack of evidence of the benefit of injected water papules on birth experience or clinical outcomes. (Cluett ER 2004, Cheung NF 2005, Huntley AL 2004)	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
			Acupuncture, acupressure and hypnosis should not be provided, but women who wish to use these techniques should not be prevented from doing so. The playing of music of the woman's choice in the	There is some evidence from small studies regarding the use of acupuncture, acupressure and hypnosis for the management of pain in labour. There is a lack of evidence on other outcomes.	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a

CPG ID	*Ref*	*Search date*	Recommendation	Supporting evidence	Level of evidence
			labour ward should be supported	Acupuncture seems to be associated with a reduction in the use of pharmacological pain relief and augmentation, but with no reduction in pain scores. Hypnosis seems to be associated with a reduction in the use of pharmacological pain relief and augmentation. There is a lack of evidence on pain scores. There is a lack of high-level evidence that music, aromatherapy or audio-analgesia influence women's pain in labour or any other outcome. (Lee MK2004, Ramnero A 2002, Skilnand E 2002, Nesheim BI2003, Cyna AM 2004, Smith CA 2005, Phumdoung S 2003)	low risk of bias
Non-pharmacological analgesia (Transcutaneous electrical nerve stimulation TENS)					
NICE 2007	[3]	April 2006	Transcutaneous electrical nerve stimulation (TENS) should not be offered to women in established labour.	There is high-level evidence that TENS is not an effective analgesic in established labour. (Carroll D 1997) NB: The conclusion of the update od Dowswell is in favor of a little difference in pain (less likely report of severe pain).	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

Table 39: Labour in water

Study ID	Ref	Population	Intervention	Results of meta-analysis	Comments	Level of evidence
Cluett 2009	[56] Lit Search October 2008	3146 women Nulliparous or multiparous women in labour (spontaneous or induced); singleton or multiple pregnancy, irrespective of gestation or labour characteristics.	Any kind of bath/tub/pool that enabled immersion compared with no immersion during any stage of labour.	Only results about first stage are extracted in this table Maternal outcomes • *epidural/spinal/paracervical analgesia/ anaesthesia*: OR: 0.82, 95% CI 0.70 to 0.98, (six trials) significant in favor of water immersion • *assisted vaginal deliveries* OR 0.84, 95% CI 0.66 to 1.06, (seven trials) Not significant • *caesarean sections* OR 1.23, 95% CI 0.86 to 1.75, (eight trials) Not significant • *Pain description as moderate to severe, pain line scale, self report pains score, wish to use bath for next labour:* significant in favor of water immersion • *Perineal trauma or maternal infection, duration of the stage, postpartum hemorrhage, post partum depression* Not significant Foetal outcomes • *Apgar <7 at 5 minutes and other Apgar scores, neonatal unit admissions* Not significant • *neonatal infection rates* OR 2.01, 95% CI 0.50 to 8.07, (four trials, n = 1295) Not significant	Literature search October 2008 SR including 11 RCTs A lack of data for some comparisons prevented robust conclusions.	Moderate

Table 40: Regional analgesia

Regional analgesia-Epidural analgesia					
CPG ID	**Ref**	**Search date**	**Recommendation**	**Supporting evidence**	**Level of evidence**
CBO 2008	[60]	Juni 2006	Epidurale analgesie, is wat de balans tussen effectiviteit van pijnbehandeling en de veiligheid voor moeder en kind betreft, superieur aan systemische analgesie, en wordt daarom aanbevolen aan pijnbehandeling van eerste keuze.	Epidurale analgesie is tijdens de baring een effectievere vorm van pijnbehandeling dan systemische opiaattoediening (pethidine) en andere niet-epidurale methoden. Anim-Somuah 2005	A1 Systematische review van tenminste twee onafhankelijk van elkaar uitgevoerde onderzoeken van A2-niveau
NICE 2007	[3]	April 2006	Compared with non-epidural pharmacological analgesia, epidural analgesia provides more effective pain relief in labour.	There is high-level evidence that, compared with non-epidural pharmacological analgesia, epidural analgesia provides more effective pain relief in labour Anim-Somuah M 2005	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
NICE 2007	[3]	April 2006	Before choosing epidural analgesia, women should be informed about the risks and benefits, and the implications for their labour. This information about choosing epidural analgesia should include the following: It is only available in obstetric units. It provides more effective pain relief than opioids. It is associated with a longer second stage of labour and an increased chance of vaginal instrumental birth. It is not associated with long-term backache. It is not associated with a longer first stage of labour or an increased chance of caesarean birth. It will be accompanied by a more intensive level of monitoring and intravenous access. Modern epidural solutions contain opioids and, whatever the route of administration, all opioids cross the placenta and in larger doses (greater than 100 micrograms in total) may cause short-term	There is high-level evidence that, compared with non-epidural pharmacological analgesia, epidural analgesia: • is associated with a longer second stage of labour and an increase in instrumental birth, although this effect could be due to the package of care currently practised • has no evidence of a longer first stage of labour • has no evidence of an increase in caesarean section • has a positive effect on neonatal acid–base status.	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

			respiratory depression in the baby and make the baby drowsy.		
CBO 2008	[60]	Juni 2006	De vrouw dient geïnformeerd te worden over het feit dat epidurale analgesie gepaard gaat met een grotere kans op de noodzaak van oxytocinegebruik, een langere uitdrijvingsduur, een grotere kans op een vaginale kunstverlossing, een verhoogde kans op hypotensie, motorisch blok en urineretentie. Epidurale analgesie gaat gepaard met een verhoogde kans op maternale temperatuurstijging: de vrouw dient geïnformeerd te worden over het feit dat, afhankelijk van klinische bevindingen, bij het vaststellen van een temperatuur ≥ 38°C antibiotica behandeling nodig kan zijn, de kinderarts zonodig wordt geraadpleegd voor het neonataal sepsisprotocol en overplaatsing van de pasgeborene naar de afdeling neonatologie noodzakelijk kan zijn. Het wordt aanbevolen op lokaal niveau afspraken te maken over het te volgen beleid bij temperatuurstijging in aansluiting aan epidurale analgesie.	Epidurale analgesie tijdens de baring verhoogt de incidentie van sectio caesarea niet wanneer vergeleken wordt met systemische opiaattoediening (pethidine) en andere niet-epidurale methoden. Epidurale analgesie tijdens de baring is geassocieerd met een verlenging van de uitdrijvingstijd van gemiddeld 16 minuten, een toegenomen kans op oxytocine gebruik en een hogere incidentie van vaginale kunstverlossingen. Epidurale analgesie tijdens de baring is niet geassocieerd met rugklachten op langere termijn. Vrouwen met epidurale analgesie durante partu hebben een hoger risico op het optreden van hypotensie. Vrouwen met epidurale analgesie durante partu hebben een hoger risico op het optreden van motorische blokkade. Vrouwen met epidurale analgesie durante partu hebben een hoger risico op het optreden van temperatuursverhoging ≥ 38° C. Vergeleken met niet-epidurale pijnbehandeling gaat epidurale analgesie durante partu gepaard met een hogere Apgarscore 1 minuut post-partum, een gelijke Apgarscore 5 minuten post-partum en een beter neonataal zuur-base evenwicht. Epidurale analgesie tijdens de baring heeft geen invloed op het CTG-patroon.	A1 Systematische review van tenminste twee onafhankelijk van elkaar uitgevoerde onderzoeken van A2-niveau

Table 41: Intravenous and intramuscular use of opioid for labour

Intravenous and intramuscular use of opioid for labour					
NICE 2007	[3]	April 2006	Pethidine, diamorphine or other opioids should be available in all birth settings. Women should be informed that these will provide limited pain relief during labour and may have significant side effects for both the woman (drowsiness, nausea and vomiting) and her baby (short-term respiratory depression and drowsiness which may last several days). Women should be informed that pethidine, diamorphine or other opioids may interfere with breastfeeding. If an intravenous or intramuscular opioid is used, it should be administered with an antiemetic. Women should not enter water (a birthing pool or bath) within 2 hours of opioid administration or if they feel drowsy.	Parenteral opioids have a limited effect on pain in labour irrespective of the agent, route or method of administration. Using of Tramadol, meptazinol and pentazocine have no advantage over pethidine. There is limited evidence that diamorphine (IM) provides more effective analgesia than the other opioids studied, with the fewest side effects for the woman as well as the effect of opioids on infant behaviour in the longer term, particularly feeding. There is a lack of evidence on the optimum dose or route of administration. Bricker L 2002 Tsui MH 2004 Isenor L 1993 Sosa, C 2004 Soontrapa , S 2007	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
CBO	[60]	Juni 2006	Zowel de zorgverlener als de barende vrouw dient zich er van bewust te zijn dat de systemische toediening van pethidine slechts een beperkte effectiviteit heeft bij de behandeling van pijn tijdens de bevalling. Indien men kiest voor intermitterende toediening van opiaten als methode van pijnbehandeling tijdens de baring, is er op grond van de beschikbare literatuur geen reden om aan een ander middel dan pethidine de voorkeur te geven	Pethidine heeft een beter pijstillend effect op baringspijn dan placebo. Het pijnstillend effect van Pethidine op baringspijn is beperkt: ongeveer 25% van de patiënten ervaart een acceptabele vermindering van de pijnintensiteit. Bij patiënten met zeer ernstige pijn is de effectiviteit van pethidine zeer beperkt. Pethidine in hoge dosering geeft geen beter resultaat dan in lage dosering. DeKornfeld et al. 1964, Tsui et al. 2004	A 2 Gerandomiseerd dubbelblind vergelijkend klinisch onderzoek van goede kwaliteit en van voldoende omvang

Table 42: Impact of epidural fentanyl analgesia on breastfeeding

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	Evidence from small studies, of variable quality, suggests a weak association between the dose of fentanyl and the duration and success of breastfeeding.	Based on 1 RCT(Beilin Y 2005, n = 177) Follow up questionnaire at 24 hours (no difference between fentanyl or not) and questionnaire at 6 weeks postpartum: 2 % (n=1) of women receiving no fentanyl not yet breastfeeding versus 5% (low dose fentanyl) and 17% (high doses fentanyl). Babies born to women in the high-dose fentanyl group with umbilical cord fentanyl concentration > 200 pg/ml were less likely to be breastfeeding at 6 weeks postpartum than babies with fentanyl concentration < 200 pg/ml (P = 0.02).	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

Table 43: Management of epidural analgesia

Timing of epidural analgesia					
CPG ID	**Ref**	**Search date**	**Recommendation**	**Supporting evidence**	**Level of evidence**
CBO 2008	[60]	Juni 2006	**Timing of epidural analgesia :** De werkgroep, adviseert om het tijdstip van het starten van epidurale analgesie durante partu niet te laten afhangen van de mate van ontsluiting in centimeters.	Het is aangetoond dat het vroeg starten van epidurale (en gecombineerd spinaal-epidurale) analgesie durante partu, op verzoek van de barende, niet leidt tot een hogere incidentie van sectio caesarea en vaginale kunstverlossing. A1 Marucci et al. (2007) Het is aangetoond dat het vroeg starten van epidurale (en gecombineerd spinaal-epidurale) analgesie durante partu bij primiparae geassocieerd is met een hogere arteriële navelstreng pH en veneuze navelstreng pH in het navelstrengbloed en een lagere neonatale behoefte aan naloxone. A1 Marucci et al. (2007) Het is aangetoond dat bij primiparae vroege epidurale analgesie effectiever is dan systemische opiaattoediening, late epidurale analgesie of een combinatie van beide. Het is onnodig te wachten tot ≥ 4 - 5cm ontsluiting alvorens te starten met epidurale toediening. A1 Marucci et al. (2007) De conclusies zijn van toepassing op primiparae. Van multiparae zijn geen gegevens bekend.	A 1 Systematische review van tenminste twee onafhankelijk van elkaar uitgevoerde onderzoeken van A2-niveau
NICE 2007	[3]	April 2006	**Timing of epidural analgesia:** Women in labour who desire	There is a high level of evidence that intrathecal or epidural analgesia administered during the early first stage of labour does not affect the	1+ Well-conducted meta-analyses, systematic

			regional analgesia should not be denied it, including women in severe pain in the latent first stage of labour	progress of labour, mode of birth or immediate neonatal condition compared with administration later in labour. Chen L-K 2000 Wong CA 2005 Ohel G 2006		reviews of RCTs or RCTs with a low risk of bias
NICE 2007	[3]	April 2006	Once established, regional analgesia should be continued until after completion of the third stage of labour and any necessary perineal repair.	There is evidence that discontinuing epidural analgesia late in labour does not improve the rate of spontaneous birth, or any other clinical outcome, and can cause distress to the woman. Torvaldsen S 2005		1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Preloading with intravenous (IV) infusions for epidural analgesia						
NICE 2007	[3]	April 2006	Intravenous access should always be secured prior to commencing regional analgesia. Preloading and maintenance fluid infusion need not be administered routinely before establishing low-dose epidural analgesia and combined spinal–epidural analgesia	Preloading infusion for high-dose epidural anaesthesia may reduce the incidence of maternal hypotension and foetal heart rate abnormality. There was no evidence of differences in other outcomes. There was no evidence that IV fluid preloads influenced maternal hypotension and foetal heart rate abnormalities, in women receiving combined spinal epidural or low-dose epidural analgesia. Hofmeyr GJ 200		1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Clinical observations for women with epidural in labour						
CBO 2008	[60]	Juni 2006	De minimale standaard monitoring van de barende vrouw bij epidurale/ spinale analgesie bestaat uit: • intraveneuze toegangsweg • 3 leads ECG • automatische niet invasieve bloeddrukmeter (NIBP) • pulsoxymeter • Bij het inbrengen van de epiduraal/spinaal en bij het geven van top-up`s dienen het ECG en de O2 saturatie continu en de NIBP minimaal elke 5 minuten gemeten te worden gedurende tenminste de eerste 30 minuten. Daarna kan volstaan worden met elke 15 minuten • pijnscore • temperatuur		Volledige bewaking van moeder en kind tijdens de epidurale/spinale analgesie vindt plaats volgens de geldende normen ongeacht de plaats van toediening.	GCP

			• blaasinhoud • ademfrequentie • sedatiescore • de hoogte van het blok • Mogelijkheden en middelen voor O2 toediening, beademing, reanimatie en uitzuigen dienen aanwezig te zijn en klaar te liggen. Eveneens efedrine of fenylefrine en intralipid 20%		
NICE 2007	[3]	April 2006	The following additional observations should be undertaken for women with regional analgesia: • During establishment of regional analgesia or after further boluses (10 ml or more of low dose solutions) blood pressure should be measured every 5 minutes for 15 minutes. • If the woman is not pain free 30 minutes after each administration of local anaesthetic/ opioid solution, the anaesthetist should be recalled. • Hourly assessment of the level of the sensory block should be undertaken.	The safety issues involved mean that there is no evidence on the effects of carrying out maternal observations upon clinical outcomes. Evidence was found on the side effects of epidural analgesia. These were: • hypotension (mainly derived from studies of high-dose local anaesthetic techniques) • urinary retention • pyrexia • pruritus. Mayberry LJ 2002 Anim-Somuah M 2005	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Positions and mobilisation for women with regional analgesia					
NICE 2007	[3]	April 2006	• Women with regional analgesia should be encouraged to move and adopt whatever upright positions they find comfortable throughout labour. There is no effect of mobilization following epidural analgesia on any maternal or neonatal outcomes	There is high-level evidence that epidural analgesia using low-dose local anaesthetic/opioid solutions allow some mobilisation compared with high-dose epidurals. Roberts CL 2004	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Use of Oxytocin for women with regional analgesia					
NICE	[3]	April	Oxytocin should not be used as a matter of routine in	There is little evidence on oxytocin infusion for	1+ Well-conducted meta-

2007		2006	the second stage of labour for women with regional analgesia.	management of the second stage, compared with expectant management. Limited evidence showed a high-dose oxytocin infusion shortened the duration of the second stage and reduced the rate of non-rotational forceps births. Saunders NJ 1989	analyses, systematic reviews of RCTs or RCTs with a low risk of bias
The use of continuous EFM with regional analgesia					
NICE 2007	[3]	April 2006	Continuous EFM is recommended for at least 30 minutes during establishment of regional analgesia and after administration of each further bolus of 10 ml or more.	There is an increase in the incidence of foetal bradycardia following the administration of intrathecal opioid, compared with no use of intrathecal opioid. Hill JB 2003 Sharma SK 2002 Sharma SK1997 Mardirosoff C 2002	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
CBO 2008	[3]	Juni 2006	De minimale monitoring van het kind bestaat uit: • • CTG • • mogelijkheid voor MBO (micro bloed onderzoek)	Omdat een optimale conditie van het ongeboren kind een voorwaarde is voor het toepassen van epidurale analgesie, dient reeds vóór het aanleggen van de epidurale analgesie gestart te zijn met continue bewaking van het ongeboren kind door middel van continue CTG-registratie. Gezien de kans op maternale complicaties met consequenties voor het kind (hypotensie), dient de CTG-registratie tijdens het aanleggen van de epidurale analgesie en daarna zoveel mogelijk gecontinueerd te worden. De mogelijkheid voor het afnemen van micro bloed onderzoek (MBO) dient aanwezig te zijn.	GCP

Table 44: Pushing delay

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence Grade app
NICE 2007	[3]	April 2006	**For women without epidural** Women should be informed that in the second stage they should be guided by their own urge to push. If pushing is ineffective or if requested by the woman, strategies to assist birth can be used, such as support, change of position, emptying of the bladder and encouragement. **For women with epidural** Upon confirmation of full cervical dilatation in women with regional analgesia, unless the woman has an urge to push or the baby's head is visible, pushing should be delayed for at least 1 hour and longer if the woman wishes, after which pushing during contractions should be actively encouraged.	There is no high-level evidence that directed pushing affects outcomes. Bloom SL2006 Schaffer JI 2005 There is high-level evidence that delaying directed pushing (1 to 3 hours, or earlier if the woman has an involuntary urge to push), compared with directed pushing at diagnosis of second stage, reduces the risk of a mid-pelvic or rotational instrumental birth. Roberts CL 2004 Simpson KR 2005	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias 1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Sprague A.E 2006	[62]	2005	**Women without epidural analgesia** • All women without epidural can commence pushing when the urge is present. (Level III) • In nulliparous women without epidural anaesthesia, waiting for up to two hours prior to the onset of pushing, and up to one hour in multiparous women without epidural anaesthesia is appropriate in the presence of continued descent of the head and reassuring foetal and maternal status. (Level III)• **Women with epidural analgesia** • In nulliparous women with epidural anaesthesia, waiting for up to 2 hours prior to the onset of pushing is appropriate if there is continued descent of the head and reassuring foetal and maternal status (IA). • In nulliparous women with epidural anaesthesia, pushing can be commenced at any time when the head is visible OR the	Roberts J 2003 (narrative review) Simpson KR 2005	III Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees. IA Evidence from at least one RCT

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence Grade app
			station is +2 or below AND the position is occipita-anterior (OA) or left (L)OA or right (R)OA. • In multiparous women with epidural anaesthesia, pushing can be commenced when the urge to push is present OR the head is visible OR the station is +2 or below and the position is OA or LOA or ROA. (Level III)		

Table 45: Pushing delay

Systematic review					
Reference	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Brancato [63]	2 827 healthy women (full-term singleton pregnancies) with epidural analgesia	Passive descent (delay 1 to 3 hours or until urge to push) *Versus* immediate pushing	<u>Maternal outcomes</u> • *Spontaneous vaginal birth* (RR: 1.08; 95% CI: 1.01-1.15; p = 0.025) significant increase when pushing was delayed • *Instrument-assisted deliveries* (RR: 0.77; 95% CI: 0.77-0.85; p < or = 0.0001) significant decrease when pushing was delayed • *Pushing time* (mean difference: -0.19 hours; 95% CI: -0.27 to -0.12; p < or = 0.0001) significant decrease when pushing was delayed • No differences in rates of *cesarean births* (RR: 0.80; 95% CI: 0.57-1.12; p = 0.19), *lacerations* (RR: 0.88; 95% CI: 0.72-1.07; p = 0.20), or *episiotomies* (RR: 0.97; 95% CI: 0.88-1.06; p = 0.45) <u>Foetal outcomes</u> Lack of results	Meta-analysis of seven RCT : Vause 1998; Hanson 2002; Plunkett 2003; Mayberry 1999 ; Fitzpatrick 2002; Fraser 2000; Simpson & James, 2005 Women included in intervention group begin mostly to push within 1 hour after full dilatation	High

Table 46: Optimal duration of active second stage

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence Grade app
Optimal duration of active second stage					
NICE 2007	[3]	April 2006	Nulliparous women: • Birth would be expected to take place within 3 hours of the start of the active second stage in most women. • A diagnosis of delay in the active second stage should be made when it has lasted 2 hours and women should be referred to a healthcare professional trained to undertake an operative vaginal birth if birth is not imminent. Parous women: • Birth would be expected to take place within 2 hours of the start of the active second stage in most women. • A diagnosis of delay in the active second stage should be made when it has lasted 1 hour.	Limited quality of evidence makes it difficult to assess the significance of a prolonged second stage of labour on perinatal outcomes for both woman and baby. The woman's position and whether pushing was directed or not are unclear from the studies. GDG interpretation Pooling findings from the descriptive studies summarised above, the range of upper limits for the normal duration of the active second stage of labour are as follows: • women giving birth to their first baby – about 0.5–2.5 hours for women without epidural, and 1–3 hours for women with epidural • women giving birth to second or subsequent babies – up to about 1 hour for women without epidural, and 2 hours for women with epidural.	2+ Well-conducted case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal
Sprague A.E 2006	[62]	2005	Nulliparous women with epidural anaesthesia: four hours. Nulliparous women without epidural anaesthesia: three hours. Multiparous women with epidural anaesthesia: three hours. Multiparous women without epidural anaesthesia: two hours.	Hansen SL 2002 Cheng Y 2004 Paterson CM 1992 Saunders NS 1992 SOGC 1998 Menucoglou SM 1995	II B Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group.

Table 47: Optimal duration of active second stage

Other studies					
Reference	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Altman Lit Search : 2005 [64]	Women at the second stage (low risk, nonanomalous deliveries)	Observation	In case of prolonged second stage > 3 hs : Increase rate of operative delivery (RR: 4.4; 95% CI: 3.8-5.0) Increase rate of cesarean delivery (RR: 5.8; 95% CI: 4.6-7.4) Increase postpartum hemorrhage, infection and obstetric lacerations but evidence is inconsistent No associations between prolonged second stage and adverse neonatal outcomes were reported.	8 observational studies included : Moon 1990, USA , Janni 2002, Germany , O'Connell 2003, UK , Myles 2003, USA , Cheng 2004, USA Saunders 1992, UK, Kuo 1996, Taiwan, Menticoglu 1995, Canada SR : risk estimates and odds ratio were reported Mix of study design (prospective and retrospective) Definition of start of second stage varies along study. Most studies were flawed. Lack of control of potential confounders	Low

Table 48: Observation during the second stage

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
Observation during the second stage					
NICE 2007	[3]	April 2006	All observations should be documented on the partogram. Observations by a midwife of a woman in the second stage of labour include: • hourly blood pressure and pulse • continued 4 hourly temperature • vaginal examination offered hourly in the active second stage or in response to the woman's wishes (after abdominal palpation and assessment of vaginal loss) • half-hourly documentation of the frequency of contractions • frequency of emptying the bladder • ongoing consideration of the woman's emotional and psychological needs. **In addition:** • Assessment of progress should include maternal behaviour, effectiveness of pushing and foetal wellbeing, taking into account foetal position and station at the onset of the second stage. These factors will assist in deciding the timing of further vaginal examination and the need for obstetric review. • • Intermittent auscultation of the foetal heart should occur after a contraction for at least 1 minute, at least every 5 minutes. The maternal pulse should be palpated if there is suspected foetal bradycardia or any other FHR anomaly to differentiate the two heart rates. • • Ongoing consideration should be given to the woman's position, hydration, coping strategies and pain relief throughout the second stage.	No relevant study found	GDG

Table 49: Optimal duration of active second stage

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
Optimal duration of active second stage					
NICE 2007	[3]	April 2006	Women should be discouraged from lying supine or semi-supine in the second stage of labour and should be encouraged to adopt any other position that they find most comfortable.	Upright or lateral position, compared with supine or lithotomy positions, was associated with • a reduced duration of second stage of labour (mean 4.28 minutes, 95% (CI) 2.93 to 5.63 minutes) what was largely due to a considerable reduction caused by women allocated to the use of the birth cushion • a small reduction in assisted deliveries (RR 0.80,95% CI 0.69 to 0.92), • a reduction in episiotomies (RR 0.83, 95% CI 0.75 to 0.92); • an increase in second degree perineal tears (RR 1.23, 95% CI 1.09 to 1.39) , • an increase in estimated blood loss greater than 500 ml (RR 1.63, 95% CI 1.29 to 2.05), • reduced reporting of severe pain during second stage of labour (1 trial: RR 0.73, 95% CI 0.60 to 0.90), • fewer abnormal foetal heart rate patterns (1 trial: RR 0.31, 95% CI 0.08 to 0.98) Gupta JK2005 Stremler R 2005 Ragnar I 2006	I☐ Meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias
Sprague A.E 2006	[62]	2005	\\'omen in labour should choose a position that is comfortable for them and enhances pushing efforts It is advisable to encourage frequent changes of position, especially if a foetal malposition or slow descent of the presenting part is present. Labouring women should avoid supine positioning	Mayberry IJ 2000 Fraser WD 2002	III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Table 50: Water birth

CPG ID	Ref	Search date	Recommendation	Supporting evidence	
Water birth					
NICE 2007	[3]	April 2006	Women should be informed that there is insufficient high-quality evidence to either support or discourage giving birth in water.	There is insufficient evidence on the use of water in the second stage of labour, particularly its effect on neonatal outcomes. Cluett ER, 2004 Woodward J	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

Table 51: Water birth

Systematic review					
Reference	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Cluett [56] Lit Search : October 2008	Nulliparous or multi parous women in labour, singleton or multiple pregnancy, irrespective of gestation or labour characteristics	Any kind of bath/tub/pool that enabled immersion compared with no immersion during any stage of labour Birth in water: (in 2 trials, 180 women)	*Maternal outcomes* • no significant differences in the mode of delivery; assisted vaginal birth (OR 0.71, 95%CI 0.18 to 2.86); Caesarean section rate (OR 0.31, 95%CI 0.06 to 1.57) • no significant differences in incidence of trauma to the perineum; episiotomy (12/100 versus 10/79,OR 0.70, 95%CI 0.27 to 1.80) and second-degree tears (21/100 versus 14/79, OR 1.26, 95%CI 0.59 to 2.71), *Foetal outcomes* • no significant difference in the incidence of raised neonatal temperature at birth greater than 37.5° • no significant difference for the others babies outcome but only one study with 100 deliveries was available regarding foetal outcomes	Too few data are available for robust conclusions	Moderate

Table 52: Pushing in the second stage

Pushing in the second stage			
NICE 2007	[3]	April 2006	There is no high-level evidence that directed pushing affects outcomes.

Table 53: Fundal pressure

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
HAS 2007	[67]	December 2005	There are no medically validated indications for the application of fundal pressure. The traumatic experience of patients and their families and the occurrence of rare but serious complications are reasons for discontinuing its use.	Zetterström J 1999 de Leeuw J 2001 Cox 1999	Low

Table 54: Fundal pressure

Systematic review					
Reference	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Verheyen [66] Lit search : November 2008	Women in second stage of labour with singleton cephalic presentation (all gestations and parity) One RCT involving 500 women	Fundal pressure by means of an inflatable belt *versus* no fundal pressure	<u>Maternal outcomes</u> - operative deliveries (RR 0.94, 95% CI 0.80 to 1.11): not significant - Intact perineum (RR 1.73, 95% CI 1.07 to 2.77) greater in case of fundal pressure - Anal sphincter damage (RR 15.69, 95% CI 2.10 to 117.02) significantly greater in case of fundal pressure - Episiotomy, post partum hemorrhage: not significant <u>Foetal outcomes</u> - 5-minute Apgar scores <7 (RR 4.62, 95% CI 0.22 to 95.68) : not significant - low arterial cord pH (RR 0.47, 95% CI 0.09 to 2.55): not significant - admission to the neonatal unit (RR 1.48, 95% CI 0.49 to 4.45): not significant	No studies on manual fundal pressure were selected Cox 1999 also included in HAS Biais: No blinding, Exclusions non justifiées, inadéquation de l'analyse statistique	Low

Table 55: Routine versus restricted use of episiotomy

Routine versus restricted use of episiotomy					
CPG ID	**Ref**	**Search date**	**Recommendation**	**Supporting evidence**	**Level of evidence**
NICE 2007	[3]	April 2006	A routine episiotomy should not be carried out during spontaneous vaginal birth. An episiotomy should be performed if there is a clinical need such as instrumental birth or suspected foetal compromise. Tested effective analgesia should be provided prior to carrying out an episiotomy, except in an emergency due to acute foetal compromise.	There is considerable high-level evidence that the routine use of episiotomy (trial mean 71.6%; range 44.9% to 93.7%) is not of benefit to women either in the short or longer term, compared with restricted use (trial mean 29.1%; range 7.6% to 53.0%). Carroli G 1998 Hartmann K 2005 Dannecker C 2004	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Angle of episiotomy					
NICE 2007	[3]	April 2006	Where an episiotomy is performed, the recommended technique is a mediolateral episiotomy originating at the vaginal fourchette and usually directed to the right side. The angle to the vertical axis should be between 45 and 60 degrees at the time of the episiotomy	Andrews V 2006	Observational studies

Table 56: Routine versus restricted use of episiotomy

Systematic review					
Reference	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Carroli [69] Lit review : march 2008	5541 women with vaginal birth	Routine episiotomy group: (75.15% of women with episotomy) *versus* restrictive episiotomy group 28.40% of women with episiotomy)	<u>Maternal outcomes</u> • Perineal trauma (RR 0.67, 95%CI):0.49 to 0.91), significantly less if restrictive • Suturing (RR 0.71, 95% CI 0.61 to 0.81) significantly less if restrictive • Healing complications (RR 0.69, 95% CI 0.56 to 0.85) significantly less if restrictive • Anterior perineal trauma (RR 1.84, 95% CI 1.61 to 2.10) significantly less if routine • Severe vaginal/perineal trauma (RR 0.92, 95% CI 0.72 to 1.18) not significant • Dyspareunia (RR 1.02, 95% CI 0.90 to 1.16), not significant • Urinary incontinence (RR 0.98, 95% CI 0.79 to 1.20) not significant • Several pain measures.: not significant <u>Foetal outcomes:</u> Not described Results for restrictive versus routine mediolateral versus midline episiotomy were similar to the overall comparison.	Eight RCTs included : Argentine 1993; Dannecker 2004; Eltorkey 1994; Harrison 1984; House 1986; Klein 1992; Sleep 1984; Rodriguez 2008 Short term outcomes	High

Table 57: Intrapartum intervention to reduce perineal trauma

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
Intrapartum intervention to reduce perineal trauma: perineal massage					
NICE 2007	[3]	April 2006	Perineal massage should not be performed by healthcare professionals in the second stage of labour.	There is high-level evidence that intrapartum perineal massage in the second stage of labour does not improve perineal outcomes. Stamp 2001	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Intrapartum intervention to reduce perineal trauma: hand position					
NICE 2007	[3]	April 2006	Either the 'hands on' (guarding the perineum and flexing the baby's head) or the 'hands poised' (with hands off the perineum and baby's head but in readiness) technique can be used to facilitate spontaneous birth.	There is limited high-level evidence that women allocated to a 'hands on' perineal management group reported less mild pain at 10 days, compared with those allocated to a 'hands poised' group. The rates of reported perineal trauma (including episiotomy) were similar between the two groups but episiotomy was higher in the 'hands on' group. McCandlish 1998	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Intrapartum intervention to reduce perineal trauma: application of warm pads					
NICE 2007	[3]	April 2006	Not recommended	There is high-level evidence that application of warm compresses in the second stage of labour does not improve perineal outcomes. Albers 2005 RCT	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
Intrapartum intervention to reduce pain : local anaesthetic spray					
NICE 2007	[3]	April 2006	Lidocaine spray should not be used to reduce pain in the second stage of labour	There is a small amount of high-level evidence that the use of lidocaine spray during the second stage of labour is not associated with a reduction in perineal pain, but may be associated with a reduction in perineal trauma during birth. Sanders 2006	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

Table 58: Physiological versus active management

CPG ID	Ref	Search date	Recommendation	Supporting evidence	EL
Physiological versus active management					
NICE 2007	[3]	April 2006	Active management of the third stage is recommended, which includes the use of oxytocin (10 international units [IU] by intramuscular injection), followed by early clamping and cutting of the cord and controlled cord traction. Women should be informed that active management of the third stage reduces the risk of maternal haemorrhage and shortens the third stage. Women at low risk of postpartum haemorrhage who request physiological management of the third stage should be supported in their choice.	Active management of the third stage of labour reduces rates of post partum hemorrhage (blood loss over 1000 ml), mean blood loss, the length of the third stage, postnatal maternal anaemia and the need for blood transfusions, and decreases maternal dissatisfaction. There are associated maternal side effects (nausea, vomiting and headache). There is no evidence of differences in neonatal outcomes. Prendiville 2005 (NB: This review is currently withdrawn because it is being updated by the Cochrane Library.)	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias
HAS 2004	[70]	2004	Active management of the third stage of labour, including at the least: - as the placenta is separating from the uterus, application of controlled traction on the umbilical cord and counter-traction on the uterus, just above the symphysis pubis, - massaging an atonic uterus after the placenta has been expelled (grade A). Slow prophylactic injection (iv or im) of oxytocin (5-10 IU) (grade B) when the anterior shoulder is delivered (active management of the placental stage) or after the placenta has been delivered .	Prendiville 2000 Elbourne 2001	GRADE A: established scientific evidence GRADE B: Presumption of scientific evidence
WHO 2007	[71]	2006	Active management of third stage of labour" should include administration of an uterotonic soon after birth of the baby, delayed cord clamping and delivery of the placenta by controlled cord traction, followed by uterine massage		GDG

Table 59: Active versus expectant management

Active versus expectant management: meta-analysis					
Ref	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Begley 2010	6486 women expected a vaginal birth (> 24 sem) in hospital settings in high – income countries	(a)Active management: package of prophylactic uterotonic + cord clamping and cutting + controlled cord traction (b)Expected management (c)Mixed management	*All women* Compared with expectant management, <u>Maternal outcomes</u> statistically significant average reduction in favor of active management • severe primary PPH (> 1000 ml up to 24 hours) RR 0.34 (95% CI) 0.14 to 0.87) • maternal haemoglobin less than 9 g/dl at 24 to 48 hours RR 0.50 (95% CI 0.30 to 0.83) • postnatal diastolic blood pressure > 90 mmHg up todischarge from labour ward (average RR 4.10, 95% CI 1.63 to10.30,(use of syntometrine = oxytocin + ergometrin) • postnatal oral or rectal analgesia to discharge from labour ward (RR 2.05, 95% CI 1.04 to 4.08) • postnatal opiate analgesia to discharge from labour ward (RR 8.22, 95% CI 1.03 to 65.52) • return to hospital as an in or outpatient because of bleeding (average RR 2.21, 95% CI 1.29 to 3.79) • afterpains (RR 2.53, 95% CI 1.34 to 4.78) <u>Fetal outcomes</u> no statistically significant difference identified in: • Apgar scores less than seven at five minutes (RR 1.00, 95%CI 0.38 to 2.66) *Subgroup analysis in women at low risk of bleeding:* Similar findings except there was no significant difference identified for severe hemorrhage and maternal haemoglobin less than 9 g/dl at 24 to 48 hours Significant reduction in primary maternal blood loss > 500 ml, use of analgesia, afterpains and return to hospital as in or out patient, because of bleeding.	5 RCTs Considerable variation between protocols for both active and expectant management In case of increased risk of PPH (high parity, all age groups, previous PPH, epidural, long labor, operative delivery) 50% of the expectant group received an oxytocic.	Moderate 2 high quality RCTs (Begley 1990, Rogers 1998), and 3 with potential sources of bias (Khan 1997, Prendiville 1988, Thilaganathan 1993) No blinding Clinical heterogeneity (random effects model)

Table 60: Duration of the third stage

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence Grade app
NICE 2007	[3]	April 2006	**For women with active management:** The third stage of labour is diagnosed as prolonged if not completed within 30 minutes of the birth of the baby	There is a moderate level of evidence that an actively managed third stage of 30 minutes or longer is associated with increased incidence of PPH.	2+ Well-conducted case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal
			For women with physiological management: The third stage of labour is diagnosed as prolonged if not completed within 60 minutes of the birth of the baby	A physiological third stage has duration of less than 60 minutes in 95% of women.	3 Non-analytical studies (for example case reports, case series)

Table 61: Timing of cord clamping

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	Studies should be carried out to investigate the timing of cord clamping and balance of risk/benefit to both mother and baby.	There is limited medium-level evidence from trials in high income countries that showed delayed cord clamping reduced the incidence of anaemia and increases in hyperbilirubinaemia in the baby. Other longer term outcomes are reported variably. There is high-level evidence from low to middle income countries that delayed cord clamping reduces the incidence of anaemia in the baby. Once again, other outcomes are reported variably. NICE GDG comment: Most of the evidence is from low income countries where anaemia in babies is more prevalent, and studies from high income countries are, with one exception, not randomised trials. The highly variable descriptions of the timing of cord clamping further confuse the issue. The impact on babies in high income countries where anaemia is less prevalent is not known.	1- meta-analyses, systematic reviews of RCTs or RCTs with a high risk of bias
WHO	[71]	2006	Because of the benefits to the baby, the	Studies on timing of cord clamping have assessed mostly infant	(Weak

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
2007			cord should not be clamped earlier than is necessary for applying cord traction in the active management of the third stage of labour. (Weak recommendation, low quality evidence) > For the sake of clarity, it is estimated that this will normally take around 3 minutes.	outcomes. The beneficial or harmful effects of early or delayed cord clamping on the mother are not known. The early recommendation to clamp the cord as soon as the uterotonic was administered was possibly due to fear that over-transfusion to the baby may occur when the uterus contracts following administration of the uterotonic. Current evidence shows that delayed cord clamping is beneficial for the baby. Therefore, delayed cord clamping must be recommended as a component of active management. Though there is controversy regarding the time at which the cord should be clamped, the panel agreed that by the time the baby is dried and wrapped and passed to the mother to breastfeed, the placenta usually separates and it is time to apply cord traction. The cord may therefore be clamped at that time.	recommendation, low quality evidence)

Table 62: Timing of cord clamping

Reference	Population	Intervention	Results	Comments	EL
Hutton [74]	1912 infants born at 37 weeks (or more) Lit review : March 2008	Late cord clamping (delayed for at least 2 mins) versus early cord clamping (immediately after birth)	<u>Maternal outcomes</u> No results available in this SR <u>Foetal outcomes</u> • *Hematocrit at age 2 months* (1 trial 47 infants)(weighted mean difference [WMD], 3.70%; 95% confidence interval [CI], 2.00%-5.40%) significantly improved in favor of delayed • *Hemoglobin at age 2 months* (3 trials 209 infants) not significant • *Ferritin concentration at age 2 months* (2 trails 144 infants) (WMD, 17.89; 95% CI, 16.58-19.21) significantly improved in favor of delayed • *Anemia at age 2 months (*2 trials 119 infants RR, 0.53; 95% CI,0.40-0.70) significantly reduced in case of delayed • *Polycythemia at 7 days* (2 studies 281 infants): RR, 3.91; 95% CI, 1.00-15.36). significantly increased in case of delayed	Meta-analysis of 8 RCT and 7 NRCT: Eight trials were conducted in countries with low perinatal mortality rates (>10 per 1000 total births), including Canada, Germany, United Kingdom, Sweden, and the United States The risk reduction of anemia was calculated on two trials performed in India and Guatemala.	B

			• *Neonatal jaundice within the first 24 to 48 hours of life* (RR, 1.35;95%CI, 1.00 to 1.81) not significant.		
Mac Donald [75]	Women with normal birth 2989 infants born at 37 weeks (or more) Lit review : December 2007	Early cord clamping, (within 60 seconds of the birth) Delayed)cord clamping, (at more than one minute after birth or when cord pulsation has ceased).	Maternal outcomes *Postpartum haemorrhage (≥500 ml) ,severe postpartum haemorrhage , mean blood loss , maternal haemoglobin values at 24 to 72 hours after birth, blood transfusion, manual removal of placenta, length of third stage of labour, therapeutic uterotonics, maternal ferritin levels at birth:* No statistical significance differences between the two groups Neonatal outcomes • *Phototherapy required for jaundice* (RR 0.59, 95% CI 0.38 to 0.92). Significantly fewer infants in the early cord clamping group • *Newborn hemoglobin* (WMD -2.17; 95% CI -4.06 to -0.28) Significantly lower in case of early clamping • *Ferritin levels at 3 months* (one trial 107 infants) WMD -17.90 ug/L (-19.21, -16.59) *and at 6 months* (one trial 315 infants) WMD 11.80 ug/L; 95% CI 19.53 4.07): significantly higher in the late clamping group. • *APGAR score <7 at 5 min, admission to intensive care, admission for respiratory distress, clinical jaundice, polycythemia, Infant hemoglobin (at 2 to 4 months,at 6 month) infant hemoglobin at 6 months, infant haematocrit <45% (at 6 hours, at 24-48 hours, at 4 months), exclusive breastfeeding*: not significant	Meta-analysis of 11 RCT: RCT only were included (including also trials in countries where anemia is a greater problem than in our country)	B

Table 63: Initial assessment of the mother following birth

CPG ID	Ref	Search date	Recommendations	Supporting evidence	Level of evidence
Initial assessment of the mother following birth					
NICE 2007	[3]	April 2006	Observations taken following the birth of the baby should include: • maternal observation – temperature, pulse, blood pressure, uterine contraction, lochia • examination of placenta and membranes – assessment of their condition, structure, cord vessels and completeness • early assessment of maternal emotional/psychological condition in response to labour and birth • Successful voiding of the woman's bladder.	There is no high-level study investigating appropriate maternal observations immediately after birth. NCCPC Guideline postnatal care July 2006	GCP

Table 64: perineal or genital trauma

CPG ID	Ref	Search date	Recommendations	Supporting evidence	Level of evidence
Definition of perineal or genital trauma					
NICE 2007	[3]	April 2006	Perineal or genital trauma caused by either tearing or episiotomy should be defined as follows: • first degree – injury to skin only • second degree – injury to the perineal muscles but not the anal sphincter • third degree – injury to the perineum involving the anal sphincter complex: ° 3a – less than 50% of external anal sphincter thickness torn ° 3b – more than 50% of external anal sphincter thickness torn ° 3c – internal anal sphincter torn. • fourth degree – injury to the perineum involving the anal sphincter complex (external and internal anal sphincter) and anal epithelium.	Expert consensus Green Top Guideline 1998	GCP
Assessment of perineal trauma					
NICE	[3]	April 2006	Before **assessing** for genital trauma, healthcare professionals should:	There is low-level evidence that	2+ Well-conducted

2007			• explain to the woman what they plan to do and why • offer inhalational analgesia • ensure good lighting • position the woman so that she is comfortable and so that the genital structures can be seen clearly The initial examination should be performed gently and with sensitivity and may be done in the immediate period following birth. If genital trauma is identified following birth, further systematic assessment should be carried out, including a rectal examination. The woman should be referred to a more experienced healthcare professional if uncertainty exists as to the nature or extent of trauma sustained.	suggests the systematic assessment of the vagina, perineum and rectum is required to adequately assess the extent of perineal trauma.	case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal
Analgesia used for perineal repair					
NICE 2007	[3]	April 2006	Perineal repair should only be undertaken with tested effective analgesia in place using infiltration with up to 20 ml of 1% lidocaine or equivalent, or topping up the epidural (spinal anaesthesia may be necessary). If the woman reports inadequate pain relief at any point this should immediately be addressed.	No study was identified.	GCP

Table 65: Uterine massage

Systematic review					
Reference	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Hofmeyr 2008 [77]	200 women who have given birth vaginally or by cesarean section	Uterine massage commencing after delivery of the placenta (every 10 minutes for 60 minutes) *Versus* No intervention or a "dummy" procedure to mask allocation	<u>Maternal outcomes</u> Blood loss 500 ml or more (RR 0.52 95%CI 0.16-1.67) No significant difference Small reduction in mean blood loss 30 (MD -41, 95% CI -75, -8) and 60 (MD -77, 95% CI -118, -36) minutes after enrolment.	Only one study (in Egypt)	Low
Pena-Marti 2007 [76]	Women after vaginal birth where active management of the third is used	Fundal pressure (Crede manoeuvre) Versus Controlled cord traction	None RCT or quasi RCT was found		Low

Table 66: Definition of healthy newborn

CPG ID	Ref	Recommendation	Supporting evidence	Level of evidence Grade app
Definition of healthy newborn				
ILCOR 2006	[79]	Newborn infants who : • are born at term, • had clear amniotic fluid, • are breathing or crying • have good tone must be dried and kept warm but do not require resuscitation.	Consensus	GCP
ERC 2005	[80]	On the basis of the initial assessment, the babies can usually be considered as healthy if: • vigorous breathing or crying • good tone • rapidly becoming pink • heart rate higher than 100 beats min−1 This baby requires no intervention other than drying, wrapping in a warm towel and, where appropriate, handing to the mother.	Consensus	GCP

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
Routine assessment : Apgar score					
NICE 2007	[3]	April 2006	The Apgar score at 1 and 5 minutes should be recorded routinely for all births. If the baby is born in poor condition (the Apgar score at 1 minute is 5 or less), then the time to the onset of regular respirations should be recorded and the cord double-clamped to allow paired cord blood gases to be taken. The Apgar score should continue to be recorded until the baby's condition is stable.	The Apgar at 5 minutes has better predictive value than at 1 minute. There is low-level evidence that the Apgar score at 5 minutes is moderately accurate at predicting neonatal death and cerebral palsy with reasonable specificity but low sensitivity. No high-level evidence could be found on immediate or longer term neonatal outcomes.	2+ Well-conducted case–control or cohort studies with a low risk of confounding, bias or chance and a moderate probability that the relationship is causal

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
				Meta-analysis performed by NICE on 5 cohorts studies and one SR (16 cohort studies)	
Routine initial assessment of the baby					
NICE 2007	[3]	April 2006	Head circumference, body temperature and birthweight should be recorded soon after the first hour following birth. An initial examination should be undertaken by a healthcare professional to detect any major physical abnormality and to identify any problems that require referral. Any examination or treatment of the baby should be undertaken with the consent and in the presence of the parents or, if this is not possible, with their knowledge.	Consensus NCCPC postnatal care 2006	GCP

Table 67: Skin-to-skin contact

CPG ID	Ref	Search date	Recommendation	Supporting evidence	Level of evidence
NICE 2007	[3]	April 2006	Women should be encouraged to have skin-to-skin contact with their babies as soon as possible after the birth. In order to keep the baby warm, he or she should be dried and covered with a warm, dry blanket or towel while maintaining skin-to-skin contact with the woman. Separation of a woman and her baby within the first hour of the birth for routine postnatal procedures, for example weighing, measuring and bathing, should be avoided unless these measures are requested by the woman, or are necessary for the immediate care of the baby (Guideline on postnatal care). Initiation of breastfeeding should be encouraged as soon as possible after the birth, ideally within 1 hour.	Early skin-to-skin contact appeared to have some clinical benefit especially regarding breastfeeding outcomes and infant crying and had no apparent short or long-term negative effects [Level 1++] Early skin to skin contact with suckling is associated with increased duration of breastfeeding. [Level 1+] NCCPC postnatal care 2006	1+ Well-conducted meta-analyses, systematic reviews of RCTs or RCTs with a low risk of bias

Table 68: Skin-to-skin contact

Immediate Skin-to-Skin contact					
Ref	**Population**	**Intervention**	**Results**	**Comments**	**Level of evidence**
Moore, 2007 [78] Lit review : august 2006	1925 (mother-infant dyads) Healthy full term or late preterm (34 to 37 weeks)	early skin to skin contact and breastfeeding (starting less than 24 hours after births) *versus* routine care (mother and child separation)	<u>Maternal outcomes</u> • Rate of breastfeeding at one to four months postbirth (10 trials; 552 participants) (odds ratio (OR) 1.82, 95% confidence interval (CI) 1.08 to 3.07) significant in favour of skin to skin • Breastfeeding duration in days (seven trials; 324 participants) (weighted mean difference (WMD) 42.55, 95% CI -1.69 to 86.79): not significant • Behavior and psychological adaptation: not significant <u>Foetal outcomes</u> Not considered in this review	30 RCTs (29 truly and one quasi-randomized) Blind assessment	High

APPENDIX 7: GRADE

Grade of Recommendation/ Description	Benefit vs. Risk and Burdens	Methodological Quality of Supporting Evidence	Implications
1A/ Strong recommendation, high quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	RCTs without important limitations or overwhelming evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1B/ Strong recommendation, moderate quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies	Strong recommendation, can apply to most patients in most circumstances without reservation
1C/ Strong recommendation, low quality evidence	Benefits clearly outweigh risk and burdens, or vice versa	Observational studies or case series	Strong recommendation, but may change when higher quality evidence becomes available
2A/ Weak recommendation, high quality evidence	Benefits closely balanced with risks and burden	RCTs without important limitations or overwhelming evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2B/ Weak recommendation, moderate quality evidence	Benefits closely balanced with risks and burden	RCTs with important limitations (inconsistent results, methodological flaws, indirect, or imprecise) or exceptionally strong evidence from observational studies	Weak recommendation, best action may differ depending on circumstances or patients' or societal values
2C/ Weak recommendation, low quality evidence	Benefits closely balanced with risks and burden	Observational studies or case series	Very weak recommendation, other alternatives may be equally reasonable

Source: http://www.gradeworkinggroup.org/index.htm

APPENDIX 8: SCORES OF STAKEHOLDERS

Recommendation(s)	GOR	LoE			
1.Il est recommandé d'informer les femmes enceintes des étapes de l'accouchement, des pratiques utilisées dans le service de maternité afin de les aider à faire des choix éclairés 1. Het is aanbevolen om zwangere vrouwen in te lichten over de verschillende stadia van de arbeid en de bevalling en de gebruiken in de dienst. Dit zal hen helpen geïnformeerde keuzes te maken.	GCP	5	2	5	83%
2. Il est recommandé de fournir sur support écrit une information objective et complète au sujet des moyens utilisables pour l'accélération (éventuelle) du travail, le contrôle de la douleur et les analgésies disponibles pendant l'accouchement. Les indications, possibilités, limitations, risques éventuels et contre-indications des différentes méthodes non-médicamenteuses et médicamenteuses utilisables pour diminuer la douleur seront clairement discutées et exposées sur papier. 2.Het is aanbevolen om een document mee te geven met daarin objectieve en volledige informatie over de gangbare methodes voor het (eventueel) verlichten van de arbeid, de pijncontrole en de beschikbare analgesie (CSE) tijdens arbeid en bevalling. De behandelingsindicaties, mogelijkheden en onmogelijkheden,risico's en contra-indicaties van de verschillende methodes van zowel niet-medicamenteuze als medicamenteuze pijnstilling worden schriftelijk en mondeling toegelicht	GCP	5	3	5	83%
6.Toute induction artificielle du travail quelle qu'en soit l'indication doit être précédée d'une information objective et complète (sur support écrit) de la femme enceinte. Après avoir été correctement informée, la femme enceinte doit de surcroît avoir donné son accord. 6, De zwangere vrouw dient objectief en volledig ingelicht te worden alvorens de arbeid kunstmatig op gang te brengen en dit onafhankelijk van de indicatie. Het is aanbevolen om ook een tekst mee te geven. Bovendien moet de vrouw voorafgaandelijk haar toestemming gegeven hebben	GCP	5	2	5	91%
21. Il est recommandé de laisser aux parturientes la possibilité de manger légèrement et de boire, aussi longtemps qu'aucune contre-indication médicale ne leur interdit. 21. Het is aanbevolen om een parturiënte de mogelijkheid te geven iets licht verteerbaars te eten en te drinken, zolang er geen medische contra-indicatie bestaat.	1B	4	1	5	75%
3.Il est recommandé d'informer les femmes enceintes de l'organisation des maternités (notamment pendant le service de garde) et des limites qu'elle impose au libre choix intégral d'un praticien ou à la disponibilité de certains moyens et techniques 3.Het is aanbevolen om zwangere vrouwen in te lichten over de organisatie van de kraamklinieken (onder andere tijdens de wachtdienst), de mogelijkheden en de beperkingen van keuze van de zorgverlener of de beschikbaarheid van bepaalde methodes en technieken.	GCP	5	2	5	82%
4.Il est recommandé d'encourager les femmes enceintes à se faire accompagner à la maternité par la personne de leur choix. 4.Het is aanbevolen om zwangere vrouwen aan te moedigen om zich naar de kraamkliniek te laten vergezellen door een persoon naar keuze.	1A	5	2	5	91%
20. En plus de la présence du partenaire de son choix, il est acceptable qu'une parturiente qui le souhaite puisse bénéficier de la présence continue d'un soignant en relation un / un 20. Naast de aanwezigheid van de partner van haar keuze, is het-aanvaarbaard dat een parturiënte die het vraagt door een zorgverlener constant bijgestaan kan worden volgens een 1 op 1 verhouding	2B	4	1	5	64%
7.Il est recommandé d'informer les parents qui évoquent la question du fait que les transplantations autologues réalisées au moyen du sang du cordon restent des techniques exceptionnelles dont les indications sont limitées.	GCP	4	2	5	60%

7.Op de vraag van ouders naar het afnemen van navelstrengbloed, is het aanbevolen hen te informeren over de beperkte indicaties waarvoor op dit ogenblik autologe stamceltransplantaties kunnen worden toegepast.					
5.Il est recommandé que la personne (le plus souvent le partenaire) qui accompagne la parturiente, soit également tenu informé de tout le processus. Il convient également d'accueillir toute autre personne choisie par le couple et dont la présence est bénéfique pendant l'accouchement. 5.Het is aanbevolen dat de persoon (meestal de partner) die de zwangere vrouw vergezelt, eveneens over het ganse proces ingelicht wordt. Het verdient aanbeveling ook andere personen, die het proces positief kunnen ondersteunen, toe te laten indien dit de keuze van het koppel is.	GCP	4	1	5	73%
7. (bis) Il est recommandé d'informer les femmes enceintes du fait que nous ne disposons actuellement d'aucun élément probant permettant d'évaluer s'il existe des avantages ou des inconvénients à accoucher dans l'eau . 7. (bis) Het is aanbevolen om zwangere vrouwen te informeren over het feit dat er tot op heden onvoldoende studies zijn waarin de voor- en nadelen van onder water bevalling bekeken zijn.	GCP	4	1	5	73%
16. Si à partir de 37 semaines, la rupture de la poche des eaux n'est pas suivie d'un travail spontané (PROM), il est recommandé d' induire l'accouchement dans un délai de 24 heures 16. Indien vanaf 37 weken, na het breken van de vliezen (PROM) de arbeid (bevalling) niet spontaan op gang komt, wordt aanbevolen de bevalling in te leiden binnen de 24 uren	1B	4	2	5	64%
8. Il est formellement recommandé de ne pas induire un accouchement avant 39 semaines révolues ? 8. Het induceren van een bevalling vóór de 39ste voltooide zwangerschapsweek wordt ontraden.	1B	5	4	5	100%
9. Il est recommandé de ne pas induire à la demande un accouchement entre 39 et 41 semaines révolues. 9. Het wordt afgeraden een bevalling tussen 39 en 41 voltooide weken op aanvraag te induceren.	1C	5	1	5	83%
10. Il est recommandé de ne pas induire un accouchement entre 39 et 41 semaines révolues surtout si le col n'est pas favorable (sur base du score de Bishop) 10. Het wordt afgeraden een bevalling te induceren tussen 39 en 41 voltooide weken zeker als de baarmoederhals niet rijp is (op basis van Bishop score).	2B	5	2	5	82%
11. Un col est considéré comme favorable quand le score de Bishop est ≥ 5 ou à 7 (selon les publications) 11. Een baarmoederhals is rijp wanneer Bishopscore ≥ 5 of 7 is (naargelang de publicaties).	GCP	3	2	5	38%
12. Il est acceptable d' induire un accouchement à 41 semaines révolues. 12. Het is aanvaardbaar de arbeid op gang te brengen op 41 voltooide zwangerschapsweken	2B	5	2	5	91%
13. Le terme de la grossesse est considéré comme dépassé à 42 semaines révolues 13. Op 42 voltooide zwangerschapsweken beschouwt men de termijn van de zwangerschap als overschreden	GCP	5	2	5	82%
14. Il est recommandé de ne pas induire un accouchement à terme en cas de suspicion de macrosomie fœtale chez une femme non diabétique 14. Het is niet aangewezen à terme een bevalling te induceren om reden van een vermoedelijke fœtale macrosomie in geval van een niet diabetische vrouw	2B	4	1	5	82%
15. Il est recommandé d'accueillir avec empathie les femmes enceintes à leur arrivée à la maternité, de les informer au fur et à mesure des étapes de l'accouchement et des gestes posés, de s'enquérir de leurs attentes, de leurs choix éventuels et de leur plan de naissance éventuel. 15. Het is aanbevolen om zwangere vrouwen met empathie te ontvangen bij hun aankomst op de kraamafdeling, hen geleidelijk te informeren over de verschillende fasen van de arbeid en de bevalling en navraag te doen naar hun verwachtingen, hun keuzes en eventuele geboorteplan	1C	5	4	5	100%
18. Au moment où une femme enceinte arrive à la maternité, il est recommandé de	GCP	4,5	2	5	90%

s'enquérir du dossier de suivi de grossesse et de réaliser un complément d'anamnèse. L'examen clinique minimum comprendra : le poids, TA, température , RC maternel et fœtal, tigette urinaire (protéines, glucose), palpation abdominale, hauteur utérine et toucher vaginal complet (si membranes intactes). L' état d'avancement du travail sera établi.					
18. Op het ogenblik dat een zwangere vrouw op de kraamafdeling aankomt, is het aanbevolen om het medisch dossier te lezen en een bijkomende anamnese te doen. Minimaal klinisch onderzoek omvat : gewicht,bloeddruk, temperatuur, hartritme van de moeder en foetus , urineonderzoek (proteine, glucose), abdominale palpatie, hoogte van de baarmoeder en inwendig onderzoek (indien vliezen niet gebroken zijn). Zo kan beoordeeld worden of de vrouw in arbeid is en in welke fase van de arbeid zij zich bevindt					
19. Il est recommandé de rassurer les femmes enceintes dont le travail n'est pas actif et de les informer dans quelles circonstances elles doivent se représenter.	1C	5	4	5	100%
19. Het is aanbevolen om zwangere vrouwen bij wie de arbeid niet actief is, gerust te stellen en hen te informeren wanneer opnieuw contact op te nemen.					
24. Il n'est pas recommandé de réaliser un monitoring fœtal à l'admission. Il est recommandé d' ausculter le cœur du fœtus pendant au moins une minute après une contraction	1B	3	1	5	42%
24. Het is niet aanbevolen om een foetale monitoring uit te voeren bij opname. Het is aanbevolen om na een contractie het hart van de foetus te ausculteren gedurende minimaal één minuut					
23. Il est acceptable de suivre prospectivement l'évolution du travail au moyen d'un partogramme	1B	4	1	5	89%
23. Het is aanvaarbaar om de evolutie van de arbeid prospectief op te volgen met behulp van een partogram					
23bis. Après rupture de la poche, le toucher vaginal doit être limité à maximum un toutes les deux heures sauf signe d'appel ou demande de la parturiente.	1C	4	2	5	67%
23bis. Na het breken van de vliezen dienen vaginale onderzoeken beperkt te blijven tot maximaal 1x om de twee uur, tenzij er specifieke indicaties zijn of op aanvraag van de zwangere vrouw.					
New. Il est recommandé d'assurer une présence continue auprès de la parturiente. Cette présence continue peut être effectuée soit par un non professionnel soit par un professionnel	1A	5	2	5	91%
New. Het wordt aanbevolen om een parturiënte continu bij te staan. Deze bijstand kan zowel door een leek als door een zorgverlener geleverd worden.					
22. Il est recommandé d'encourager les parturientes à adopter la position qui leur convient le mieux pendant le travail.	1B	5	4	5	100%
22. Het is aanbevolen om de parturiënte aan te moedigen om de voor haar meest comfortabele houding aan te nemen gedurende de arbeid					
26. L'auscultation discontinue du cœur du fœtus est recommandée comme modalité de surveillance	1A	5	1	5	64%
26. Het is aanbevolen om intermitterende auscultatie toe te passen					
27. Il est acceptable de réaliser le monitoring fœtal en continu (par enregistrement CTG) soit à la demande de la parturiente, soit si la disponibilité du staff infirmier ne permet pas de réaliser l'auscultation discontinue	GCP	4	1	5	73%
27. Het is aanvaardbaar dat er continue fœtale monitoring (CTG) gebeurt wanneer de parturiente het vraagt of als de bestaffing geen intermitterende auscultatie toe laat.					
28. Il est recommandé de ne pas percer la poche des eaux de manière routinière si le travail évolue normalement	1A	5	4	5	100%
28. Het routinematig breken van de vliezen is niet aanbevolen in geval van een normaal verloop van de arbeid					
29. Après information correcte et accord de la parturiente, il est acceptable dans des circonstances spécifiques, de tenter d'accélérer le travail en perçant la poche des eaux, ceci en combinaison avec une perfusion d'oxytocine et un support continu par un professionnel.	2B	2,5	1	5	20%
29. Na correcte informatie en toestemming van de vrouw in arbeid, is het					

aanvaardbaar in specifieke omstandigheden de arbeid te versnellen door het breken van de vliezen in combinatie met een oxytocine-infuus en een "one to one care".					
30. Il est recommandé aux professionnels de manifester de l'empathie par rapport à la douleur des parturientes et de s'enquérir de leurs choix éventuels quant à la prise en charge de celle-ci. 30. Het is aanbevolen dat zorgverleners empathie tonen voor de pijnbeleving van de parturiente en zich bij opname informeren over haar wensen	1C	5	4	5	100%
31. Il est recommandé de respecter les choix faits par la femme enceinte et les éventuels changements d'option pendant l'accouchement pour autant que ce soit possible dans les limites de l'organisation des soins 31. Het is aanbevolen de keuzes van de zwangere vrouw voor wat betreft pijnstilling alsook de eventuele veranderingen van keuzes tijdens de ontsluitingsfase te respecteren voor zover mogelijk binnen de organisatie	GCP	5	4	5	100%
32. Si la parturiente le souhaite et après l'avoir informée du fait qu'on ne dispose pas de suffisamment de données pour quantifier le risque infectieux éventuel (mère/enfant), il est recommandé de tenter de diminuer la douleur en laissant le travail s'accomplir dans un bain chaud en suivant certaines précautions d'hygiéne 32. Indien de parturiënte dit wenst is het aanbevolen de pijn te proberen verlichten door de arbeid te laten plaatsvinden in een warm bad, mits controle van warmte en tijdsduur en in achter name van de nodige hygiënische maatregelen. De parturiente dient op de hoogte gebracht te worden dat vanuit de huidige beschikbare literatuur niet geweten is of gebruik van het bad tijdens de arbeid gepaard gaat met een verhoogd risico op maternale en neonatale infecties.	1B	4	1	5	82%
34. Si la parturiente demande une analgésie médicamenteuse, il est recommandé de réaliser une analgésie régionale plutôt qu'une analgésie systémique. 34. Indien de parturiënte naar medicamenteuze pijnstilling vraagt, is een regionale analgesie te verkiezen boven systemische analgesie	1A	5	5	5	100%
36. Si la parturiente demande une analgésie médicamenteuse mais présente des contre-indications à une analgésie régionale , il est recommandé d'utiliser des opioïdes en intraveineux après l'avoir informée du fait que les opioïdes en IV ont un effet limité sur la douleur et peuvent s'accompagner d'effets secondaires pour elle-même et son enfant 36. Indien de parturiënte medicamenteuze pijnstilling wenst maar niet in aanmerking komt voor regionale analgesie, is het toedienen van intraveneuze opioïden aanbevolen na informatie over de bijwerkingen van opioïden per IV voor moeder en kind en over de beperkte werkzaamheid ervan tegen baringspijn	2B	4,5	1	5	75%
33. Il est recommandé d'informer la parturiente du fait que les analgésies régionales s'accompagnent d'une surveillance rapprochée (mise en place d'un accès veineux, monitoring plus fréquent) mais permettent une certaine mobilité 33. Het is aanbevolen de vrouw te informeren over het feit dat regionale analgesie tijdens de ontsluitingsfase gepaard gaat met een striktere opvolging (plaatsing van een veneuze toegang, frequentere monitoring) maar toch nog enige bewegingsvrijheid toelaat.	GCP	5	4	5	100%
35. Il est recommandé de réaliser l' analgésie régionale quand le travail est établi et que la patiente en ressent le besoin , quel que soit le stade de la dilatation. 35. Wanneer de ontsluitingsfase gestart is en wanneer de parturiënte hierom vraagt, is het aanbevolen regionale analgesie toe te passen ongeacht het stadium van de ontsluiting	1A	5	3	5	86%
39. Il est recommandé de ne pas interrompre l'analgésie régionale pendant la phase d'expulsion et la délivrance y compris la suture éventuelle du périnée 39. Het is aanbevolen de regionale analgesie niet te onderbreken tijdens de arbeid, de bevalling en het eventuele hechten van het perineum.	1A	5	3	5	78%
41bis. Il est recommandé de laisser les parturientes qui n'ont pas d'analgésie régionale et qui sont à dilatation complète, pousser quand elles en ressentent le besoin. 41bis. Wanneer een parturiënte die geen regionale analgesie kreeg en die een volledige ontsluiting heeft, spontane persdrang heeft, is het aanbevolen haar te	1A	5	4	5	100%

laten persen					
41. Il est recommandé de retarder les efforts expulsifs des parturientes sous analgésie régionale qui sont à dilatation complète jusqu'à ce que le foetus soit descendu et que la parturiente en ressente le besoin. 41. Indien een parturiënte met regionale analgesie geen persdrang voelt bij volledige ontsluiting, is het aanbevolen de verdere indaling van de foetus en spontane persdrang af te wachten vooraleer met actief persen wordt gestart	1A	5	3	5	89%
42. Il est recommandé d'intervenir au moment où la partie active de la phase d'expulsion dépasse deux heures chez une primipare et une heure chez une multipare. 42. Het is aanbevolen tussen te komen indien de actieve uitdrijvingsfase langer duurt dan twee uur bij primiparae en een uur bij multiparae	1C	5	1	5	88%
38. Il est recommandé d'encourager les parturientes à adopter la position qui leur semble la plus confortable pour pousser 38. Het is aanbevolen om de parturiënte aan te moedigen een houding aan te nemen die haar het meest comfortabel lijkt om te persen.	1A	5	3	5	80%
40. Il est recommandé de laisser la parturiente pousser de la manière qui lui semble la plus efficace , vu que la littérature ne permet pas de conclure si une technique est plus efficace que l'autre 40.Het is aanbevolen dat de vrouw zich bij het persen laat leiden door haar persdrang, aangezien in de literatuur niet is aangetoond dat gedirigeerd persen met gesloten glottis een meer doeltreffende techniek is.	GCP	5	4	5	100%
43. Il est recommandé de ne pas exercer de poussée sur le fond utérin pendant la phase d'expulsion. 43. Het is aanbevolen geen fundusdruk uit te oefenen tijdens de uitdrijvingsfase.	1B	5	3	5	90%
44. La littérature ne contient pas de données probantes suffisantes pour affirmer ou infirmer que le fait de soutenir manuellement le périnée réduise ou non le nombre de ruptures. 44. In de literatuur zijn onvoldoende aanwijzingen dat het al dan niet toepassen van damsteun het aantal perineumrupturen reduceert	2B	5	4	5	100%
45. Il est formellement recommandé de ne pas réaliser d'épisiotomie en routine. 45. Het wordt formeel aanbevolen niet routinematig over te gaan tot een episiotomie	1A	5	4	5	100%
46. S'il existe une indication médicale, il est recommandé de réaliser une épisiotomie médiolatérale. 46. Bij het bestaan van een medische indicatie , wordt een mediolaterale episiotomie aanbevolen.	2C	5	2	5	90%
47. Il est recommandé de réaliser en routine un management actif de la délivrance (ou délivrance dirigée) (injection d'oxytocine au moment de la naissance, clamp et section du cordon suivi d'une traction contrôlée de celui-ci) 47. Het is aanbevolen routinematig (de bevalling) geboorte van de placenta actief te begeleiden (oxytocine injectie op het moment van de geboorte, eerder afklemmen en doorsnijden van de navelstreng gevolgd door een gecontroleerde tractie op de navelstreng).	1B	4	0	5	56%
49. Le management actif de la délivrance réduit les risques d'hémorragie du post-partum et raccourcit la durée de la délivrance. 49. Het actief beleid tijdens de geboorte van de placenta vermindert de duur van de derde fase én het risico op postpartum bloeding .	1A	4	0	5	67%
Les recommandation 47 et 49 sont basées sur une SR en cours de révision [72]. Il est nécessaire de se tenir au courant d'un changement éventuel des conclusions. Aanbevelingen 47 en 49 zijn gebaseerd op een systematische review die momenteel in revisie is. Daarom is het nodig zich op de hoogte te stellen van eventuele veranderingen in de conclusies		5	0	5	83%
50. Si la parturiente ne présente aucun risque particulier d'hémorragie du postpartum, il est acceptable de laisser la délivrance se dérouler de manière physiologique pour autant que sa durée n'excède pas une heure. 50. Indien de vrouw geen verhoogd risico heeft op een postpartumbloeding is het aanvaardbaar om de bevalling op een natuurlijke wijze te laten gebeuren voor	2C	4	1	5	78%

zover de geboorte van de placenta niet langer duurt dan een uur.					
54. Dans les suites immédiates de l'accouchement, il est recommandé d' observer l'état physique et psychologique de la mère. 54. Het is aanbevolen na de bevalling een goede observatie van de vrouw uit te voeren, met aandacht voor zowel haar klinische als haar psychologische toestand	1C	5	4	5	100%
54 bis. Le périnée , le vagin et le rectum feront l'objet d'un examen soigneux 54 bis.Het perineum, de vagina en het rectum worden zorgvuldig geïnspecteerd.	1C	5	5	5	100%
54 ter. Une éventuelle suture sera effectuée sous anesthésie locale (si pas d'analgésie régionale). 54 ter.Indien nodig wordt er onder lokale anesthesie gehecht (indien geen regionale analgesie)	GCP	5	3	5	90%
51. A la naissance, il est recommandé d'examiner le nouveau né et de déterminer s'il satisfait aux conditions suivantes : le liquide amniotique était clair, le nourrisson respire (ou crie) a un bon tonus et une fréquence cardiaque >100/min. 51. Bij de geboorte is het aanbevolen het geboren kind te observeren om na te gaan indien hij aan deze voorwaarden voldoet : het vruchtwater was helder, het kind ademt (of schreit), hij heeft een goede tonus en een hartfrekwentie van > 100/min	GCP	5	1	5	82%
52. Si le nouveau-né ne satisfait pas à l'une ou l'autre de ces conditions, il est recommandé d'entreprendre sans délai les manœuvres de réanimation nécessaires dans les conditions optimales. 52. Indien de pasgeborene voldoet niet aan één of meerdere van deze voorwaarden, is het aanbevolen om onverwijld met de reanimatie te starten in de meest optimale omstandigheden	GCP	5	1	5	82%
53. Si le nouveau-né satisfait à ces conditions, il est recommandé de déterminer son Apgar à une et cinq minutes 53. Indien de pasgeborene aan deze voorwaarden voldoet is het aanbevolen de Apgar te meten aan 1 en 5 minuten	1B	5	4	5	100%
53bis. Il est recommandé de placer ensuite le nouveau-né peau à peau contre sa mère et de les couvrir avec un linge tiède 53bis. Het is dan aanbevolen de pasgeborene huid aan huid in contact te brengen met de moeder, en moeder en kind samen bedekken met een warme doek.	1A	5	3	5	91%
55. Il est recommandé de ne pas séparer la mère et son nourrisson à la naissance. A cet effet, les mesures de poids, taille et température seront retardées d'au moins une heure. 55. Het is aanbevolen de moeder en de pasgeborene na de bevalling niet te scheiden. Routinehandelingen zoals het meten van gewicht, lengte en temperatuur worden minstens één uur uitgesteld	GCP	5	4	5	100%
56. Si la mère a reçu une analgésie péridurale, il est recommandé d'intensifier l'encadrement de la mise en route de l'allaitement. 56. Indien de moeder een regionale analgesie had, is het aanbevolen om de begeleiding van de opstart van de borstvoeding te intensifiëren	GCP	5	1	5	82%
57. Il est recommandé d'observer et de suivre attentivement la jeune mère et son nourrisson pendant la première heure qui suit la naissance 57. Het is aanbevolen de vrouw en de pasgeborene tijdens het eerste uur na de geboorte strikt te observeren en op te volgen	GCP	5	1	5	91%

APPENDIX 9: CONCLUSIONS OF STAKEHOLDERS' MEETING

Recommendation(s)	**After stakeholders meeting**
1.Il est recommandé d'informer les femmes enceintes des étapes de l'accouchement, des pratiques utilisées dans le service de maternité afin de les aider à faire des choix éclairés	A la fin de la grossesse ou à différents stades l'accouchement, il est recommandé (GCP) : • d'informer les femmes enceintes de l'organisation des maternités (notamment pendant le service de garde) et des limites qu'elle impose au libre choix intégral d'un praticien ou à la disponibilité de certains moyens et techniques ; • d'informer les femmes enceints des étapes de l'accouchement, et des pratiques utilisées en salle de naissance afin de les aider à faire des choix éclairés ; • de fournir une information objective et complète (de préférence sur support écrit en fin de grossesse) au sujet des moyens utilisables pour l'accélération (éventuelle) du travail, le contrôle de la douleur et les analgésies disponibles pendant l'accouchement. Les indications, possibilités, limitations, risques éventuels et contre-indications des différentes méthodes non-médicamenteuses et médicamenteuses utilisables pour diminuer la douleur seront clairement exposées et discutées ; • avant toute induction artificielle du travail (quelle qu'en soit l'indication) de fournir une information objective et complète (de préférence sur support écrit). Après avoir été correctement informée, la femme enceinte doit de surcroît avoir donné son accord.

1. Het is aanbevolen om zwangere vrouwen in te lichten over de verschillende stadia van de arbeid en de bevalling en de gebruiken in de dienst. Dit zal hen helpen geïnformeerde keuzes te maken.	Op het einde van de bevalling of tijdens de verschillende stadia van de bevalling word aanbevolen: • om zwangere vrouwen in te lichten over de organisatie van de kraamklinieken (onder andere tijdens de wachtdienst), de mogelijkheden en de beperkingen van keuze van de zorgverlener of de beschikbaarheid van bepaalde methodes en technieken. • om de vrouwen in te lichten over de verschillende stadia van de bevalling en van de handelingen die toegepast worden in de bevallingskamer teneinde hen te helpen om een geïnformeerde keuze te maken. • om objectieve en volledige informatie te verstrekken (bij voorkeur met behulp van een geschreven document ter ondersteuning en op het einde van de zwangerschap) over de verschillende middelen die kunnen gebruikt worden om eventueel de arbeid te versnellen, het verzachten van de pijn en de pijnstillers die beschikbaar zijn gedurende de bevalling. De indicaties, mogelijkheden, limieten, eventuele risico's en contra-indicaties van de verschillende medicamenteuze en niet-medicamenteuze methodes om de pijn te stillen zullen op een heldere wijze worden uitgelegd en bediscussieerd. • om voor elk kunstmatig op gang brengen van de arbeid (voor welke indicatie ook) volledige en objectieve informatie (bij voorkeur met behulp van een geschreven document) te verstrekken. Na op een correcte manier te zijn voorgelicht dient de zwangere vrouw bovendien haar toestemming te geven.

2. Il est recommandé de fournir sur support écrit une information objective et complète au sujet des moyens utilisables pour l'accélération (éventuelle) du travail, le contrôle de la douleur et les analgésies disponibles pendant l'accouchement. Les indications, possibilités, limitations, risques éventuels et contre-indications des différentes méthodes non-médicamenteuses et médicamenteuses utilisables pour diminuer la douleur seront clairement discutées et exposées sur papier.	See 1
2.Het is aanbevolen om een document mee te geven met daarin objectieve en volledige informatie over de gangbare methodes voor het (eventueel) verlichten van de arbeid, de pijncontrole en de beschikbare analgesie (CSE) tijdens arbeid en bevalling. De behandelingsindicaties, mogelijkheden en onmogelijkheden,risico's en contra-indicaties van de verschillende methodes van zowel niet-medicamenteuze als medicamenteuze pijnstilling worden schriftelijk en mondeling toegelicht	See 1
6.Toute induction artificielle du travail quelle qu'en soit l'indication doit être précédée d'une information objective et complète (sur support écrit) de la femme enceinte. Après avoir été correctement informée, la femme enceinte doit de surcroît avoir donné son accord.	See 1
6, De zwangere vrouw dient objectief en volledig ingelicht te worden alvorens de arbeid kunstmatig op gang te brengen en dit onafhankelijk van de indicatie. Het is aanbevolen om ook een tekst mee te geven. Bovendien moet de vrouw voorafgaandelijk haar toestemming gegeven hebben	See 1
21. Il est recommandé de laisser aux parturientes la possibilité de manger légèrement et de boire, aussi longtemps qu'aucune contre-indication médicale ne leur interdit.	Il est recommandé de laisser aux parturientes la possibilité de boire des liquides clairs (y compris les boissons énergétiques), aussi longtemps qu'aucune contre-indication médicale ne leur interdit
21. Het is aanbevolen om een parturiënte de mogelijkheid te geven iets licht verteerbaars te eten en te drinken, zolang er geen medische contra-indicatie bestaat.	Het is aanbevolen om een parturiënte de mogelijkheid te geven iets licht verteerbaars te drinken (energy drinks inbegrepen), zolang er geen medische contra-indicatie bestaat.

3.Il est recommandé d'informer les femmes enceintes de l'organisation des maternités (notamment pendant le service de garde) et des limites qu'elle impose au libre choix intégral d'un praticien ou à la disponibilité de certains moyens et techniques 3.Het is aanbevolen om zwangere vrouwen in te lichten over de organisatie van de kraamklinieken (onder andere tijdens de wachtdienst), de mogelijkheden en de beperkingen van keuze van de zorgverlener of de beschikbaarheid van bepaalde methodes en technieken.	See 1 See 1
4.Il est recommandé d'encourager les femmes enceintes à se faire accompagner à la maternité par la personne de leur choix.	Il est recommandé que les femmes enceintes se fassent accompagner à la maternité par la personne de leur choix (1 A). Celle-ci sera tenue informée de tout le processus (GCP). Vu qu'il est recommandé d'assurer une présence continue auprès de la parturiente, il est acceptable dans certaines circonstances qu'une personne supplémentaire (professionnelle ou non) choisie par le couple soit également accueillie lorsque sa présence est bénéfique pour le couple (2B).
4.Het is aanbevolen om zwangere vrouwen aan te moedigen om zich naar de kraamkliniek te laten vergezellen door een persoon naar keuze.	Het is aanbevolen dat de zwangere vrouw zich laat vergezellen in het bevallingkwartier door een persoon van hun keuze (1A). Deze persoon zal op de hoogte gebracht van gans het proces (Good Clinical Practice). Aangezien het aanbevolen is om een continue aanwezigheid bij de parturiënte te verzekeren is het aanvaardbaar om in bepaalde omstandigheden een derde persoon (professioneel of niet), gekozen door het koppel, toe te laten als de aanwezigheid voordelen bied voor het koppel.
20. En plus de la présence du partenaire de son choix, il est acceptable qu'une parturiente qui le souhaite puisse bénéficier de la présence continue d'un soignant en relation un / un	See 4

20. Naast de aanwezigheid van de partner van haar keuze, is het-aanvaarbaard dat een parturiënte die het vraagt door een zorgverlener constant bijgestaan kan worden volgens een 1 op 1 verhouding	See 4
7.Il est recommandé d'informer les parents qui évoquent la question du fait que les transplantations autologues réalisées au moyen du sang du cordon restent des techniques exceptionnelles dont les indications sont limitées. 7.Op de vraag van ouders naar het afnemen van navelstrengbloed, is het aanbevolen hen te informeren over de beperkte indicaties waarvoor op dit ogenblik autologe stamceltransplantaties kunnen worden toegepast.	Il est recommandé d'informer les parents qui évoquent de leur propre initiative la question des transplantations autologues réalisées au moyen du sang du cordon du fait que celles-ci restent des techniques exceptionnelles dont les indications sont limitées. idem
5.Il est recommandé que la personne (le plus souvent le partenaire) qui accompagne la parturiente, soit également tenu informé de tout le processus. Il convient également d'accueillir toute autre personne choisie par le couple et dont la présence est bénéfique pendant l'accouchement.	See 4
5.Het is aanbevolen dat de persoon (meestal de partner) die de zwangere vrouw vergezelt, eveneens over het ganse proces ingelicht wordt. Het verdient aanbeveling ook andere personen, die het proces positief kunnen ondersteunen, toe te laten indien dit de keuze van het koppel is.	See 4
7. (bis) Il est recommandé d'informer les femmes enceintes du fait que nous ne disposons actuellement d'aucun élément probant permettant d'évaluer s'il existe des avantages ou des inconvénients à accoucher dans l'eau . 7. (bis) Het is aanbevolen om zwangere vrouwen te informeren over het feit dat er tot op heden onvoldoende studies zijn waarin de voor- en nadelen van onder water bevalling bekeken zijn.	Il est recommandé d'informer les femmes enceintes du fait que nous ne disposons actuellement d'aucun élément probant permettant d'évaluer s'il existe des avantages à accoucher dans l'eau Het is aanbevolen om zwangere er van op de hoogte te brengen dat we voor het moment over geen enkel aanwijzing beschikken die toelaat te beoordelen of voordelen verbonden zijn aan een bevalling onder water.
16. Si à partir de 37 semaines, la rupture de la poche des eaux n'est pas suivie d'un travail spontané (PROM), il est recommandé d' induire l'accouchement dans un délai de 24 heures	Si à partir de 37 semaines, la rupture de la poche des eaux n'est pas suivie d'un travail spontané (PROM), il est recommandé d' induire l'accouchement après 24 heures.

16. Indien vanaf 37 weken, na het breken van de vliezen (PROM) de arbeid (bevalling) niet spontaan op gang komt, wordt aanbevolen de bevalling in te leiden binnen de 24 uren	Indien vanaf 37 weken, na het breken van de vliezen (PROM) de arbeid (bevalling) niet spontaan op gang komt, wordt aanbevolen de bevalling in te leiden na 24 uren.
8. Il est formellement recommandé de ne pas induire un accouchement avant 39 semaines révolues 8. Het induceren van een bevalling vóór de 39ste voltooide zwangerschapsweek wordt ontraden.	Il n'est pas recommandé d' induire un accouchement avant 39 semaines révolues. idem
9. Il est recommandé de ne pas induire à la demande un accouchement entre 39 et 41 semaines révolues. 9. Het wordt afgeraden een bevalling tussen 39 en 41 voltooide weken op aanvraag te induceren.	Il n'est pas recommandé d' induire à la demande un accouchement entre 39 et 41 semaines révolues (1C), surtout si le col n'est pas favorable (sur base du score de Bishop) (2B). Het wordt afgeraden een bevalling tussen 39 en 41 voltooide weken op aanvraag te induceren (1C), zeker als de baarmoederhals niet rijp is (op basis van Bishop score) (2B) .
10. Il est recommandé de ne pas induire un accouchement entre 39 et 41 semaines révolues surtout si le col n'est pas favorable (sur base du score de Bishop)	See 10
10. Het wordt afgeraden een bevalling te induceren tussen 39 en 41 voltooide weken zeker als de baarmoederhals niet rijp is (op basis van Bishop score).	See 10
11. Un col est considéré comme favorable quand le score de Bishop est ≥ 5 ou à 7 (selon les publications) 11. Een baarmoederhals is rijp wanneer Bishopscore ≥ 5 of 7 is (naargelang de publicaties).	out out
12. Il est acceptable d' induire un accouchement à 41 semaines révolues. 12. Het is aanvaardbaar de arbeid op gang te brengen op 41 voltooide zwangerschapsweken	

13. Le terme de la grossesse est considéré comme dépassé à 42 semaines révolues 13. Op 42 voltooide zwangerschapsweken beschouwt men de termijn van de zwangerschap als overschreden	out out
14. Il est recommandé de ne pas induire un accouchement à terme en cas de suspicion de macrosomie fœtale chez une femme non diabétique 14. Het is niet aangewezen à terme een bevalling te induceren om reden van een vermoedelijke fœtale macrosomie in geval van een niet diabetische vrouw	Il est recommandé de ne pas induire un accouchement à terme sur la seule indication d'une suspicion de macrosomie fœtale chez une femme non diabétique Het is niet aangewezen à terme een bevalling te induceren om reden (met als enige indicatie) van een vermoedelijke fœtale macrosomie in geval van een niet diabetische vrouw
15. Il est recommandé d'accueillir avec empathie les femmes enceintes à leur arrivée à la maternité, de les informer au fur et à mesure des étapes de l'accouchement et des gestes posés, de s'enquérir de leurs attentes, de leurs choix éventuels et de leur plan de naissance éventuel. 15. Het is aanbevolen om zwangere vrouwen met empathie te ontvangen bij hun aankomst op de bevallingskwartier, hen geleidelijk te informeren over de verschillende fasen van de arbeid en de bevalling en navraag te doen naar hun verwachtingen, hun keuzes en eventuele geboorteplan	
18. Au moment où une femme enceinte arrive à la maternité, il est recommandé de s'enquérir du dossier de suivi de grossesse et de réaliser un complément d'anamnèse. L'examen clinique minimum comprendra : le poids, TA, température , RC maternel et fœtal, tigette urinaire (protéines, glucose), palpation abdominale, hauteur utérine et toucher vaginal complet (si membranes intactes). L' état d'avancement du travail sera établi. 18. Op het ogenblik dat een zwangere vrouw op de bevallingskwartier aankomt, is het aanbevolen om het medisch dossier te lezen en een bijkomende anamnese te doen. Minimaal klinisch onderzoek omvat : gewicht,bloeddruk, temperatuur, hartritme van de moeder en foetus , urineonderzoek (proteine, glucose), abdominale palpatie, hoogte van de baarmoeder en inwendig	. Au moment où une femme enceinte arrive à la maternité, il est recommandé de prendre connaissance du dossier de suivi de grossesse et de réaliser un complément d'anamnèse. L'examen clinique minimum comprendra : le poids, TA, température , RC maternel et fœtal, tigette urinaire (protéines, glucose), palpation abdominale, hauteur utérine et toucher vaginal complet (si membranes intactes). L' état d'avancement du travail sera établi. idem

onderzoek (indien vliezen niet gebroken zijn). Zo kan beoordeeld worden of de vrouw in arbeid is en in welke fase van de arbeid zij zich bevindt	
19. Il est recommandé de rassurer les femmes enceintes dont le travail n'est pas actif et de les informer dans quelles circonstances elles doivent se représenter. 19. Het is aanbevolen om zwangere vrouwen bij wie de arbeid niet actief is, gerust te stellen en hen te informeren wanneer opnieuw contact op te nemen.	
24. Il n'est pas recommandé de réaliser un monitoring fœtal à l'admission. Il est recommandé d' ausculter le cœur du fœtus pendant au moins une minute après une contraction	A l'admission, il est recommandé d'évaluer l'état du fœtus, en auscultant son cœur pendant au moins une minute immédiatement après une contraction (1B). Cette pratique n'entrainant pas de majoration du risque pour le fœtus, il est acceptable de réaliser cette évaluation au moyen d'un CTG en sachant que l'utilisation du CTG entraine une faible augmentation du risque de délivrance instrumentale (GCP).
24. Het is niet aanbevolen om een foetale monitoring uit te voeren bij opname. Het is aanbevolen om na een contractie het hart van de foetus te ausculteren gedurende minimaal één minuut	Bij opname is het aanbevolen de toestand van de foetus te evalueren door zijn hart te ausculteren gedurende op zijn minst één minuut onmiddellijk na een contractie (1 B). Terwijl deze praktijk geen verhoogd risico voor de foetus met zich meebrengt is het aanvaardbaar om die evaluatie te doen door middel van een CTG wetende dat het gebruik van een CTG een klein risico met zich meebrengt voor een instrumentele bevalling (GCP).
23. Il est acceptable de suivre prospectivement l'évolution du travail au moyen d'un partogramme	

23. Het is aanvaarbaar om de evolutie van de arbeid prospectief op te volgen met behulp van een partogram	
23bis. Après rupture de la poche, le toucher vaginal doit être limité à maximum un toutes les deux heures sauf signe d'appel ou demande de la parturiente.	. Après rupture de la poche, le toucher vaginal doit être limité à maximum un toutes les quatre heures sauf signe d'appel ou demande de la parturiente
23bis. Na het breken van de vliezen dienen vaginale onderzoeken beperkt te blijven tot maximaal 1x om de twee uur, tenzij er specifieke indicaties zijn of op aanvraag van de zwangere vrouw.	Na het breken van de vliezen dienen vaginale onderzoeken beperkt te blijven tot maximaal 1x om de vier uur, tenzij er specifieke indicaties zijn of op aanvraag van de zwangere vrouw.
New. Il est recommandé d'assurer une présence continue auprès de la parturiente. Cette présence continue peut être effectuée soit par un non professionnel soit par un professionnel New. Het wordt aanbevolen om een parturiënte continu bij te staan. Deze bijstand kan zowel door een leek als door een zorgverlener geleverd worden.	See 1 See 1
22. Il est recommandé d'encourager les parturientes à adopter la position qui leur convient le mieux pendant le travail. 22. Het is aanbevolen om de parturiënte aan te moedigen om de voor haar meest comfortabele houding aan te nemen gedurende de arbeid	Il est recommandé d'encourager les parturientes à adopter la position qui pendant le travail convient le mieux pour l'avancement du travail , la parturiente et son fœtus. Het is aanbevolen om de parturiënte aan te moedigen om de meest comfortabele houding voor de evolutie van de arbeid, voor haar en voor de foetus aan te nemen gedurende de arbeid.
26. L'auscultation discontinue du cœur du fœtus est recommandée comme modalité de surveillance	L'auscultation discontinue du cœur du fœtus est recommandée comme modalité de surveillance pour autant que les conditions suivantes soient remplies : l'auscultation doit être réalisée toutes les 15 minutes pendant au moins une minute et immédiatement après une contraction (1A). Il est acceptable de réaliser le monitoring fœtal en continu (par enregistrement CTG) soit à la demande de la parturiente, soit si la disponibilité du staff ne permet pas de réaliser l'auscultation discontinue (GCP).

26. Het is aanbevolen om intermitterende auscultatie toe te passen	Het is aanbevolen om intermitterende auscultatie toe te passen in de mate dat de volgende voorwaarden zijn vervuld: de auscultatie moet gebeuren elke 15 minuten gedurende op zijn minst één minuut onmiddellijk na een contractie (1A). Het is aanvaardbaar dat er continue fœtale monitoring (CTG) gebeurt wanneer de parturiente het vraagt of als de bestaffing geen intermitterende auscultatie toe laat (GCP).
27. Il est acceptable de réaliser le monitoring fœtal en continu (par enregistrement CTG) soit à la demande de la parturiente, soit si la disponibilité du staff infirmier ne permet pas de réaliser l'auscultation discontinue 27. Het is aanvaardbaar dat er continue fœtale monitoring (CTG) gebeurt wanneer de parturiente het vraagt of als de bestaffing geen intermitterende auscultatie toe laat.	See 26 See 26
28. Il est recommandé de ne pas percer la poche des eaux de manière routinière si le travail évolue normalement 28. Het routinematig breken van de vliezen is niet aanbevolen in geval van een normaal verloop van de arbeid	La rupture systématique routinière et artificielle de la poche des eaux n'est pas recommandée quand le travail évolue normalement. idem
29. Après information correcte et accord de la parturiente, il est acceptable dans des circonstances spécifiques, de tenter d'accélérer le travail en perçant la poche des eaux, ceci en combinaison avec une perfusion d'oxytocine et un support continu par un professionnel.	
29. Na correcte informatie en toestemming van de vrouw in arbeid, is het aanvaardbaar in specifieke omstandigheden de arbeid te versnellen door het breken van de vliezen in combinatie met een oxytocine-infuus en een "one to one care".	
30. Il est recommandé aux professionnels de manifester de l'empathie par rapport à la douleur des parturientes et de s'enquérir de leurs choix éventuels quant à la prise en charge de celle-ci.	

30. Het is aanbevolen dat zorgverleners empathie tonen voor de pijnbeleving van de parturiente en zich bij opname informeren over haar wensen	
31. Il est recommandé de respecter les choix faits par la femme enceinte et les éventuels changements d'option pendant l'accouchement pour autant que ce soit possible dans les limites de l'organisation des soins 31. Het is aanbevolen de keuzes van de zwangere vrouw voor wat betreft pijnstilling alsook de eventuele veranderingen van keuzes tijdens de ontsluitingsfase te respecteren voor zover mogelijk binnen de organisatie	
32. Si la parturiente le souhaite et après l'avoir informée du fait qu'on ne dispose pas de suffisamment de données pour quantifier le risque infectieux éventuel (mère/enfant), il est recommandé de tenter de diminuer la douleur en laissant le travail s'accomplir dans un bain chaud en suivant certaines précautions d'hygiène. 32. Indien de parturiënte dit wenst is het aanbevolen de pijn te proberen verlichten door de arbeid te laten plaatsvinden in een warm bad, mits controle van warmte en tijdsduur en in achter name van de nodige hygiënische maatregelen. De parturiente dient op de hoogte gebracht te worden dat vanuit de huidige beschikbare literatuur niet geweten is of gebruik van het bad tijdens de arbeid gepaard gaat met een verhoogd risico op maternale en neonatale infecties.	Si la parturiente le souhaite, il est recommandé de tenter de diminuer la douleur en laissant le travail s'accomplir dans un bain chaud en suivant certaines précautions d'hygiène. Indien de parturiënte dit wenst is het aanbevolen de pijn te proberen verlichten door de arbeid te laten plaatsvinden in een warm bad, mits controle van warmte en tijdsduur en in achter name van de nodige hygiënische maatregelen.
34. Si la parturiente demande une analgésie médicamenteuse, il est recommandé de réaliser une analgésie loco-régionale plutôt qu'une analgésie systémique. 34. Indien de parturiënte naar medicamenteuze pijnstilling vraagt, is een loco-regionale analgesie te verkiezen boven systemische analgesie	Si la parturiente demande une analgésie médicamenteuse, il est recommandé de réaliser une analgésie loco-régionale plutôt qu'une analgésie systémique. idem

36. Si la parturiente demande une analgésie médicamenteuse mais présente des contre-indications à une analgésie régionale , il est recommandé d'utiliser des opioïdes en intraveineux après l'avoir informée du fait que les opioïdes en IV ont un effet limité sur la douleur et peuvent s'accompagner d'effets secondaires pour elle-même et son enfant 36. Indien de parturiënte medicamenteuze pijnstilling wenst maar niet in aanmerking komt voor loco-regionale analgesie, is het toediening van intraveneuze opioïden aanbevolen na informatie over de bijwerkingen van opioïden per IV voor moeder en kind en over de beperkte werkzaamheid ervan tegen baringspijn	Out of scope Out of scope
33. Il est recommandé d'informer la parturiente du fait que les analgésies loco-régionales s'accompagnent d'une surveillance rapprochée (mise en place d'un accès veineux, monitoring plus fréquent) mais permettent une certaine mobilité	
33. Het is aanbevolen de vrouw te informeren over het feit dat loco-regionale analgesie tijdens de ontsluitingsfase gepaard gaat met een striktere opvolging (plaatsing van een veneuze toegang, frequentere monitoring) maar toch nog enige bewegingsvrijheid toelaat.	
35. Il est recommandé de réaliser l' analgésie loco-régionale quand le travail est établi et que la patiente en ressent le besoin , quel que soit le stade de la dilatation. 35. Wanneer de ontsluitingsfase gestart is en wanneer de parturiënte hierom vraagt, is het aanbevolen loco-regionale analgesie toe te passen ongeacht het stadium van de ontsluiting	
39. Il est recommandé de ne pas interrompre l'analgésie loco-régionale pendant la phase d'expulsion et la délivrance y compris la suture éventuelle du périnée	

39. Het is aanbevolen de loco-regionale analgesie niet te onderbreken tijdens de arbeid, de bevalling en het eventuele hechten van het perineum.	
41bis. Il est recommandé de laisser les parturientes qui n'ont pas d'analgésie loco-régionale et qui sont à dilatation complète, pousser quand elles en ressentent le besoin.	
41bis. Wanneer een parturiënte die geen loco-regionale analgesie kreeg en die een volledige ontsluiting heeft, spontane persdrang heeft, is het aanbevolen haar te laten persen	
41. Il est recommandé de retarder les efforts expulsifs des parturientes sous analgésie loco-régionale qui sont à dilatation complète jusqu'à ce que le foetus soit descendu et que la parturiente en ressente le besoin. 41. Indien een parturiënte met loco-regionale analgesie geen persdrang voelt bij volledige ontsluiting, is het aanbevolen de verdere indaling van de foetus en spontane persdrang af te wachten vooraleer met actief persen wordt gestart	Lorsqu'une parturiente sous analgésie loco-régionale ne ressent aucune envie de pousser à dilatation complète , il est recommandé d'attendre la descente du fœtus et l'envie spontanée de pousser avant de commencer les efforts expulsifs volontaires, à condition que la surveillance du rythme cardiaque reste normale. Indien een parturiënte met loco-regionale analgesie geen enkele persdrang voelt bij volledige ontsluiting, is het aanbevolen de verdere indaling van de foetus en spontane persdrang af te wachten vooraleer met actief persen wordt gestart op voorwaarde dat het gesurveilleerde foetale hartritme normaal blijft.
42. Il est recommandé d'intervenir au moment où la partie active de la phase d'expulsion dépasse deux heures chez une primipare et une heure chez une multipare. 42. Het is aanbevolen tussen te komen indien de actieve uitdrijvingsfase langer duurt dan twee uur bij primiparae en een uur bij multiparae	
38. Il est recommandé d'encourager les parturientes à adopter la position qui leur semble la plus confortable pour pousser	Il est recommandé d'encourager les parturientes à adopter la position qui leur semble la plus confortable pour pousser à condition que la surveillance du rythme cardiaque reste normale.

38. Het is aanbevolen om de parturiënte aan te moedigen een houding aan te nemen die haar het meest comfortabel lijkt om te persen.	Het is aanbevolen om de parturiënte aan te moedigen een houding aan te nemen die haar het meest comfortabel lijkt om te persen op voorwaarde dat het gesurveilleerde foetale hartritme normaal blijft.
40. Il est recommandé de laisser la parturiente pousser de la manière qui lui semble la plus efficace , vu que la littérature ne permet pas de conclure si une technique est plus efficace que l'autre 40.Het is aanbevolen dat de vrouw zich bij het persen laat leiden door haar persdrang, aangezien in de literatuur niet is aangetoond dat gedirigeerd persen met gesloten glottis een meer doeltreffende techniek is.	
43. Il est recommandé de ne pas exercer de poussée sur le fond utérin pendant la phase d'expulsion.	
43. Het is aanbevolen geen fundusdruk uit te oefenen tijdens de uitdrijvingsfase.	. Het is aanbevolen geen druk op de fundus uit te oefenen tijdens de uitdrijvingsfase
44. La littérature ne contient pas de données probantes suffisantes pour affirmer ou infirmer que le fait de soutenir manuellement le périnée réduise ou non le nombre de ruptures. 44. In de literatuur zijn onvoldoende aanwijzingen dat het al dan niet toepassen van damsteun het aantal perineumrupturen reduceert	
45. Il est formellement recommandé de ne pas réaliser d'épisiotomie en routine. 45. Het wordt formeel aanbevolen niet routinematig over te gaan tot een episiotomie	
46. S'il existe une indication médicale, il est recommandé de réaliser une épisiotomie médiolatérale. 46. Bij het bestaan van een medische indicatie , wordt een mediolaterale episiotomie aanbevolen.	S'il existe une indication médicale (délivrance opératoire ou suspicion de détresse fœtale), il est recommandé de réaliser une épisiotomie médiolatérale. Bij het bestaan van een medische indicatie (operatieve bevalling of vermoeden van foetaal lijden) , wordt een mediolaterale episiotomie aanbevolen.

47. Il est recommandé de réaliser en routine un management actif de la délivrance (ou délivrance dirigée) (injection d'oxytocine au moment de la naissance, clamp et section du cordon suivi d'une traction contrôlée de celui-ci) 47. Het is aanbevolen routinematig (de bevalling) geboorte van de placenta actief te begeleiden (oxytocine injectie op het moment van de geboorte, eerder afklemmen en doorsnijden van de navelstreng gevolgd door een gecontroleerde tractie op de navelstreng).	Pour les parturientes qui sont à haut risque d'hémorragie (grande multipare, antécédents d'hémorragie, anesthésie loco-régionale, travail long ou accouchement instrumental), il est recommandé de réaliser en routine un management actif de la délivrance (ou délivrance dirigée) (injection d'oxytocine au moment de la naissance, clamp et section du cordon suivi d'une traction contrôlée de celui-ci). Voor parturiënten met een hoog risico op bloeding (sterk multipaar, antecedenten van bloeding, loco-regionale analgesie, langdurige arbeid of instrumentele bevalling), is het aanbevolen routinematig de geboorte van de placenta actief te begeleiden (oxytocine injectie op het moment van de geboorte, eerder afklemmen en doorsnijden van de navelstreng gevolgd door een gecontroleerde tractie op de navelstreng).
49. Le management actif de la délivrance réduit les risques d'hémorragie du post-partum et raccourcit la durée de la délivrance. 49. Het actief beleid tijdens de geboorte van de placenta vermindert de duur van de derde fase én het risico op postpartum bloeding .	out out
Les recommandation 47 et 49 sont basées sur une SR en cours de révision [72]. Il est nécessaire de se tenir au courant d'un changement éventuel des conclusions.	Out (see Begley)
Aanbevelingen 47 en 49 zijn gebaseerd op een systematische review die momenteel in revisie is. Daarom is het nodig zich op de hoogte te stellen van eventuele veranderingen in de conclusies	Out (see Begley)
50. Si la parturiente ne présente aucun risque particulier d'hémorragie du postpartum, il est acceptable de laisser la délivrance se dérouler de manière physiologique pour autant que sa durée n'excède pas une heure. 50. Indien de vrouw geen verhoogd risico heeft op een postpartumbloeding is het aanvaardbaar om de bevalling op een natuurlijke wijze te laten gebeuren voor zover de geboorte van de placenta niet langer duurt dan een uur.	

54. Dans les suites immédiates de l'accouchement, il est recommandé d' observer l'état physique et psychologique de la mère. 54. Het is aanbevolen na de bevalling een goede observatie van de vrouw uit te voeren, met aandacht voor zowel haar klinische als haar psychologische toestand	
54 bis. Le périnée , le vagin et le rectum feront l'objet d'un examen soigneux 54 bis.Het perineum, de vagina en het rectum worden zorgvuldig geïnspecteerd.	
54 ter. Une éventuelle suture sera effectuée sous anesthésie locale (si pas d'analgésie régionale). 54 ter.Indien nodig wordt er onder lokale anesthesie gehecht (indien geen loco-regionale analgesie)	
51. A la naissance, il est recommandé d'examiner le nouveau né et de déterminer s'il satisfait aux conditions suivantes : le liquide amniotique était clair, le nourrisson respire (ou crie) a un bon tonus et une fréquence cardiaque >100/min.	Etant donné le fait que la partie consacrée au nourrisson ne fait pas partie intégrante du guideline et n'a pas fait l'objet d'une revue systématique, le texte suivant n'a pas la valeur d'une recommandation en tant que telle. **Messages clés concernant le nourrisson** : A la naissance , l'état du nourrisson sera évalué au moyen des paramètres suivants : la clarté du liquide amniotique, sa respiration (ou son cri) , sa coloration, son tonus et sa fréquence cardiaque (>100/min). Si ces paramètres sont favorables , le nourrisson sera placé peau à peau contre sa mère et recouvert d' un linge chaud. Son score d'Apgar sera déterminé à une et cinq minutes. Si ces paramètres ne sont pas favorables, l'observation sera poursuivie et /ou les maneuvres de réanimation nécessaires seront entreprises sans délai. Le nourrisson en bonne santé ne sera pas séparé de sa mère à la naissance. A cet effet, les mesures de poids, taille et température seront retardées idéalement d'au moins une heure. La mise en route de l'allaitement sera encadrée

51. Bij de geboorte is het aanbevolen het geboren kind te observeren om na te gaan indien hij aan deze voorwaarden voldoet : het vruchtwater was helder, het kind ademt (of schreit), hij heeft een goede tonus en een hartfrekwentie van > 100/min	Gezien het gedeelte gewijd aan de zuigeling geen deel uitmaakt van de richtlijnen en niet het onderwerp was van een systematische review heeft de volgende tekst niet de waarde van een aanbeveling als zodanig.
52. Si le nouveau-né ne satisfait pas à l'une ou l'autre de ces conditions, il est recommandé d'entreprendre sans délai les manœuvres de réanimation nécessaires dans les conditions optimales.	Kernboodschappen betreffende de pasgeborene Bij de geboorte zal de toestand van de pasgeborene geëvalueerd worden gebruik makende van volgende parameters: helderheid van het vruchtwater, ademhaling (of gehuil), kleur van de huid, tonus en hartfrequentie (> 100/min). Als die parameters gunstig zijn zal de pasgeborene huid aan huid bij moeder worden geplaatst en met een warme doek worden bedekt. Zijn Apgar score zal bepaald worden op één en vijf minuten. Als die parameters niet gunstig zijn zal het observeren verder gaan en/of zal de reanimatie die nodig is onverwijld worden ondernomen. De moeder en de pasgeborene zullen na de bevalling niet gescheiden worden. Routinehandelingen zoals het meten van gewicht, lengte en temperatuur worden minstens één uur uitgesteld. Het op gang brengen van de borstvoeding zal begeleid worden
52. Indien de pasgeborene voldoet niet aan één of meerdere van deze voorwaarden, is het aanbevolen om onverwijld met de reanimatie te starten in de meest optimale omstandigheden	See 51
53. Si le nouveau-né satisfait à ces conditions, il est recommandé de déterminer son Apgar à une et cinq minutes	See 51
53. Indien de pasgeborene aan deze voorwaarden voldoet is het aanbevolen de Apgar te meten aan 1 en 5 minuten	See 51
53bis. Il est recommandé de placer ensuite le nouveau-né peau à peau contre sa mère et de les couvrir avec un linge tiède	See 51

53bis. Het is dan aanbevolen de pasgeborene huid aan huid in contact te brengen met de moeder, en moeder en kind samen bedekken met een warme doek.	
55. Il est recommandé de ne pas séparer la mère et son nourrisson à la naissance. A cet effet, les mesures de poids, taille et température seront retardées d'au moins une heure. 55. Het is aanbevolen de moeder en de pasgeborene na de bevalling niet te scheiden. Routinehandelingen zoals het meten van gewicht, lengte en temperatuur worden minstens één uur uitgesteld	See 51
56. Si la mère a reçu une analgésie péridurale, il est recommandé d'intensifier l'encadrement de la mise en route de l'allaitement. 56. Indien de moeder een loco-regionale analgesie had, is het aanbevolen om de begeleiding van de opstart van de borstvoeding te intensifiëren	See 51
57. Il est recommandé d'observer et de suivre attentivement la jeune mère et son nourrisson pendant la première heure qui suit la naissance 57. Het is aanbevolen de vrouw en de pasgeborene tijdens het eerste uur na de geboorte strikt te observeren en op te volgen	See 51

Following paragraphs were added in scientific summary :

7.3.3.3 Other considerations

One new RCT (Wilson 2010) published after our search date compared epidural analgesia with fentanyl added to bupivacaïne and bupivacaïne alone. A similar proportion of women in each epidural group initiated breastfeeding. Mean duration of breastfeeding was similar across epidural groups.

8.3.4.3 Other considerations

Case reports (Nguyen 2002, Kassim 2005) show that water birth may induce rare but serious adverse outcomes for the baby such water aspiration, hypoxia and infection.

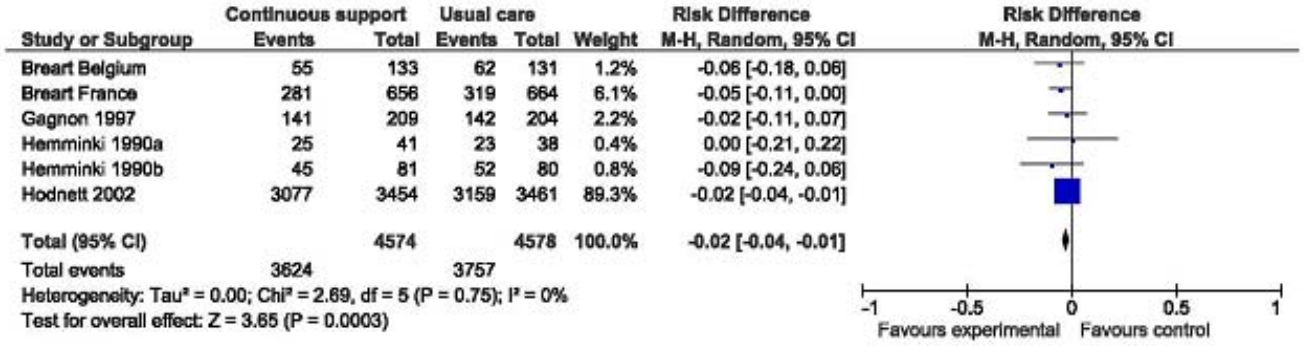
APPENDIXES WITH CHAPTER 6

APPENDIX 10: METHODOLOGY OF SUB-GROUP ANALYSIS PERFORMED BY KCE

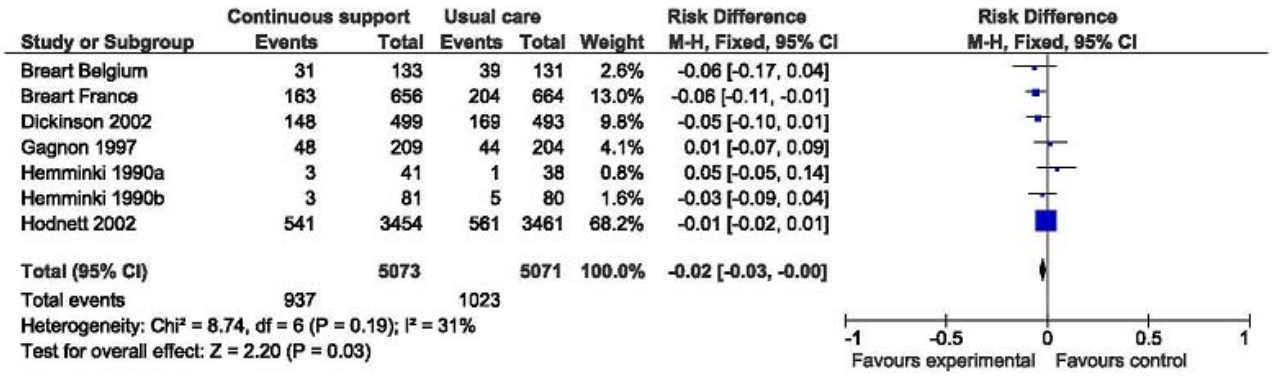
Given the lack (or the very small number) of doulas in Belgium, the permission of other support (depending on woman choice) during labour and the routinely availability of epidural analgesia, the expert groups wished to know if a one-to one care support realized by midwifes in such conditions has some effect on two outcomes : the use of intrapartum analgesia and the rate of instrumental vaginal birth.

Therefore, KCE experts performed one subgroup analysis based on analysis 2.1 of Hodnett (This subgroup analysis excluding one study (study including doula acting as continuous intrapartum support) was performed as a sensitivity analysis and did not alter the estimations nor the conclusions of the original SR .

This subgroup selected 7 studies in which other additional support was permitted and assessed the effect of continuous support during labour versus usual care on the use of intrapartum analgesia. Six studies included trained midwife or midwife students but one[47] included doula acting as continuous intrapartum support. KCE subgroup analysis excluded the study with doula acting as continuous intrapartum support.



The second question was the effect of one-to one care support realized by midwifes in conditions described before (permission of other support and routinely availability of epidural analgesia) on the rate of instrumental vaginal birth. KCE experts performed one subgroup analysis based on analysis 2.3 and excluding studies with doula acting as continuous intrapartum support.



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