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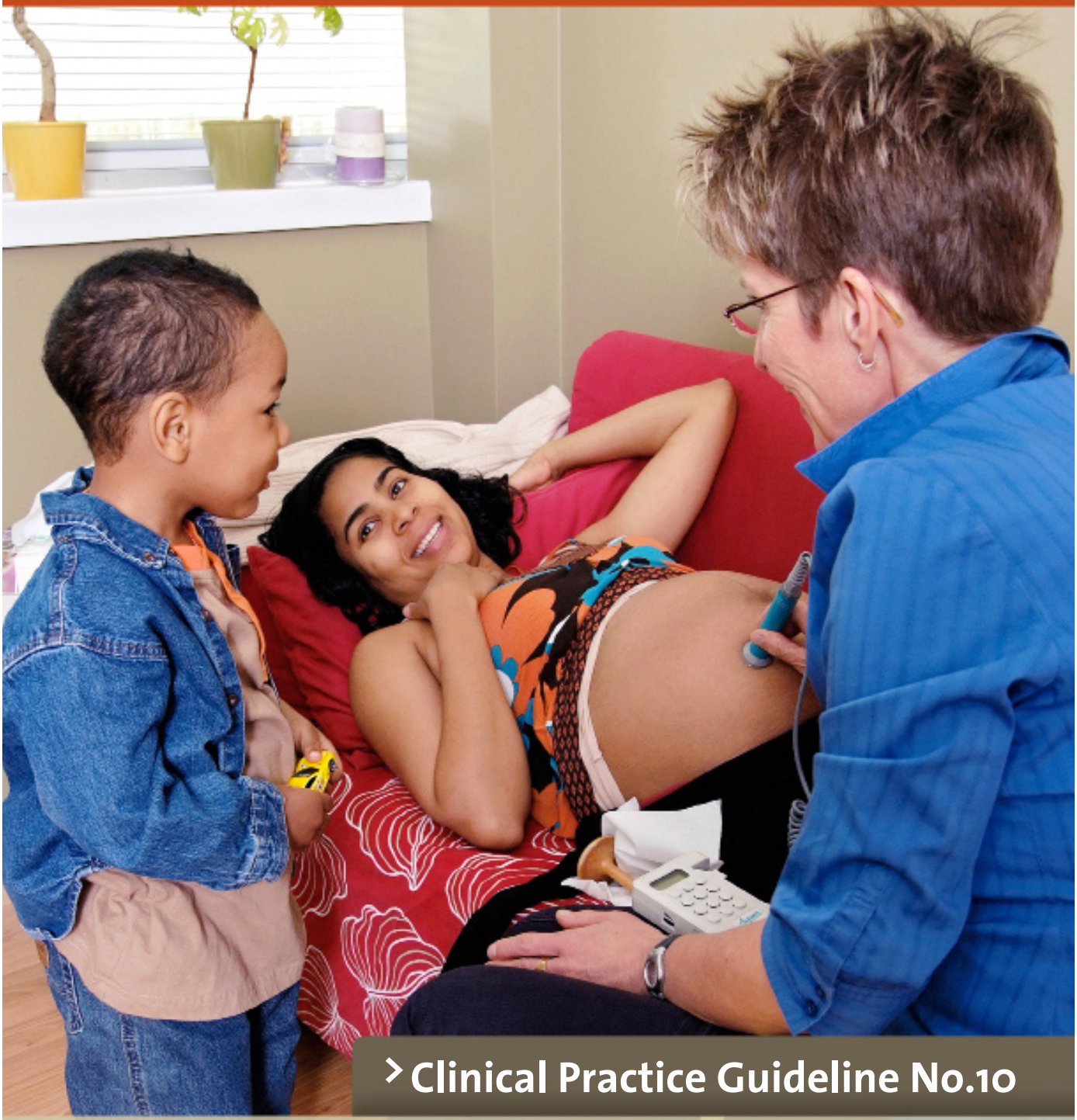

Clinical Practice Guideline No.10

Association of Ontario Midwives

Management of the Uncomplicated Pregnancy Beyond 41+0 Weeks' Gestation

February 2010

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Management of the Uncomplicated Pregnancy

Beyond 41+0 Weeks' Gestation

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AOM CLINICAL PRACTICE GUIDELINE

Management of the Uncomplicated Pregnancy Beyond 41+0 Weeks' Gestation

This guideline was approved by the AOM Board of Directors: February 17, 2010

Statement of purpose:

The goal is to provide an evidence-based clinical practice guideline (CPG) that is consistent with the midwifery philosophy of care. Midwives are encouraged to use this CPG as a tool in clinical decision-making.

Objectives:

To provide a critical review of the research literature for women reaching 41+0 weeks' gestation and beyond in an uncomplicated pregnancy, as well as to provide recommendations regarding management options. Evidence relating to the following will be discussed:

- Factors contributing to an increased risk of postdates pregnancy
- Effective interventions for reducing the rate of postdates pregnancy
- Impact of postdates pregnancy on maternal and neonatal outcomes
- Management options for postdates pregnancy.

Outcomes of interest:

1. Maternal outcomes: rate of caesarean section, instrumental delivery, morbidity, satisfaction with care
2. Neonatal outcomes: perinatal mortality, perinatal morbidity

Methods:

A search of the Medline database and Cochrane library from 1994-2009 was conducted using the key words: prolonged pregnancy, postdates pregnancy, postterm pregnancy. Additional search terms were used to provide more detail on individual topics as they related to postdates pregnancy: antenatal monitoring, fetal movement counting, evening primrose oil and gestational age calculation. Older publications were accessed to include seminal randomized controlled trials, commonly cited sources for incidence rates or studies that had significant impact on clinical practice. Evidence was graded using the Canadian Task Force on Preventive Health Care grading system. (1)

Review:

This guideline was reviewed using a modified version of the AGREE instrument (2), the AOM's Values-based Approach to CPG Development (3), as well as consensus of the AOM CPG Sub-committee, the Insurance and Risk Management Program, and the AOM Board of Directors.

ABBREVIATIONS:

CI – confidence interval

CS – caesarean section

BMI – body mass index

BPP – biophysical profile

EDB – estimated date of birth

LMP – last menstrual period

MAS – meconium aspiration syndrome

MSAF – meconium stained amniotic fluid

NNT – number needed to treat

OR – odds ratio

RR – relative risk

T1 – first trimester

T2 – second trimester

Key to evidence statements and grading of recommendations, from the Canadian Task Force on Preventive Health Care

Evaluation of evidence criteria		Classification of recommendations criteria	
I	Evidence obtained from at least one properly randomized controlled trial	A	There is good evidence to recommend the clinical preventive action
II-1	Evidence from well-designed controlled trials without randomization	B	There is fair evidence to recommend the clinical preventive action
II-2	Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group	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
II-3	Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category	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
III	Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees	D	There is fair evidence to recommend against the clinical preventive action
		E	There is good evidence to recommend against the clinical preventive action
		L	There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

Reference: (1)

INTRODUCTION

Pregnancy at 41+ weeks' gestation is seen often in midwifery practice. Though it is generally a normal and healthy occurrence associated with good outcomes for women and babies, pregnancy at 41+ weeks has been associated with increased risks of meconium stained amniotic fluid (MSAF), meconium aspiration syndrome (MAS), shoulder dystocia and stillbirth. Determining the best method of calculating an estimated date of birth (EDB), effective monitoring of fetal well-being, and if, when and how to intervene to initiate labour are all important aspects of postdates pregnancy management. Midwives providing care for pregnancy at 41+ weeks' gestation aim to avoid unnecessary intervention while facilitating the best possible outcomes for mothers and babies.

Discussing and implementing a plan for management of pregnancy at 41+ weeks is part of the informed choice process. In order to facilitate client decision-making regarding pregnancy at 41+ weeks, midwives need to be aware of the risks and benefits of interventions such as induction of labour, as well as of expectant management.

Definition of Terms

According to the internationally recommended definitions endorsed by the World Health Organization (WHO) and the International Federation of Gynecology and Obstetrics (FIGO), 'postterm' pregnancy is defined as pregnancy lasting 42+0 weeks (≥ 294 days) or more. 'Postdates' pregnancy is defined as lasting 40+0 weeks plus one or more days (i.e. anytime past the estimated date of birth), and 'prolonged' pregnancy is any pregnancy after 42+0 weeks (or synonymous with postterm). (WHO 1977, FIGO 1986, cited in (4))

Considerable confusion arises, however, as 'postterm', 'postdates' and 'prolonged' pregnancy tend to be used interchangeably in research literature and textbooks, as well as by health care providers. The lack of precision in the use of the terms associated with pregnancies that pass the EDB is widespread and may lead to misunderstanding as described by Murray Enkin:

> "Semantic problems have also contributed to the confusion in understanding of postterm pregnancy. The words 'postterm,' 'prolonged,' 'postdates' and 'postmature' are all used as synonyms but are laden with different evaluative undertones." (5)

Further, this ambiguity in the use of terms associated with postdates pregnancy makes "accurate compounding of the qualitative data" difficult. (6)

Where possible, the gestational age upon which research studies based their results will be specified in this CPG, but due to inconsistencies in the way data was collected, gathered or reported, this level of accuracy in reporting outcomes according to gestational age is not always possible.

Using specific language when communicating with other health care providers as well as helping clients to understand these terms will improve clarity when communicating management plans for postdates pregnancies.

Incidence of Postterm Pregnancy

It is difficult to determine the true prevalence of postterm pregnancy because inaccurate pregnancy dating tends to over-estimate incidence, and induction of labour will reduce rates of postdates. Several retrospective studies that applied strict criteria for pregnancy dating have reported rates of 6% to 8% for postterm pregnancy. (7-9) Statistics Canada data (1980-1995) showed an increase in the number of births at 41 weeks (11.9% in 1980 to 16.3% in 1995) and a decrease at 42 or more weeks (7.1% in 1980 to 2.9% in 1995) reflecting changes in clinical practice for the management of postdates pregnancy in Canada during this time period (10) and possibly due to the increasing use of ultrasound allowing for more accurate pregnancy dating.

Contributing Factors for Pregnancy ≥ 41+0 Weeks' Gestation

Several retrospective cohort studies have identified factors that contribute to prolonged pregnancy. These include high body mass index (BMI), nulliparity, fetal male gender and a previous postterm (≥ 42+0 weeks) pregnancy. Two cohort studies found an inverse correlation between the rate

of spontaneous labour at term and first trimester BMI: the chance of having a postterm pregnancy goes up as BMI increases (OR ranging from 1.24 with a BMI of 25-29 to 1.52 with a BMI over 35; 95% CI 1.28-1.82). (8,11)

Pregnant women are more likely to have pregnancies lasting ≥ 41 weeks if the fetus is male than if it is female. A retrospective study reviewed 82 484 singleton births and found that there was a higher rate of postdates pregnancies when the fetus was male (RR 1.41 at 42 weeks) and proposed that this may be due to potential measurement bias (male fetuses are slightly larger on average and therefore ultrasound measurements may tend to interpret them as being at a slightly later gestation). (12) Another review (656 423 births) also found a higher likelihood of postterm pregnancy when the fetus was male (OR 1.14 at 41 wks, 1.39 at 42 wks, 1.50 at 43 wks) but concluded that measurement bias does not account for all of the increase and suggested a gender-related component to the initiation of labour. (13) Some evidence suggests that women are also more likely to have a postterm pregnancy when having their first baby (RR 1.35 - 1.46) (9,14) or if they have had a previous postterm pregnancy (RR 1.38 – 1.88). (4,15,16)

Summary Statement

Nulliparity, high BMI, history of a previous postdates pregnancy and male fetal gender are all associated with a higher rate of postterm pregnancy. (II-2)

MATERNAL COMPLICATIONS OF POSTDATES PREGNANCY

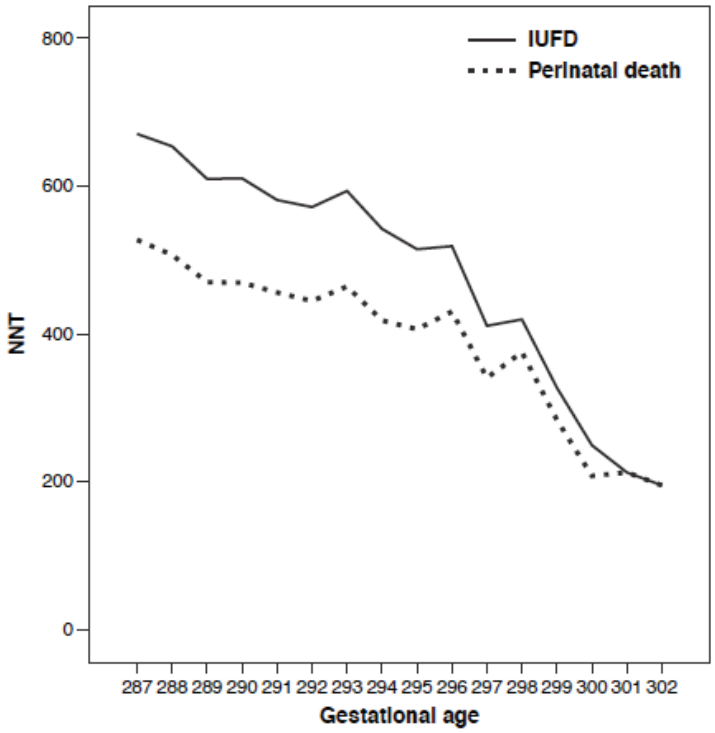
Several studies have examined the maternal complications associated with postdates including instrumental delivery and caesarean section (CS). A Finnish retrospective population-based cohort study conducted from 1990-2000 (1678 postterm pregnancies) found that postterm pregnancy was associated with an increase in instrumental delivery (10.7% vs. 5.3%) (OR 1.97, 95% CI 1.06-1.37, p < .01). (9) Background data, obstetrical risk factors and health behaviours were included in the analysis to limit the influence of confounding variables. Another retrospective review of 36 160 low risk pregnancy outcomes from 1989-1997 in Israel, found an increase in CS with increasing gestational age postdates (5.4% at 40 wks, 5.8% at 41 wks, 7.9% at 42 wks, 8.2% at 43 wks). (7) Similarly, in a retrospective cohort study including 119 254 low risk pregnancies in California in the period 1995-1999, caesarean rates increased from a rate of 9.0% at 40 weeks to 14.0% at 41 weeks and 21.7% at ≥ 42 weeks (p < .01). The authors controlled for length of labour, induction of labour and type of anaesthesia using multivariate regression. (17) The above studies have demonstrated an association with increased rates of CS for postdates pregnancies, rather than demonstrating causation. Simply being aware that a woman is 'postdates' may cause health care providers to intervene more readily (due to labelling). (6)

PERINATAL COMPLICATIONS OF POSTDATES PREGNANCY

Perinatal complications associated with pregnancy ≥ 41+0 weeks include meconium stained amniotic fluid, meconium aspiration syndrome, shoulder dystocia and stillbirth.

Three randomized controlled trials (comprising 3407, 440 and 508 women respectively) found similar perinatal mortality rates in those induced at 41 weeks and those managed expectantly who delivered between 41 and 43 weeks' gestation. (18-20) A large retrospective review of 408 631 births beyond 41+0 weeks' gestation from the Norwegian Medical Birth Registry (1999-2005) found the perinatal mortality rate increased with increasing gestational age (0.18% at 41 weeks, 5.1% at 43 weeks), no data was given for 42 weeks. In this analysis, the number of inductions necessary (NNT) to avoid one intrauterine fetal death (IUFD) or perinatal death at 41 weeks was determined to be 671 (95% CI: 571-794) and 195 at 43 weeks (95% CI: 84-600), p < .004. The authors note that there is a downward curve in inductions needed to avoid perinatal death and IUFD near 286 days gestation (42+2 weeks), see Figure 1. (21) A population-based prospective study of 17 493 singleton pregnancies, also from Norway (1989-1999), with a second-trimester ultrasound examination and delivery af-

Figure 1: Numbers of inductions needed to avoid 1 IUFD and 1 perinatal death according to gestational age. Data from the Medical Birth Registry of Norway (21)



ter 37+0 gestational weeks found that the relative risk for perinatal mortality per 1000 total births decreased from week 37+0 until 41+0 weeks, reaching a nadir and then increasing at week 42+0 (RR 1.24 at 37 weeks, 1.0 at 40 weeks, 0.43 at 41 wks and 1.92 at 42 wks). The absolute risk of perinatal mortality in this study was similar to the Norwegian Medical Birth Registry review above (2.7/1000 at 40 weeks, 1.18/1000 at 41 weeks and 5.23/1000 at 42 weeks). (16)

A retrospective review of 36 160 low-risk pregnancies found an increase in MSAF (17.5% at 40 wks, 21.5% at 41 wks, 25% at 42 wks, 37.7% at 43 wks, $p < .001$). (7) Another cohort study of 32 679 low-risk, cephalic, singleton births delivered at ≥ 37+0 weeks of gestation (1976-2001) found an increase in MAS (OR 2.18 at 40 wks, 3.35 at 41 wks, 4.09 at 42 wks). (22) Multivariate analyses were used to control for ethnicity, weight, age, economic status and obstetrical history. A retrospective population based cohort study of 1678 postdates pregnancies from one hospital in Finland (1990-2000) found that postterm pregnancy was associated with an increase in meconium staining (21.2% vs. 12.8%; $p < .01$), and shoulder dystocia (4.1% vs. 2.4%, $p < .01$), but found no significant difference in perinatal mortality or morbidity. (9) It is important to note that although the risk of complications rise with increasing gestational age past 41+0 weeks, the absolute risk of adverse events remains small (see Table 1).

There is evidence that the risk of an adverse outcome is greater for smaller postterm babies. A large retrospective study (510 029 singleton term and postdates births) found that postterm small for gestational age (SGA) babies are at higher risk of stillbirth, compared with postterm appropriate for gestational age babies (OR 10.56; 95% CI 6.95 - 16.05) and that the rate of SGA babies is higher in the postterm period (3.8%) compared to at term

Table 1: Risk of Fetal Complications by Gestational Age: Perinatal Complications per 1000 births

Complication (Study Country)	Gestational age (weeks)			
	40	41	42	43
	Fetal complication / 1000 births			
Meconium Stained Amniotic Fluid (Israel) N=30 478 (7)	175	215	250	N/A
Meconium Aspiration Syndrome (Norway) N=27 514 (23)	2.9	5.1	4.7	N/A
Neonatal deaths‡/ Stillbirths* (Calculated separately by the authors) (United Kingdom) N= 171 527 (24)	1.2/1.5 (Total= 3.7)	0.7/1.7 (Total= 2.4)	1.8/1.9 (Total= 3.7)	1.6/2.1 (Total= 3.7)
Perinatal Mortality Rate† (Norway) N=17 493 (16)	2.72	1.18	5.23	N/A

‡Neonatal death (WHO definition): Number of deaths during the first 28 completed days of life per 1000 live births in a given year or period. Neonatal deaths may be subdivided into early neonatal deaths, occurring during the first seven days of life, and late neonatal deaths, occurring after the seventh day but before the 28 completed days of life. (25)

**Stillbirth: none of the signs of life are present at or after birth (26)*

†Perinatal mortality rate (WHO definition): number of stillbirths and deaths in the first week of life per 1000 live births. (25)

(2.2%). (26,27) A prospective study following 792 pregnancies after 41 weeks reported an inverse relationship between non-reassuring fetal status and birth weight category. Smaller babies (<10th percentile) were more likely to have abnormal findings during antenatal monitoring (36% vs. 14% of average size babies) and more likely to need a CS for non-reassuring fetal status (12.3% vs. 5.3% for average and large size babies, $p < .024$). While the authors do not distinguish SGA babies from intrauterine growth restriction babies with regards to outcomes, the latter study excluded any previously suspected growth restricted fetuses. (28)

Summary Statement

After 41+0 weeks' gestation, the risk of meconium stained amniotic fluid, meconium aspiration syndrome and perinatal mortality rate increases with increasing gestational age, though the absolute risks associated with increasing gestational age are small. (II-2). Perinatal risk seems to be higher for postterm babies who are also small for gestational age. (II-2)

PREVENTION OF POSTTERM PREGNANCY

Establishing An Accurate Estimated Date of Delivery

Determining the length of gestation and an accurate estimated date of birth (EDB) can have "profound personal, social, and medical implications." (29) There are a variety of methods for assessing

gestational age and each method has strengths and weaknesses relating to the prevention of post-term birth, women's agency and the judicious use of technology. Therefore the method of EDB calculation deserves careful consideration.

Decisions on how best to manage a postdates pregnancy involve accurate estimates of gestational age. There is still some controversy as to how gestational age is best estimated during pregnancy. Research examining methods of establishing EDB have studied differences in the accuracy of using menstrual dating alone, ultrasound dating at different gestational ages, or algorithms that combine both menstrual dating and ultrasound biometry.

Length of Human Gestation

The duration of human gestation as calculated from the first day of the last menstrual period (LMP), assuming a 28-day menstrual cycle, is often quoted as 280 days or 40+0 weeks. (26,30-32)The true length of gestation is the time from conception until delivery occurs. (30) Empirical evidence suggests that gestation ranges from 266-274 days in studies calculating the gestational period from ovulation; the length from conception is most commonly cited as 266 days. (32,33)

This 280-day estimate for the duration of human gestation differs by 2 days from a retrospective analysis of birth data for 427 581 births in Sweden in the period from 1976-1980. In this study examining the duration of pregnancy for singleton births, analysis of last menstrual period dates and actual birthdates were compared. The duration from last menstrual period to vaginal birth was noted to be 282 days (median), 281 days (mean) and 283 days (mode). (34) In a British study involving 1512 women who had known menstrual dates and first trimester ultrasound data, where the estimated gestational age discrepancy was within ± 1 day between LMP and ultrasound, the duration of gestation was estimated for spontaneous births. The median time to spontaneous birth was 283 days after the LMP (95% CI 282-283 days). (35)

The same study demonstrated that nulliparous women have a longer gestation compared to multiparous women. The median time from LMP to spontaneous delivery was 2 days longer among nulliparous women compared with multiparous women (284 vs. 282 days, $p < .0001$). (35) A longer gestation for nulliparous women was also shown in a 1983 retrospective American study of 114 uncomplicated pregnancies. For women having spontaneous onset of labour, the median gestation from ovulation for nulliparas was 274 days and for multiparas it was 269 days. (33) More research is needed in this area.

Determining Date of Conception

Basal body temperature has been accepted as an indicator of the approximate time of ovulation. The onset of pregnancy can be assessed with reasonable reliability when basal body temperature recordings are made before and after conception. (32) If the conception date is known, either by charting basal body temperature or because conception occurred by insemination or in vitro fertilization, adding the "standard" estimate of 266 days will provide the most accurate EDB. (36,37) The accurate recording of basal body temperature, mucus monitoring or urine-test kits can predict with a higher degree of accuracy when ovulation actually occurs, compared to the LMP. (37)

Summary Statement

Having a known conception date will provide the most accurate estimate of EDB. (II-2)

MENSTRUAL DATING

Establishing an EDB using menstrual dating alone assumes a 28-day cycle, with ovulation occurring on day 14-15. Though this is accurate for many women, there are times when it is not. Franz Carl Naegele was a 19th Century obstetrician who published an easy method to establish EDB: adding 7 days from the menstrual period and counting back 3 months. Naegele's rule establishes an EDB that is approximately 280 days from the LMP and is widely used by health care practitioners.

Naegele's original citation did not make it clear if the calculations were based on the first or last day of LMP, however the first day is now standard. (26,37,38) It has been asserted that Naegele's rule was never based on empirical data, but rather on

observations that women were most likely to conceive just after menstruation, as well as the accepted normal gestation period for humans of 10 lunar or 9 calendar months. (33,38)

Naegele's rule may result in calculating gestation periods from 280-283 days depending on the months in question, due to variations in the number of days in different months. (30) Other identified problems with Naegele's rule include: inaccurate recall by women of the date on which the menstrual period began, variations in the follicular phase of the menstrual cycle and difficulty in determining whether the last bleeding episode was a menstrual period or bleeding that may be attributed to breakthrough bleeding or implantation bleeding, oral contraceptive use, and any factor that could influence ovulation timing. (31,36,39)

Variations in the Follicular Phase of the Menstrual Cycle / Timing of Ovulation

Assigning a 14-day interval between menstruation and ovulation will be inaccurate for women with irregular cycles or delayed ovulation. In 2 studies of a population who have charted their basal body temperature and where dating by ovulation is possible, 70% of the population classified as postterm from their LMP using Naegele's rule, were incorrectly dated. (32,40) This is due to a prolonged follicular phase or delayed ovulation and was demonstrated by basal body temperature and coital records. Delayed ovulation may involve the apparent prolongation of pregnancy when ovulation dates are unknown and EDB is calculated using menstrual dates only. (32)

Several studies have shown that the 28-day cycle, with ovulation on day 14 is not applicable to all women. In a study of 5688 women, 30% reported an average cycle length greater than 30 days. (41) In another study of 498 women with normal menstrual cycles, there was a range of 7 to 19 days for the luteal phase, and only 10% of women ovulated on day 14. (42) A study examining the timing of ovulation and fertility found only 30% of women with normal 28-day cycles are 'fertile' between days 10 and 17. (43) Since Naegele's rule assumes that ovulation occurs 14 to 15 days after the first day of the LMP, adjusting the EDB according to the woman's cycle length may increase the accuracy of the estimation.

Inaccurate Recall of LMP Date

A non-biological factor that reduces the accuracy of menstrual dating is the inaccurate recall of menstrual dates or the length between menstrual cycles. (33,36) One study looking at women's recall of the day of their last menstrual period noted seven digits: 1, 5, 10, 15, 20, 25 and 28 to have been reported more frequently than expected. The study found that women were 2.5 times more likely to report menstruating on day 15 than any other day, showing a digit preference. (36,44) The authors attributed this to rounding and surmised that this would lead to overestimating the gestational age, thus reducing the accuracy of menstrual dating for establishing EDB. Women who reported the first day of LMP with non-preferred numbers were likely to have more accurate LMP-based estimations of gestational age as measured by agreement with dating ultrasound. (44)

Gestational Wheels

Gestational wheel EDB is determined using either an LMP date or an ultrasound-determined gestational age. The use of gestational wheels to calculate EDB from LMP is not recommended, as they are prone to error. This may be due to the poor quality control in the production of pregnancy wheels such as the lines not being evenly spaced or concentrically aligned. The loosening of the central mounting of the gestational wheel may also contribute to errors in calculating EDB. Five-day errors are typical between wheels and they often do not correlate with Naegele's rule. (30)

Summary Statement

Factors that contribute to inaccurate calculation of EDB using menstrual dating include: inaccurate recall by women of the date on which the menstrual period began, variations in the follicular phase of the menstrual cycle and any factor that could influence ovulation timing. (II-2)

Using a gestational wheel to calculate EDB is not recommended. Counting 266 days from a known conception date or 280 days from a certain first day of LMP is preferable. (II-2)

MENSTRUAL HISTORY

Taking a thorough menstrual history is important in order to be as accurate as possible in establishing EDB. Midwives should elicit as much menstrual and fertility information as possible from the woman to determine an accurate EDB. During menstrual history taking, the following information should be discussed: LMP date (asking questions to help women to recall the date as accurately as possible), history of previous menstrual cycles, duration and amount of bleeding during menses, contraception use and timing of sexual activity. Women may also have knowledge of their potential conception date if using a fertility awareness method such as charting basal body temperature, use of an ovulation predictor kit or if they conceived through assisted fertility methods. Gathering this information will help to establish the EDB based on LMP in a manner that may more closely reflect a true estimate. However, it is important to consider that even the most careful history taking and skilled questioning may not overcome errors in women's recollection of their menstrual dates or variations in their follicular cycle which will contribute to errors in the estimation of EDB. Once an EDB has been determined, corroborate or reassess estimated dates based on physical assessments which may include fundal height measurements, timing of quickening and/or how early fetal heart may be auscultated with a fetoscope.

ULTRASOUND DATING

Some midwifery clients may request the use of ultrasound as a routine part of their pregnancy while others choose to decline. Ultrasound biometry as it relates to preventing postdates pregnancy in establishing as accurate as possible an EDB will be discussed. The risks and benefits, as well as costs of using ultrasound in the uncomplicated pregnancy are beyond the scope of this CPG.

The use of ultrasound for pregnancy dating is based on the premise that there is very little variation in the growth rate of the fetus, particularly in early pregnancy. Knowing the size of the fetus by ultrasound is thought to be equivalent to knowing the gestational age, with a margin of error of 8%. (36,37) It is important to recognize that dating a pregnancy using the LMP does so by determining the length of pregnancy, while an ultrasound estimates dates based on fetal size. A limitation of using ultrasound is that fetal size references themselves are based on having a certain LMP as the original standard, which is not accurate for all women, as discussed above. Globally, a variety of policies exist for dating a pregnancy when both a valid LMP and ultrasound date is available: (7, 10 or 14-day rules). (29) Currently, the Society of Obstetricians and Gynaecologists of Canada recommends changing the EDB if ultrasound estimation is ± 5 days in the first trimester (T1), or ± 10 days in the second trimester (T2). These guidelines approximate the 8% margin of error of ultrasound, but are less accurate as length of gestation increases in each trimester. (45)

Comparing the Effect of Menstrual Dating vs. Ultrasound Dating

A 2002 study involving 3655 women who had a known last LMP as well as an early ultrasound (< 21 weeks) examined the precision of different dating methods to estimate gestational age. They evaluated the accuracy of pregnancy dating by LMP alone, ultrasound estimates alone and algorithms that used the LMP date unless there was (a) more than 7 days' difference in the EDB when compared to ultrasound and (b) more than 14 days' difference in the EDB when compared to ultrasound. When using LMP information alone, many more women had their babies after 41 weeks (12.1%), compared to their EDB based on ultrasound alone (3.4%) or when their EDB was adjusted when it differed by more than 7 days (4.5%) or 14 days (3.5%) from the LMP estimate. This study confirms the findings of previous studies that determined that menstrual dating alone was more likely to overestimate gestational age, by not accounting for delayed ovulation. (36)

Another study of 1867 singleton live births compared first trimester report of LMP and first trimester ultrasound, and examined whether differences between estimates varied by maternal and infant characteristics. LMP classified more births as postterm than ultrasound (4.0% vs. 0.7%). Results in-

dicate first trimester report of LMP reasonably approximates gestational age obtained from first trimester ultrasound, but the degree of discrepancy between estimates varies by some maternal characteristics: younger age, ethnicity, high BMI and low birth weight. More research is needed in this area to clearly identify subpopulations at higher risk for EDB calculation errors, to reduce misdiagnoses of postterm pregnancy. (46)

In a retrospective study of 11 510 women with singleton pregnancies, reliable LMP and delivery after 37 weeks were divided into 4 groups: women who delivered at term (within 259-295 days) according to both the ultrasound and the LMP; women who delivered postterm according to the LMP estimate but not according to the ultrasound estimate; women who delivered postterm according to the ultrasound estimate but not according to the LMP; and women who delivered postterm according to both the ultrasound and the LMP estimates. There was no significant difference in mortality between the term group and the other 3 study groups. There was no significant increase in the risk for Apgar score of < 7 after 5 min or transfer to the neonatal intensive care unit for pregnancies that were defined as postterm according to the last menstrual period estimate but not according to the ultrasound estimate. However, there was an increased risk for Apgar score of < 7 after 5 min in the group that was postterm according to the ultrasound estimate but not according to the last menstrual period estimate (RR 4.96, 95% CI 1.97-12.5). This suggests that the effect of ultrasound in changing the EDB to a later date leading to pregnancies becoming postterm according to the LMP estimate but not according to the ultrasound estimate does not have any adverse consequences for fetal outcome. (47)

A retrospective study of 34 249 singleton pregnancies compared the accuracy of EDB estimations in predicting the actual date of delivery when using ultrasound alone, menstrual date alone or an algorithm where LMP dates were used and only adjusted if there was a discrepancy with the ultrasound dates of 7, 10 or 14 days. Women who had both certain menstrual dates and ultrasound biometry were included in the study. Menstrual histories were taken by midwives and only entered if the woman was certain of her dates, her menstrual cycle had been regular and no oral contraceptives had been used in the previous 3 months. Delivery took place within ± 7 days of the EDB in 49.5% of the cases if LMP was used and 55.2% of the cases if ultrasound only was used. The mean lengths of pregnancy were shortest if dating was by ultrasonography alone (279.1 days) and longest for menstrual dating alone (281.8 days). Prediction errors (calculated as estimated gestational age at delivery - 280) of LMP estimates were larger, and differed significantly from ultrasound estimates alone. This longer average length of pregnancy when using menstrual dates to calculate EDB increases the incidence of women whose pregnancy lasts beyond 41 weeks. Whether postterm is defined as being 41, 41+3 or 42 weeks, in this study, ultrasonography alone resulted in lower numbers being classified as postterm as did the other dating methods (see Table 2). Because induction is recommended in many communities when women are postterm, the dating method used will affect the number of cases that fall into this category. The authors predict that if ultrasound prior to 20 weeks is used to calculate the EDB, it will reduce the number of pregnancies that last beyond 42 weeks by 70%. (29)

A Canadian study of 44 623 women in a tertiary hospital that included all live or stillborn infants including multiple births compared LMP with ultrasound at 16 to 18 weeks. Six methods of EDB calculation were tested: LMP alone, LMP if ultrasound was ± 14 days, LMP if ultrasound was ± 10 days, LMP if ultrasound was ± 7 days, LMP if ultrasound was ± 3 days, and ultrasound alone. Concordance between LMP and ultrasound was within 3 days for 46.6% of all births, and 90.7% were within 14 days. The proportion of births greater than or equal to 42 weeks was 6.4% for LMP alone and 1.9% for ultrasound alone. Births greater than or equal to 41 weeks decreased by nearly 50% with use of early ultrasound vs. LMP estimates. (48)

Comparing the Accuracy of First Trimester and Second Trimester Ultrasound Dating

There is some evidence that first trimester ultrasound dating is more effective at preventing in-

Table 2: Percentage of cases requiring induction of labour for postdates according to induction policy and gestational dating method. From: (29)

	Postdates management policy (day of induction)		
Dating method	**287 (41 weeks)**	**290 (41+3 weeks)**	**294 (42 weeks)**
Scan only	19.2%	11.5%	3.5%
7-day rule	21.6%	12.7%	4.5%
10-day rule	23.4%	14.0%	5.3%
14-day rule	25.2%	15.6%	6.5%
LMP only	29.6%	20.3%	11.5%

duction of labour than second trimester dating. In a study of 218 women who were randomly allocated to a first or second trimester ultrasound for the purpose of dating the pregnancy, the EDB was adjusted if the difference was more than 5 days between the date calculated by the last menstrual period (LMP) and first trimester ultrasound dates, or for a difference of more than 10 days with a second trimester ultrasound. Of women assigned to the first trimester screening group, 41.3% had their gestational age adjusted on the basis of the crown-rump length measurement. Of 92 women randomly assigned to the second trimester screening group, 10.9% were corrected as a result of biometry (RR 0.26, 95% CI 0.15-0.46, p < .001). Fewer women in the first trimester screening group had labor induced for postterm pregnancy (RR 0.37, 95% CI 0.14-0.96, p = .04). There was a significant difference in the prevalence of postterm pregnancy between groups. In the first trimester screening group 6.7% delivered at a gestational age of 287 days or greater, compared with 16.3% in the second trimester screening group (RR 0.41, 95% CI 0.18-0.94, p = .03). There were no significant differences in caesarean section rates, or neonatal outcomes observed between the two groups. (31)

A Cochrane review that included 6 randomized controlled trials (RCTs), with pooled results of 24 195 women, found that routine early ultrasound in pregnancy was associated with reduced rates of induction of labour for postterm pregnancy (OR 0.61, 95% CI 0.52-0.72). (49)

Overall, the use of ultrasound to calculate EDB has correlated with a greater population level decline in postterm births than by using LMP. A large American study reviewed 42 689 603 Natality Data Files on singleton live births between 22 and 44 weeks' gestation. The authors compared LMP dates and ultrasound (T1 or T2). The decline in the American postterm birth rate from 1990-2002 was 36.6% using the LMP, and 73.8% using the ultrasound estimate of gestational age. (50) (See Figure 2)

Summary Statement

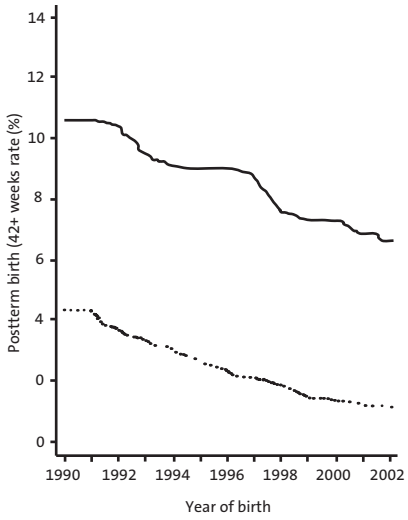
Ultrasound dating measures the size of the fetus, which is believed to be equivalent to knowing gestational age, with a margin of error of 8%. LMP dating estimates the length of the pregnancy. Ultrasound dating does not prevent postterm pregnancy; rather it measures fetal size, addressing errors that may occur due to LMP dating such as inaccurate recall of menstrual dates and factors that influence ovulation timing. Studies have consistently shown that the use of ultrasound dates alone result in fewer postterm births than LMP alone, or any algorithm used to adjust EDB based on a combination of LMP and ultrasound estimates. (II-2)

Recommendations

1. **Inform clients that when EDB information is available from both LMP and ultrasound measurements, an EDB based on ultrasound dating prior to 24 weeks is less likely to result in a postterm pregnancy. (II-2-B)**

2. **For women who choose not to have ultrasound, taking as accurate a menstrual history as possible is recommended to give a more precise estimate of pregnancy length. Obtain as much menstrual and fertility information as possible from the woman. Corroborate or reassess estimated dates based on physical assessments. (III-A)**

Figure 2: Temporal trend in postterm birth 42 to 44 weeks based on gestation age using menstrual dates and ultrasound estimates of gestational age, US singleton live births, 1990-2002. (Straight line = LMP, dotted line = ultrasound estimate) (50)



INTERVENTIONS USED TO PROMOTE SPONTANEOUS LABOUR

There are various methods used later in pregnancy to avoid the need for a postterm induction including: sweeping the membranes, evening primrose oil, homeopathic remedies and acupuncture. These methods are included in this document because they are believed to support the natural changes at the end of pregnancy, rather than to initiate labour. Alternative therapies used for the induction of labour such as castor oil, herbal remedies and breast stimulation will be considered in a clinical practice guideline on methods of labour induction. Some of the methods suggested below may be self-administered, while some require the aid of a health care practitioner. Some are supported by research and others by anecdotal evidence, physiologic rationales or beliefs of efficacy.

There are many reasons a woman may prefer to hasten the onset of their labour using home remedies or alternatives to medical induction. Westfall and Benoit conducted a qualitative study to explore women's views of prolonged pregnancy and how they felt about managing the end of the pregnancy proactively or "letting nature take its course." Twenty-seven women in British Columbia were interviewed in their third trimester of pregnancy and 23 were re-interviewed postpartum. Many of the women favoured a watch-and-wait approach when interviewed in their third trimester. However, in the postpartum interview, 9 of the 10 women whose pregnancies lasted beyond 40 weeks' gestation reported using do-it-yourself proactive measures to hasten labour onset and none of the women requested medical induction. Benoit and Westfall concluded that home remedies to hasten labour allowed women to "guide their own care rather than follow their caregiver's order" and were seen as a way of exercising agency, and resisting loss of control over the childbearing experience. (51) Use of home remedies may also reflect the anxiety reported by some women with waiting for the onset of labour past the EDB.

Sweeping the Membranes

Sweeping the membranes, sometimes referred to as a "stretch and sweep" appears to be an effective method for reducing the incidence of postterm pregnancy and the need for induction. This intervention may be particularly helpful if the woman

Table 3: Summary of RCTs of Sweeping Membranes (I-A)				
Study	**Rate of postdates pregnancy**		**Induction rate**	
	Sweeping	**Control**	**Sweeping**	**Control**
De Miranda (55)	23%	41%	N/A	N/A
Dare (57)	3%	16%	N/A	N/A
Berghella (52)	5.5%	21.7%	N/A	N/A
Cammu (54)	19%	33%	11%	26%
Gupta (56)	4%	34%	2%	32%
Magann (53)	N/A	N/A	17%	69%

is nulliparous (52) or has an unfavourable cervix. (53) The regimens used in 6 different randomized trials varied from every other day starting at 41 weeks, to weekly starting at 38 weeks, to one single event (see Table 3 for summary of results). Beginning weekly membrane sweeping at 38 weeks was shown to decrease the number of women who reached 41+ weeks' gestation. (52,54) Daily or every other day membrane sweeping beginning at 41 weeks decreased the number of women who reached 42 weeks. (53,55) Even a single session of membrane sweeping was associated with an earlier spontaneous labour and reduced need for induction. (56,57) While the procedure can be uncomfortable, one study reported that 88% of women would choose to have it done again in a subsequent pregnancy. (55) A Cochrane review (22 trials) updated in 2009 reported a reduced duration of pregnancy, a reduced frequency of pregnancies beyond 41 weeks (RR 0.50) and beyond 42 weeks (RR 0.28). (58)

Recommendation

3. **Offer sweeping of membranes, when appropriate, beginning between 38 and 41 weeks, to reduce the rate of postterm pregnancy and the need for induction. (I-A)**

Evening primrose oil

There are no prospective trials on use of oral evening primrose oil for cervical ripening. One study found no benefit to use of oral evening primrose oil, however, the study was a retrospective chart review that did not report on potential confounding variables such as the indication for using evening primrose oil or Bishop score. (59) Women choosing to use evening primrose oil may have had one of the following: unfavorable cervix, history of postdates pregnancy or medical indication to induce labour. There is an individual case report linking evening primrose oil in late pregnancy to inhibited platelet function in the neonate. (60) No studies were found on the use of vaginal evening primrose oil.

Acupuncture

Acupuncture is believed to stimulate hormonal changes or the nervous system, eventually stimulating the uterus. Three small studies were included (212 women) in a Cochrane review. The reviewer found that fewer women using acupuncture required the use of induction methods (RR 1.45, 95% CI 1.08-1.95) compared with standard care. These studies lacked statistical power and details on primary outcomes and identified a need for further study related to the use of acupuncture. However, the reviewers concluded that acupuncture appears to be safe in late pregnancy and has no known teratogenic effects. (61) More research on the risks and benefits of acupuncture is needed in order to make a recommendation.

Homeopathy

There is insufficient data on the use of homeopathic remedies such as caulophyllum to recom-

mend their use for the prevention of postterm pregnancy. One systematic review identified two trials but the trials had small sample sizes and insufficient detail to allow a recommendation. The review noted, however, that serious side effects from homeopathy use are rare and "remedies recommended for use in pregnancy are not thought to cause any problems in pregnancy." (62)

Summary Statement

No recommendations on either using or not using evening primrose oil, acupuncture or homeopathy can be made due to the absence of good quality research and subsequent lack of evidence regarding efficacy. These approaches may be offered as part of a range of alternatives, including conventional therapies, discussing the risks and benefits of each as well as any research gaps.

MANAGEMENT OF POSTDATES PREGNANCY

Background

As clients reach and pass their due dates, decisions about whether or not to intervene in the postdate pregnancy have to be made. Is intervention necessary? (63) Is the prevention of postterm pregnancy of benefit to the fetus? Do potential benefits to the fetus outweigh potential risks for the mother? How can we determine which fetus is at risk of the rare complications associated with postdates pregnancy?

These questions are being asked in the context of increasing induction rates (64,65) and caesarean section rates, (66) a trend many believe is influenced by medico-legal considerations. (63) In the US, between 1990 and 1998, the rate of labour induction increased from 9.5% to 19.4%, though the indications for the inductions varied. (65,67) This increase has been attributed to the "availability of cervical ripening agents, pressure from patients, conveniences to physicians and litigious constraints." (65) In Ontario, the induction rate was 24.7% in 2007/08, with postdates accounting for 32.7% of the total inductions. (68) Emotional stress for some midwifery clients as their pregnancy becomes prolonged, along with an obstetric community standard where induction of labour in the uncomplicated pregnancy is offered and encouraged at 41 weeks have increasingly become obstacles to the expectant approach to management of postdates pregnancy.

The question of whether or not the risks of induction outweigh potential risks to the fetus in the uncomplicated postdates pregnancy have been the subject of numerous studies and meta-analyses yielding conflicting results. (18,20,21,64,69-72) In their 2009 meta-analysis, Wennerhold et al. describe 3 options in the management of the prolonged uncomplicated pregnancy:

i. A policy of routine induction of labour at a specified gestational age

ii. Fetal assessment in the prolonged pregnancy with intervention based on evidence of fetal compromise (in practice approach i and ii are often combined)

iii. No intervention (64)

Weighing the risks and benefits of the 3 approaches to postdates management are part of what midwives discuss with their clients. A postdates discussion should include the potential risks to the fetus of postterm pregnancy and the risks of labour induction (see Table 4) to the fetus and to the mother. Helping clients to interpret this research is difficult as the research related to the management of the uncomplicated postdates pregnancy is often conflicting, of varying quality and complicated by differences in methods used to date pregnancies and different protocols used to induce labour.

COMPARING INDUCTION OF LABOUR AND EXPECTANT MANAGEMENT

A large retrospective review of births occurring between 41 and 45 weeks' gestation (408 631 births) found that the number of inductions needed to prevent one perinatal death decreased constantly after 41+0 weeks (NNT: 527 at 41 wks, 195 at 43 wks). (21) In this study the NNT at 42 was not specified, nor was data available to make this cal-

Table 4: Summary of Risks of Induction of Labour (73)	
Fetal Risks	**Maternal Risks**
Fetal compromise as a result of uterine hyperstimulation	For primiparous women: complications of prolonged labour or failed induction (e.g. chorioamnionitis, operative delivery)
Neonatal immaturity if dating is inaccurate	For multiparous women (P > 3): uterine hyperstimulation
Fetal compromise as a result of prolonged labour	Increased use of epidural analgesia (72)

culation. However, in another review of morbidity and mortality rates of conservatively managed postterm pregnancies in a Norway hospital during the period from 1989-1999, an NNT of 370 at 42 weeks was calculated. (16)

One retrospective review of 3262 women at or past their due dates found that induction was associated with a 17% increase in epidurals and a 5% increase in CS. (72)

A case control study compared 360 women induced at 42 weeks with 486 controls who were managed expectantly with serial fetal monitoring. The induction group had a higher operative delivery rate (OR 1.46, 95% CI 1.34-2.01). (74) Researchers have pointed out the challenge of retrospective studies with regards to their potential for bias (74) and have called for larger randomized studies before changing policy regarding the management of postterm pregnancy. (75)

Randomized studies and systematic reviews have resulted in conflicting conclusions. Management of postdates pregnancy was significantly influenced in Canada by the Canadian Multicenter Post-term Pregnancy Trial (CMPPT) published in 1992. This trial randomized a total of 3 407 women between 41 and 44 weeks' gestation into an induction group (1701) and antenatal monitoring/expectant management group (1706). (18) The study found similar rates of perinatal mortality and neonatal morbidity in the 2 groups but a higher rate of CS in the expectant management group (24.5% vs. 21.2%, p = .03). Two limitations of the study acknowledged by the authors were the lack of blinding and the different methods of induction. In the induction group, intracervical prostaglandin gel was used when the cervix was less than 3 cm dilated, whereas the expectant management group was induced with oxytocin alone which could have affected the success of the induction process. The clinicians providing intrapartum care were not blinded to the women's group allocation, possibly influencing the clinician's threshold for intervening and performing a CS. Subsequent commentary on the validity of the CMPPT has noted that the higher rate of CS in the expectant group can be almost completely accounted for by more operations for fetal distress (8.3% vs. 5.7%) and suggested that clinicians were more likely to respond to fetal tracings among those in the expectant management group. (76) Lack of blinding could also have had an impact on the results of a case control study by Luckas et al. where the rate of CS (RR 1.9) and NICU admissions (RR 2.69) were higher for the postdates pregnancy group while the incidence of low Apgars and neonatal pathology were the same. The authors conclude "a lower threshold for clinical intervention in pregnancies perceived to be 'at-risk' may be a significant contributing factor." (77) Two smaller RCTs (440 and 508 women respectively) did not find a significant difference in neonatal mortality, morbidity or CS rate when comparing routine induction with expectant management. (19)

A recent Canadian study from Winnipeg attempted to validate the findings of the CMPPT at a tertiary

care hospital. The study examined the outcomes of 1367 women in non-randomized contemporaneous cohorts of nulliparous women at 41+0 weeks who had planned either expectant management or induction. When grouped by intention to treat, caesarean rates were not significantly different at 17.7% for expectant management and 21.3% induction respectively, (p = .09). In an analysis that compared all spontaneous labours (regardless of whether they planned expectant management or induction of labour) with a group where induction of labour was planned and carried out, caesarean rates were 16.6% (spontaneous labour group) vs. 25.4% (induction of labour group), (p = .001). The authors conclude that the results of the CMPPT may not be valid for similar hospital environments with low CS rates and strict indications for induction. (71)

A Cochrane Review comparing induction at 41 weeks with at least one additional week of expectant management found no significant difference in the CS rate. There was a significant decrease in MAS in the induction group (RR 0.29). The review did report a lower perinatal mortality rate in the 41-week induction group (0.03% vs. 0.33%), even after all deaths due to congenital abnormalities were excluded (0 vs. 0.21%) but this finding was not statistically significant. (70) A 2009 systemic review by Wennerholm et al. found that expectant management was not associated with a higher risk of perinatal mortality but was associated with an increased risk of MAS (RR 0.43, 95% CI 0.23-0.79). The expectant management group had more caesarean deliveries but when the Hannah trial was excluded in a sensitivity analysis, this difference was no longer significant. In addition, the authors assessed all of the 13 trials included to be of poor to fair quality and inadequately powered to detect a rare outcome such as perinatal mortality. (64) (See Table 5)

There is some evidence that the decision to induce with postdates pregnancy should take into consideration estimated fetal weight: small for gestational age babies appear to be at higher risk postdates. One small, retrospective analysis of 143 Japanese women with an uncomplicated pregnancy induced at 42 weeks found that primiparous women with babies over 3600 g compared with women whose babies weighed less than 3600 g had a lower rate of caesarean section for fetal distress during labour (1/5 vs. 14/18, p < .05) but a higher risk of induction failure due to an unfavourable cervix. The group with babies weighing < 3600 g were also statistically more likely to have a lower umbilical artery blood pH (pH < 7.20) than the group with babies weighing > 3600 g (14/58 vs. 0/22, p < .01). In multiparous women there was no significant difference in obstetrical outcomes between women with babies over and under 3600 g. It should be noted that the study population was very small and results may not be generalizable. (78)

Summary Statement

While there is some evidence that increasing gestational age is associated with a higher rate of perinatal complications, clinical research has not established the optimal gestational age to induce labour in order to avoid adverse outcomes. (I) Perinatal risk seems to be higher for postdates babies who are also small for gestational age. (II-2) For AGA babies, a policy of expectant management until 42+0 weeks' gestation has the potential advantage of reducing rates of induction (I) and epidural (II-2).

Recommendations

4. **Prior to 41+0 weeks' gestation, discuss the risks and benefits of induction of labour between 41 and 42 weeks' gestation and offer induction by 42+0 weeks' gestation. (II-2-A)**

5. **Inform clients that the absolute risk of perinatal death from 40+0 weeks to 41+0 weeks to 42+0 weeks' gestational age changes from 2.72/1000 to 1.18/1000 to 5.23/1000; currently available research is not of high quality and has not established an optimal time for induction. Therefore, women with uncomplicated postdates pregnancies should be offered full support in choices that will allow them to enter spontaneous labour. A policy of expectant management to 42+0 weeks following an informed choice discussion is the most appropriate strategy for women who wish to maximize their chance of normal birth. (II-2-A)**

Table 5: Comparison of Expectant Management (EM) to Induction of Labour (IOL) at 41 weeks		
Comparison of expectant management to induction of labour at 41 weeks		
Study	**CS rate: Intention to Treat**	
	EM	**IOL**
Hannah 1992 (18) RCT, N = 3407	24.5%	21.2%
Luckas 1998 (77) Cohort study	RR 1.9; 95%CI 1.29-2.85	N/A
Heimstad 2007 (20) RCT, N = 508	No significant difference	
Heimstad 2008 (21) Retrospective review, N = 98 559		NNT = 527 (to prevent 1 perinatal death)
Gulmezoglu 2009 (70) Cochrane Review 19 Trials, N = 7984	No significant difference	
Pavicic 2009 (71) Cohort study, N = 1367	17.7%	21.3%; p = .09
Duff, 2000 (72) Retrospective review, N = 3262	N/A	5% increase

6. **For women choosing expectant management beyond 42+0 weeks, discuss the lack of clear evidence on which to base a recommendation regarding expectant management other than a trend towards increasing perinatal morbidity and mortality with increasing gestational age (II-2-A)**

FETAL SURVEILLANCE FOR PREGNANCIES AT 41+0 WEEKS AND BEYOND

None of the studies reviewed have validated an optimal starting time or frequency for fetal surveillance at and beyond term. The most commonly used methods for postdates fetal surveillance are the non-stress test, amniotic fluid index, biophysical profile and fetal movement counting. No evidence was found to show that a non-stress test is an effective way to monitor postdates pregnancies due to its low sensitivity and low positive predictive value (less than 50%). (79) Low amniotic fluid index (< 5 cm) is associated with adverse perinatal outcomes but on its own has a low sensitivity (11% to 28%) for the prediction of morbidity. (80-82) One study found the biophysical profile to have high specificity and high negative predictive value; (83) however, another study found that, while a modified BPP did result in more abnormal findings, there was not an improvement in neonatal outcomes when compared to AFI alone. (83)

While maternal awareness of fetal movement is associated with good outcomes, no specific method for fetal movement counting has been shown to be beneficial in reducing perinatal mortality or morbidity in low-risk pregnancies. (84-86) While no studies tested or compared specific schedules for postdates fetal surveillance, the five RCTs reviewed all had very low perinatal mortality and morbidity rates and their respective surveillance protocols are summarized in Table 6.

Table 6: Fetal Surveillance Protocols Used In Postdates Trials		
Trial:	**Starting week:**	**Fetal surveillance protocol:**
Hannah 1992 (18)	41 wks	Daily kick counts, Non-Stress Test (NST) 3x/wk, U/S for AFV 2-3x/wk until 44 wks
NICHHDN 1994 (19)	41 wks	NST and U/S for AFV 2x/wk until 44 wks
Chanrachakul 2003 (87)	41+3 wks	NST and AFI once/wk until 43 wks then 2x/wk until 44 wks
Roach 1997 (88)	42 wks	NST and AFI 2x/wk
Heimstad 2007 (20)	41+2 wks	U/S for EFW and AFI, NST every third day until 42+6 wks

Summary Statement

Although non-stress tests and formal fetal movement counting are commonly used as monitoring strategies there is very little evidence to demonstrate their efficacy. (II-3-C)

The efficacy of other methods such as amniotic fluid index (AFI) and bio-physical profile (BPP) are supported by limited evidence. (II-2)

Recommendation

7. **For women choosing expectant management of pregnancy at and beyond 41+0 weeks' gestation, offer ultrasound twice weekly, starting between 41 and 42 weeks and continuing until delivery to assess fetal well-being and amniotic fluid volume. (II-2-A)**

CONCLUSION

Management of the uncomplicated pregnancy beyond 41+0 weeks occurs commonly in midwifery practice. Though overwhelmingly these babies will be born healthy and without complications, there is research evidence indicating there are increased risks associated with increasing gestational age. Not all regions have equal or equitable access to ultrasound for dating or antenatal fetal monitoring. Midwives, along with their clients, should determine the best available methods for estimating gestational age. Midwives should also determine the best methods for fetal surveillance in their communities during expectant management past 41+0 weeks, determined by access to technologies and women's risk tolerance.

The management of postdates pregnancy, and the decision whether or not elevated risk may warrant induction of labour is an ongoing debate among the obstetric community. The evidence available to date about the comparison of expectant management to induction of labour for postdates pregnancy is conflicting and not easily comparable due to different study protocols and inadequate study size to detect rare outcomes.

Since the outcomes of interest in the management of prolonged pregnancy occur very infrequently, very large numbers of study participants are required to achieve adequate statistical power and provide convincing evidence for either expectant management or induction of labour. Until this evidence becomes available, midwives should discuss these areas of clinical uncertainty with pregnant women in the spirit of informed choice. Expectant management until 42+0 weeks can be expected to support normal birth, along with the associated benefits of a labour occurring through the mother's own efforts. In the absence of clear evidence and following informed choice discussions about risks and benefits of both strategies women themselves are best suited to make decisions in the absence of clear evidence based on their own risk tolerance and unique circumstances.

RISK MANAGEMENT

Practice groups may wish to create a written protocol specific to the practice group that documents which of the recommendations within the Clinical Practice Guideline they are adopting and how they are putting into practice those recommendations, including what would be included in an informed choice discussion with each client. Midwives are advised to document clearly that an informed choice discussion has taken place. If the practice group has a written protocol about what should be discussed with each client, that discussion should be followed. Any deviation from that discussion should also be documented in the woman's chart. If there is no protocol about what information is provided then documentation in the woman's chart should provide details of that discussion. If, based on the client's health or risk status, the midwife makes recommendations for surveillance or intervention that the client declines, the midwife should document that her recommendation was declined.

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SUMMARY OF RECOMMENDATIONS

1. **Inform clients that when EDB information is available from both LMP and ultrasound measurements, an EDB based on ultrasound dating prior to 24 weeks is less likely to result in a postterm pregnancy. (II-2-B)**
2. **For women who choose not to have ultrasound, taking as accurate a menstrual history as possible is recommended to give a more precise estimate of pregnancy length. Obtain as much menstrual and fertility information as possible from the woman. Corroborate or reassess estimated dates based on physical assessments. (III-A)**
3. **Offer sweeping of membranes, when appropriate, beginning between 38 and 41 weeks, to reduce the rate of postterm pregnancy and the need for induction. (I-A)**
4. **Prior to 41+0 weeks' gestation, discuss the risks and benefits of induction of labour between 41 and 42 weeks' gestation and offer induction by 42 weeks' gestation. (II-2-A)**
5. **Inform clients that the absolute risk of perinatal death from 40+0 weeks to 41+0 weeks to 42+0 weeks' gestational age changes from 2.72/1000 to 1.18/1000 to 5.23/1000; currently available research is not of high quality and has not established an optimal time for induction. Therefore, women with uncomplicated postdates pregnancies should be offered full support in choices that will allow them to enter spontaneous labour. A policy of expectant management to 42+0 weeks following an informed choice discussion is the most appropriate strategy for women who wish to maximize their chance of normal birth. (II-2-A)**
6. **For women choosing expectant management beyond 42+0 weeks, discuss the lack of clear evidence on which to base a recommendation regarding expectant management other than a trend towards increasing perinatal morbidity and mortality with increasing gestational age (II-2-A)**
7. **For women choosing expectant management of pregnancy at and beyond 41+0 weeks' gestation, offer ultrasound twice weekly, starting between 41 and 42 weeks and continuing until delivery to assess fetal well-being and amniotic fluid volume. (II-2-A)**

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