Supplement

Winter 2007
Volume 16
Number 1

The Journal of
Perinatal Education®

Advancing Normal Birth

A Lamaze® International Publication

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(*Continued*)

The Journal of
Perinatal Education®

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The Journal of Perinatal Education (ISSN 1058-1243) is published quarterly (winter, spring, summer, fall) at 2025 M St. NW, Suite 800, Washington, DC 20036-3309; (202) 367-1128. Subscription to the journal is a benefit of membership in Lamaze International. Nonmember print and online subscription prices are $60 for individuals and $180 for institutions. Back issues are $25 each.

The Journal of Perinatal Education is peer-reviewed and indexed in Cumulative Index to Nursing-Allied Health Literature (CINAHL) and in PubMed Central.

Postmaster: Send address changes to *The Journal of Perinatal Education*, Lamaze International, 2025 M St. NW, Suite 800, Washington, DC 20036-3309.
Periodicals postage paid at Washington, DC, and additional mailing offices.

For more information about Lamaze International membership and Lamaze Childbirth Educator Certification, call (202) 367-1128 or toll-free (800) 368-4404; e-mail info@lamaze.org; or visit the Lamaze International Web site (www.lamaze.org). For information on *Lamaze Parents* magazine, call toll-free (800) 832-0277.

Publisher: Lamaze International, Inc.
2025 M St. NW, Suite 800, Washington, DC 20036-3309;
(800) 368-4404; (202) 367-1128.
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Author Guidelines: www.lamaze.org
Production and Distribution: Dartmouth Journal Services, Pilgrim Five, Suite 5, 5 Pilgrim Park Road, Waterbury, VT 05676. (802) 244-1457.

The mission of Lamaze International is to promote, support, and protect normal birth through education and advocacy. Our vision is a world of confident women choosing normal birth. Lamaze International believes that women who are fully informed, confident, and supported will want normal birth. Lamaze International believes that caregivers should respect the birth process and not intervene without compelling medical indication. These evidence-based practices adapted from the World Health Organization promote, protect, and support normal birth: Labor begins on its own; freedom of movement throughout labor; continuous labor support; no routine interventions; nonsupine (e.g., upright or side-lying) positions for birth; no separation of mother and baby with unlimited opportunity for breastfeeding.

Introduction

The Coalition for Improving Maternity Services:

Judith A. Lothian, PhD, RN, LCCE, FACCE

ABSTRACT

The history of the Coalition for Improving Maternity Services as part of a global effort to promote normal birth is described. The principles underlying the *Mother-Friendly Childbirth Initiative* are presented, the *Ten Steps of Mother-Friendly Care* are identified, and the evidence basis for the *Ten Steps* is introduced.

Journal of Perinatal Education, *16*(1–Supplement), 1S–4S, doi: 10.1624/105812407X173119
Keywords: The Coalition for Improving Maternity Services, Mother-Friendly Childbirth Initiative, Ten Steps of Mother-Friendly Care, normal birth

HISTORY OF THE COALITION FOR IMPROVING MATERNITY SERVICES

In response to the expanding medicalization of birth and low breastfeeding rates, the 1990s saw a flurry of activity at both international and national levels to normalize birth and increase breastfeeding rates. In 1991, the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) launched the *WHO Baby-Friendly Hospital Initiative* and the *Ten Steps to Baby-Friendly* in an effort to ensure that all maternity services, whether free-standing or in a hospital, would become centers of breastfeeding support. In 1997, the WHO released *Care in Normal Birth: A Practical Guide*. A parallel process was at work in the United States. In 1994, Lamaze International invited sister organizations and stakeholders in the birth and breastfeeding communities to a birth summit in Chicago, Illinois. The goal of that summit was to foster collaboration in a national effort to promote, protect, and support normal birth and breastfeeding. The commitment of that group to work together resulted in the establishment of the Coalition for Improving Maternity Services (CIMS) and, 2 years later, the launch of the *Mother-Friendly Childbirth Initiative* and the *Ten Steps of the Mother-Friendly Childbirth Initiative for Mother-Friendly Hospitals, Birth Centers, and Home Birth Services (Ten Steps of Mother-Friendly Care)* (CIMS, 1996). Like the *Baby-Friendly Hospital Initiative*, the *Mother-Friendly Childbirth Initiative* is intended to help hospitals as well as birthing centers and home birth services provide care that is "mother-friendly."

The *Mother-Friendly Childbirth Initiative* was the first consensus declaration to deal with labor and birth by a multidisciplinary body of professional organizations and individuals in the history of North America. Members of CIMS that developed and ratified the *Mother-Friendly Childbirth Initiative* included childbirth educators, maternity care nurses, midwives, physicians, doulas, lactation consultants, grassroots advocates for normal birth and breastfeeding, maternity care researchers, university professors, experts in maternal mental health, authors, and parents. The participants met at forums across the United States from 1994 to 1996 to identify the philosophical cornerstones of the *Mother-Friendly Childbirth Initiative* and, then, to define

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the *Mother-Friendly Childbirth Initiative* and accompanying *Ten Steps of Mother-Friendly Care,* log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.

what practices constituted mother-friendly care. At the time of the signing of the *Mother-Friendly Childbirth Initiative*, there was representation from 26 organizations (acting on behalf of over 90,000 childbirth professionals and advocates) and 28 individuals (CIMS, 1996).

PHILOSOPHICAL CORNERSTONES OF THE MOTHER-FRIENDLY CHILDBIRTH INITIATIVE

Normalcy of the Birthing Process

Birth is a normal, natural, healthy process, and women and babies have the inherent wisdom necessary for birth. Babies are aware, sensitive human beings at birth. Breastfeeding provides optimum nourishment for newborns and infants. Birth can safely take place in hospitals, birth centers, and homes. The midwifery model of care, supporting and protecting the normal process of birth, is the most appropriate care for most women during pregnancy and birth.

Empowerment

A woman's confidence and ability to give birth and care for her baby are enhanced or diminished by every person who gives her care and by the environment in which she gives birth. A mother and baby are distinct, yet interdependent, during pregnancy, birth, and infancy. Their interconnectedness is vital and must be respected. Pregnancy, birth, and the postpartum period are milestone events in the continuum of life. These experiences profoundly affect women, babies, fathers, and families and have important and long-lasting effects on society.

Autonomy

Every woman should have the opportunity to have a healthy and joyous birth experience and to give birth as she wishes in an environment in which she feels nurtured and secure and in which her emotional well-being, privacy, and personal preferences are respected. She should have access to the full range of options for pregnancy, birth, and nurturing her baby; receive accurate and up-to-date information about the benefits and risks of all procedures, drugs, and tests; and be allowed the rights of informed consent and informed refusal. Finally, she should receive support for making informed choices about what is best for her and her baby based on her individual values and beliefs.

Do No Harm

Interventions should not be applied routinely during pregnancy, birth, or the postpartum period. If complications arise, medical treatments should be based on the latest high-quality evidence.

Responsibility

Each caregiver is responsible for the quality of care she or he provides. Maternity care practices should be based not on the needs of the caregiver or provider, but solely on the needs of the mother and child. Each hospital and birth center is responsible for the periodic review and evaluation, according to current scientific evidence, of the effectiveness, risks, and rates of use of its medical procedures. Society, through both its government and the public health establishment, is responsible for ensuring access to maternity services for all women and for monitoring the quality of those services. Individuals are ultimately responsible for making informed choices about the health-care they and their babies receive.

TEN STEPS OF MOTHER-FRIENDLY CARE

These principles gave rise to the *Ten Steps of Mother-Friendly Care*, which support, protect, and promote mother-friendly maternity services. A mother-friendly hospital, birth center, or home birth service must fulfill the following steps:

1. Offers all birthing mothers:
   - unrestricted access to the birth companions of her choice, including fathers, partners, children, family members, and friends;
   - unrestricted access to continuous emotional and physical support from a skilled woman—for example, a doula or labor-support professional; and
   - access to professional midwifery care.
2. Provides accurate, descriptive, and statistical information to the public about its practices and procedures for birth care, including measures of interventions and outcomes.
3. Provides culturally competent care—that is, care that is sensitive and responsive to the specific beliefs, values, and customs of the mother's ethnicity and religion.
4. Provides the birthing woman with the freedom to walk, move about, and assume the positions of her choice during labor and birth (unless restriction is specifically required to correct a complication) and discourages the use of the lithotomy position.
5. Has clearly defined policies and procedures for:
   - collaborating and consulting throughout the perinatal period with other maternity services,

including communicating with the original caregiver when transfer from one birth site to another is necessary; and
- linking the mother and baby to appropriate community resources, including prenatal and postdischarge follow-up and breastfeeding support.

6. Does not routinely employ practices and procedures that are unsupported by scientific evidence, including but not limited to the following:
   - shaving,
   - enemas,
   - intravenous drips,
   - withholding nourishment,
   - early rupture of membranes, and
   - electronic fetal monitoring.

   Other interventions are limited, as follows:
   - has an induction rate of 10% or less;
   - has an episiotomy rate of 20% or less, with a goal of 5% or less;
   - has a total cesarean rate of 10% or less in community hospitals and 15% or less in tertiary care hospitals; and
   - has a vaginal birth after cesarean rate of 60% or more, with a goal of 75% or more.
7. Educates staff in nondrug methods of pain relief and does not promote the use of analgesic or anesthetic drugs not specifically required to correct a complication.
8. Encourages all mothers and families, including those with sick or premature newborns or infants who have congenital problems, to touch, hold, breastfeed, and care for their babies to the extent compatible with their conditions.
9. Discourages nonreligious circumcision of the newborn.
10. Strives to achieve the WHO/UNICEF *Ten Steps of the Baby-Friendly Hospital Initiative* to promote successful breastfeeding.

ONGOING RECOGNITION AND EVIDENCE BASIS FOR THE TEN STEPS

The *Mother-Friendly Childbirth Initiative* has received national and international recognition. An international survey in 2005 provided global support for the *Ten Steps of Mother-Friendly Care* (Pascali-Bonaro, 2006). In 2006, authorities of the WHO/UNICEF *Baby-Friendly Hospital Initiative* added an optional component to the baby-friendly assessment tools, which examines mother-friendly care. Each country will determine whether it will integrate this module as it updates assessment criteria and tools to the new standards (WHO, 2003). For the first time, the *World Alliance for Breastfeeding Action* (2006) has included a section on birth practices based on the *Mother-Friendly Childbirth Initiative*. In 2006, the international committee of CIMS working with Childbirth Connection organized a meeting in Geneva. Participants represented 19 national and international organizations, including Lamaze International; DONA International; the International Confederation of Midwives; the International Council of Nurses; the International Lactation Consultant Association; the Academy of Breastfeeding Medicine; the International Pediatric Association; the Partnership for Maternal, Newborn and Child Health; UNICEF; Wellstart International; the World Alliance for Breastfeeding Action; and the World Health Organization. The result of this collaboration is an international document: the *MotherBaby International Childbirth Initiative*. This global initiative is expanding the reach of mother-friendly and is solidifying awareness of the impact of birth on breastfeeding (CIMS, in press).

In the 10 years since the development of the evidence-based *Ten Steps of Mother-Friendly Care*, birth has become increasingly ''intervention intensive'' (Declercq, Sakala, Corry, & Applebaum, 2006). The cesarean rate in the United States has risen dramatically and, in 2005, reached an all-time high of 30.2% of births (National Center for Health Statistics, 2006). At the same time, there has been a sharp decrease in the number of vaginal births after cesarean (Declercq et al., 2006). An increasing body of research provides support for the value of normal physiologic birth and the dangers inherent in interfering in that process (Buckley, in press; Enkin et al., 2000). There is a deepening appreciation for the value of evidence that examines best possible outcomes rather than just risk and adverse outcome (Murphy & Fullerton, 2001).

As the crisis in birth escalates, it is critically important to assemble and scrutinize the evidence basis for the *Ten Steps of Mother-Friendly Care*. In this supplementary issue, we present the culmination of our efforts: a systematic review of the evidence in support of each of the *Ten Steps of Mother-Friendly Care*. Members of the CIMS Expert Work Group describe the methodology used and, then, present the rationales for complying with each step and a systematic review of the evidence for each step. Because the *Ten Steps of Mother-Friendly Care* is intended to advance mother-friendly care in birth centers and home birth services as well as hospitals,

Members of the CIMS Expert Work Group and supporting associates were:

- Henci Goer, BA, Project Director
- Mayri Sagady Leslie, MSN, CNM
- Judith Lothian, PhD, RN, LCCE, FACCE
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- Karen Salt, CCE, MA
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- Sharon Storton, MA, CCHT, LMFT
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- Allana Moore, BA, Project Assistant
- Randall Wallach, BA, MA, Medical Editor

we determined it was important to look carefully at the state of the science related to birth outside the hospital. These findings are presented in the Appendix (see pp. 81S–88S).

ACKNOWLEDGEMENT

This project was made possible by a generous grant from a donor's advised fund of the New Hampshire Charitable Foundation.

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Dedication to Sharron Humenick

Roberta Scaer, MSS

Before her untimely death on September 9, 2006, Sharron Humenick devoted her adult life to normal birth and breastfeeding. As a professor of nursing, Lamaze childbirth educator, and editor of *The Journal of Perinatal Education*, Sharron took every opportunity to publicize the intricate, physiological dance between mother and fetus that is normal birth and to publicize how normal birth is most likely to occur when the care provider observes but does not intervene with drugs, anesthesia, or surgery. Sharron knew if the mother and baby were seen as inseparable from birth and the pair were respected and treated as a dyad, the dance of breastfeeding is most likely to continue after birth.

The *Mother-Friendly Childbirth Initiative* (MFCI) and the *Ten Steps of Mother-Friendly Care* that lay out the practical application of the philosophy and principles of the MFCI were conceived and created by the consensus method over a 2-year period by several hundred maternity-care professionals, authors, and individuals with experience and knowledge of normal birth and breastfeeding. When Sharron first read the MFCI with its *Ten Steps*, she knew this historic document could be the catalyst for health professionals to support and protect normal birth and breastfeeding as the standard of care. She also knew that documentation of the research literature supporting the *Ten Steps* was a critical need for its use as evidence-based care.

Every one of us who had the privilege of knowing and working with Sharron felt empowered and always encouraged to base our work on scientific methodology. She was fearless in publicizing normal birth and breastfeeding as the gold standard of care for all women. She was equally fearless in demanding that research literature reviews be used to support the credibility of that care.

In the last weeks of her life, Sharron wanted so much to be part of the team bringing this document to fruition. She expressed regret that she was leaving life with so much left to do for normal birth and breastfeeding. We dedicate this document, *Evidence Basis for the Ten Steps of Mother-Friendly Care*, to Sharron Humenick, both to honor her commitment to normal birth and breastfeeding in practice and in proof and to present her commitment as a model for the reader.

In honor of Sharron Humenick's commitment to advancing normal birth around the world, Lamaze International established the "Sharron S. Humenick International Development Fund." Contributions may be sent to Lamaze International, 2025 M Street NW, Suite 800, Washington, DC 20036. For more information, visit Lamaze International's Web site (www.lamaze.org) or call toll-free at (800) 368-4404.

Methods

The Coalition for Improving Maternity Services:

Henci Goer, BA

ABSTRACT

In this article, the details of the methods used to determine the evidence basis of the *Ten Steps of Mother-Friendly Care* are presented and discussed.

Journal of Perinatal Education, *16*(1–Supplement), 5S–9S, doi: 10.1624/105812407X173128
Keywords: systematic review, Ten Steps of Mother-Friendly Care, Agency for Healthcare Research and Quality standards

The systematic review is the optimal vehicle for establishing a detailed evidence basis for the *Ten Steps of Mother-Friendly Care,* developed by the Coalition for Improving Maternity Services (CIMS). Ebell et al. (2004) define a systematic review as "a critical assessment of existing evidence that addresses a focused clinical question, includes a comprehensive literature search, appraises the quality of studies, and reports results in a systematic manner" (p. 549). This process gives systematic reviews important advantages over the more conventional, narrative review, as described (Goer, in press):

- Systematic reviews cast a wide net. With narrative reviews, no attempt is made to retrieve all relevant research; instead, reviewers choose what suits their thesis.
- Systematic reviews describe their methodology. Narrative reviews make explicit neither how reviewers went about selecting studies nor the basis on which studies were included or excluded.
- Systematic reviews apply uniform criteria. Narrative reviewers may include or reject a study simply because they like or do not like its conclusions.
- Systematic reviews evaluate quality. Narrative reviews behave as if all studies are alike, whereas systematic reviews include only higher quality studies. This means that, unlike narrative reviews, systematic reviews draw conclusions from the best evidence available. Systematic reviews also clarify where there is insufficient evidence to reach a conclusion.
- Systematic reviews report results in a structured way. Narrative reviews tend to cite specific results from a few studies in support of a theory.

It would seem at first glance that a valid systematic review would not be possible given that the *Ten Steps of Mother-Friendly Care*, the conclusions of the proposed review, were already fixed. However, when the *Ten Steps* were developed, only those steps for which research had established consensus or which were intuitively obvious as "best practice" were included. The task for this project, therefore, was refined to evaluate and present the quality of evidence supporting specific rationales for each of the *Ten Steps*.

The review expanded on conventional systematic reviews in that it addressed a broad range of

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outcomes of interest. The content of conventional reviews are generally confined to the presence or absence of short-term, adverse, physical outcomes. They also typically evaluate the use of specific interventions in isolation rather than considering the effects of a "high-intervention" system of care versus one that is not.

Members of the CIMS Expert Work Group (EWG) conducting this review, like the developers of the *Mother-Friendly Childbirth Initiative* itself, recognized that the absence of disease does not equal health. They also recognized that the excessive use of intervention is, in itself, harmful because it imposes risks with no evidence of benefit. Accordingly, the EWG examined long-term outcomes, psychosocial outcomes, quality of life concerns, the impact of birth practices on breastfeeding, increased need for further medical intervention, and short-term morbidity.

Members of the CIMS Expert Work Group were:

- *Henci Goer, BA, Project Director*
- *Mayri Sagady Leslie, MSN, CNM*
- *Judith Lothian, PhD, RN, LCCE, FACCE*
- *Amy Romano, MSN, CNM*
- *Karen Salt, CCE, MA*
- *Katherine Shealy, MPH, IBCLC, RLC*
- *Sharon Storton, MA, CCHT, LMFT*
- *Deborah Woolley, PhD, CNM, LCCE*

PROJECT DESIGN

The EWG consisted of eight people. Members came from varied professional backgrounds, were committed to mother-friendly care, and were knowledgeable about either maternity care research in general or the research in their specific field. EWG members had expertise in the various aspects of mother-friendly care covering all elements of the *Ten Steps of Mother-Friendly Care*.

The *Ten Steps* were parceled out among six members of the EWG for research and review (HG, MSL, KS, KS, SS, DW). In accordance with the requirements of systematic reviews, EWG members determined whether to include or exclude studies based on specific criteria (see later discussion). They extracted data from each included study into a data summary sheet and listed a reason for each study they excluded. The EWG developed the data summary template based on guidelines published by the Agency for Healthcare Research and Quality (AHRQ) and an article recommending strategies for conducting valid systematic reviews with limited resources (Griffiths, 2002; West et al., 2002).

To provide intra- and interobserver reliability, one member of the EWG who did not participate in the primary review process served as a "second reader" (AR). The second reader and project director (HG) determined which topics would require a second reading. The topics chosen represented the steps (or components thereof) that were considered most controversial in the literature and/or in practice and included the following: home birth, freestanding birth centers, routine intravenous lines, withholding food and drink in labor, routine early amniotomy, routine electronic fetal monitoring (cardiotocography), induction rate, cesarean-section rate, vaginal birth after cesarean rate, hydrotherapy, epidurals, circumcision, and adoption of baby-friendly status. The second reader was then responsible for reading and independently evaluating the quality of the studies that were reviewed for the preselected topics and reviewing all data summary sheets to ensure they were correct and complete. Finally, with no knowledge of the rating assigned by the primary reviewers, the reader assigned ratings of the strength of the aggregate evidence supporting each rationale for the three domains (see later discussion). Any discrepancies between the ratings assigned by the primary reviewer and the second reader were resolved by consensus. Another EWG member (JL) assumed the role of project director during the final stages of the process and was involved with writing, editing, and preparing the document for publication.

DATA SOURCES

EWG members conducted searches in the following seven databases: CINAHL, the Cochrane Library, DARE, MEDLINE, OMNI, PsychINFO, and Scirus. In addition, EWG members obtained studies from their own files and the reference lists of other studies and reviews (both narrative and systematic). EWG members included studies published between January 1, 1990, and June 1, 2006.

EXCLUSION CRITERIA

Study exclusions came in two categories: absolute and relative. Absolute exclusions were the following:

- Studies published in languages other than English. Fortunately, many studies carried out in countries where English is not the native language are published in English-language journals.
- Studies available only as an abstract.
- Narrative reviews, commentaries, or practice guidelines. Narrative reviews and commentaries are opinion pieces. Opinion pieces are the weakest form of evidence and were disqualified on that basis. Practice guidelines are generally opinion pieces as well, but even where they are not, unlike systematic reviews, they do not provide the information necessary to evaluate the quality of the literature review on which they are based.
- Studies with surrogate outcomes, with two exceptions (see later discussion).

Grimes and Schulz (2005) define a surrogate outcome, also called "surrogate marker" or "intermediate measure," as "an outcome measure that substitutes for a clinical event of true importance" (p. 1114). Surrogate outcomes are usually laboratory or imaging studies "thought to be in the causal pathway to a clinical event of interest" (p. 1114). For example, a measurement of pelvic-floor muscle strength or an ultrasound scan showing a defect in the anal sphincter muscle would be surrogate outcomes as opposed to outcomes measuring urinary or bowel incontinence. Surrogate outcomes often correlate poorly with clinical outcomes, as is the case with the examples cited here. Nonetheless, although surrogate outcomes cannot rule in adverse clinical outcomes, they can sometimes be useful in ruling them out. Using the current example, the fact that the pelvic-floor musculature is stronger in women who have spontaneous tears defeats the argument that episiotomy prevents urinary incontinence.

The second situation in which surrogate outcomes can be useful is in cases whereby the endpoint is so rare that it is not feasible to conduct a study large enough—that is, with sufficient statistical power—to have a reasonable chance to detect differences between groups. Neonatal death in full-term pregnancies with no medical complications serves as one example. In such cases, studies relying on surrogate outcomes were acceptable, provided the outcome was closely linked to the actual event of interest and could be measured objectively, as when newborns required prolonged respiratory assistance as opposed to low 5-minute APGAR scores.

Relative exclusions were left to the individual judgment of the EWG member and depended on the specific topic being researched. Relative exclusions were the following:

- On rare occasions and for reasons listed with the reference, studies published earlier than 1990.
- Studies in countries lacking medical resources.
- Weaker studies (see later discussion for grading scheme).
- Studies included systematic reviews.
- Multiple reports on the same study or dataset.

Studies published more than 15 years prior to conducting this review or published in countries lacking medical resources were excluded to ensure that results could be generalized to modern medical care. Nonetheless, outcomes of interest might not depend on these factors, and what constitutes a weaker study varies from rationale to rationale, depending on what evidence is available.

Individual studies analyzed in systematic reviews were excluded to avoid duplication. Exceptions were made for the rare case in which the systematic review did not report an outcome of interest, but individual studies included in the review did. It should be noted, however, that systematic reviews often overlapped in the studies they included. As for multiple reports on the same study or dataset, only those reports containing unique data pertinent to the rationales for each of the *Ten Steps of Mother-Friendly Care* are cited.

Finally, the EWG took into account the degree to which protocol was violated in randomized controlled trials. Randomized controlled trials are analyzed according to "intent to treat," not actual treatment, because to do otherwise defeats the purpose of random assignment. If a few participants receive the treatment of another group, this is not a problem; but in obstetric trials, it is not uncommon for sizeable percentages to be given the treatment of another group. This crossover decreases the power of the trial to detect differences between groups. For example, investigators conducting a randomized controlled trial of epidural analgesia versus nonepidural pain relief calculated that 263 women per group would be needed to have an 80% probability of detecting a doubling of the cesarean rate from 7% to 15%, assuming that the noncompliance rates were 25% to 30% in the nonepidural group (Dickinson, Paech, McDonald, & Evans, 2002). The actual noncompliance rate was 60%, which would require 12,000 participants to detect the same difference. In some cases, trials and reviews were excluded on this basis; but in others, it was not feasible to do so. Explanatory notes alert the reader to this caveat, where relevant.

GRADING SCHEME

Individual studies were given a quality rating using guidelines published by the AHRQ (West et al., 2002). The following selected elements recommended by AHRQ were considered when evaluating individual studies and, on this basis, each included study was graded good, fair, or weak:

Systematic Reviews

- Study question: "question clearly specified and appropriate."
- Search strategy: "sufficiently comprehensive and rigorous."

- Inclusion and exclusion criteria: ''selection methods specified and appropriate.''
- Data extraction: ''rigor and consistency of process,'' ''measure of agreement or reproducibility'' [*Note:* This only applies to reviews that include meta-analyses], ''extraction of clearly defined interventions/exposures and outcomes for all relevant subjects and subgroups.''
- Study quality and validity: ''assessment method specified and appropriate.''
- Data synthesis and analysis: ''appropriate use of qualitative and/or quantitative synthesis, with consideration of the robustness of results and heterogeneity issues.''
- Funding or sponsorship: ''type and sources of support for study.''

Randomized Controlled Trials

- Study question: ''clearly focused and appropriate question.''
- Study population: ''specific inclusion and exclusion criteria.''
- Randomization: ''adequate concealment method used.''
- Blinding: ''double-blinding (e.g., of investigators, caregivers, subjects, assessors, and other key study personnel as appropriate) to treatment allocation.''
- Interventions: ''intervention(s) clearly detailed for all study groups.''
- Outcomes: ''primary and secondary outcome measures specified;'' ''assessment method standard, valid, and reliable.''
- Statistical analysis: ''appropriate analytic techniques that address study withdrawals, loss to follow-up, missing data, and intention to treat;'' ''power calculation;'' ''assessment of confounding [factors].''
- Results: ''measure of effect for outcomes and appropriate measure of precision.''
- Funding or sponsorship: ''type and sources of support for study.''

Observational Studies

- Study question: ''clearly focused and appropriate question.''
- Study population: ''description of study populations.''
- Comparability of participants: ''specific inclusion/exclusion criteria for all groups,'' ''criteria applied equally to all groups,'' ''comparability of groups at baseline,'' ''comparability of follow-up among groups at each assessment,'' ''explicit case definition [case–control studies],'' ''controls similar to cases except without condition of interest and with equal opportunity for exposure [case–control studies].''
- Exposure or intervention: ''clear definition of exposure;'' ''measurement method standard, valid and reliable;'' ''exposure measured equally in all study groups.''
- Outcome measurement: ''primary/secondary outcomes clearly defined;'' ''outcomes assessed blind to exposure or intervention status;'' ''method of outcome assessment standard, valid and reliable;'' ''length of follow-up adequate for question.''
- Statistical analysis: ''power calculation provided,'' ''assessment of confounding [factors].''
- Results: ''measure of effect for outcomes and appropriate measure of precision.''
- Funding or sponsorship: ''types and sources of support for study.''

Also using AHRQ's precepts, the strength of the aggregate evidence supporting each rationale was graded A, B, or C in three domains (West et al., 2002):

- Quality: ''the aggregate of quality ratings for individual studies.''
- Quantity: ''magnitude of effect, numbers of studies, and sample size or power.''
- Consistency: ''the extent to which similar findings are reported using similar and different study designs.''

Because these domains function independently of each other, they provide a more nuanced evaluation than the usual single-score grading systems. This system also corrects a weakness of systematic reviews. It makes clear, in contrast to systematic review abstracts, cases where only one study reports on a particular outcome or where the quantity of evidence is small.

EWG members varied somewhat in how they presented their data. As a result, some tables use the term ''may'' versus ''can'' to indicate rationales for which studies disagreed versus those for which studies were consistent.

Additional Grading Information

To the AHRQ scheme, the EWG added ''no evidence of benefit'' and ''no evidence of harm.'' The concept of no evidence of benefit was needed for routine interventions (e.g., routine IV drip)

whereby the quality of research could not be ascertained because no research had examined the policy. In these cases, because benefit has not been established but harm has, the policy should be abandoned until such time as research establishes that benefits outweigh the hazards. The concept of no evidence of harm was needed for mother-friendly practices (e.g., freedom of movement during first-stage labor or the companionship of family and friends) for which research has not established benefit other than that women prefer it.

Grading schemes frequently use a hierarchy, placing systematic reviews of randomized trials at the pinnacle followed by individual randomized controlled trials, systematic reviews of observational studies, individual observational studies, and case reports or series. The Oxford Centre for Evidence-Based Medicine is a well-respected example of this approach (Centre for Evidence-Based Medicine, 2001). However, as Glasziou, Vandenbroucke, and Chalmers (2004) point out, different questions require different study types. For example, randomized controlled trials, even in the aggregate, rarely have the power to detect differences in rare, catastrophic outcomes, a category of great importance when exposing healthy women and babies to routine or frequent use of intervention. The EWG, therefore, decided not to give precedence to any study design, with the exception of systematic reviews. Because of their nature, systematic reviews potentially offer the strongest evidence—provided their component studies are sound—because they aggregate evidence from multiple studies. Before including a systematic review, EWG members evaluated the component studies, or at least the larger studies, if the studies were too numerous to make it feasible to evaluate them all. When a systematic review was available on a particular topic, EWG members included it over studies of that same topic published during the time period covered by the review and added qualified studies published subsequent to the review.

CONCLUSION

Developing a systematic review of the *Ten Steps of Mother-Friendly Care* posed a unique challenge: Medical studies are designed to determine the best ways of predicting, diagnosing, and treating disease. The questions they ask are almost always illness-oriented and take the limited form: ''Which is better: A or B?'' Systematic reviews of medical studies, therefore, have evolved as a means of evaluating bodies of such research.

In contrast, this project evaluated a *system* of care intended to promote health and well-being during a fundamentally normal process. These differences necessarily required adapting the conventional techniques used in systematic reviews while adhering to their basic precepts. In this sense, this review is both an extension and reflection of the *Mother-Friendly Childbirth Initiative*, which itself expanded on conventional strategies for developing practice guidelines. CIMS hopes that the process that resulted in the *Ten Steps of Mother-Friendly Care* and the methodology of this systematic review will serve as models and guidelines for others who wish to base maternity care—indeed, medical care in general—on humanistic, holistic, and egalitarian principles while maintaining scientific rigor.

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Step 1: Offers All Birthing Mothers Unrestricted Access to Birth Companions, Labor Support, Professional Midwifery Care

The Coalition for Improving Maternity Services:

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ABSTRACT

The first step of the *Ten Steps of Mother-Friendly Care* insures that women have access to a wide variety of support in labor and during the pregnancy and postpartum periods: unrestricted access to birth companions of their choice, including family and friends; unrestricted access to continuous emotional and physical support from a skilled woman such as a doula; and access to midwifery care. The rationales for the importance of each factor and the evidence to support those rationales are presented.

Journal of Perinatal Education, 16(1–Supplement), 10S–19S, doi: 10.1624/105812407X173137
Keywords: labor support, doula, midwifery care, nurse-midwives, childbirth satisfaction, maternal satisfaction

Step 1: Offers all birthing mothers:

- **unrestricted access to the birth companions of her choice, including fathers, partners, children, family members, and friends;**
- **unrestricted access to continuous emotional and physical support from a skilled woman—for example, a doula or labor-support professional; and**
- **access to professional midwifery care.**

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care*, see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

Step 1: Offers all birthing mothers:

- *unrestricted access to the birth companions of her choice, including fathers, partners, children, family members, and friends.*

In the past, when birth typically took place in homes, trusted family and friends provided care and support for the laboring woman. This support continues to be valued by women and is associated with increased satisfaction with childbirth.

Access to Birth Companions

Rationale for Compliance	Evidence Grade	
No evidence of medical harm found for: • unrestricted access by mother to birth companions • access of mother to companions of her choice • fathers at birth • partners at birth • children at birth • family members at birth • friends at birth		NEH
Mothers reported less satisfaction with birth support when the support provider was a nurse or a doctor compared with a partner or doula (trained or experienced woman who provides continuous labor support) (DeClercq, 2002).	**Quality:** **Quantity:** **Consistency:**	A B NA*
The perception of support during labor is a key ingredient in a woman's ultimate satisfaction with her birth experience (Hodnett, 2002).	**Quality:** **Quantity:** **Consistency:**	A A A**
The perception of support during labor is more important in determining a woman's satisfaction with her birth experience than her experience of pain or her satisfaction with methods of pain relief (Hodnett, 2002).	**Quality:** **Quantity:** **Consistency:**	A A A**

A = good, B = fair, NA = not applicable, NEH = no evidence of harm

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only one study

**multiple studies in systematic review (SR)

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care*, log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

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Step 1: Offers all birthing mothers:

- *unrestricted access to continuous emotional and physical support from a skilled woman—for example, a doula, or labor-support professional.*

Across time and cultures, women have been supported during labor by other women who are skilled in providing continuous emotional and physical support. When childbirth moved to the hospital, this component of supportive care was largely lost. Skilled support (differentiated from support provided by family and friends or nursing and medical support) is once again available to women and has been studied extensively over the last decade.

Access to Labor Support

Rationale for Compliance	Evidence Grade	
No evidence of harm found for unrestricted access to continuous emotional and physical support from a skilled woman (Hodnett, 2003).	**Quality:** **Quantity:** **Consistency:**	A A A* and **
Compared with a similar population receiving comparable clinical care, continuous labor support by a skilled or experienced woman reduces the likelihood of having pain medication in labor, increases the likelihood of spontaneous birth (vaginal birth without the aid of vacuum extraction or forceps), increases satisfaction with the birth experience, and reduces the likelihood of severe postpartum pain (Hodnett, 2003; Schroeder, 2005; Simkin, 2002; Waldenström, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
Compared with a similar population receiving comparable clinical care, continuous labor support by a skilled or experienced woman results in fewer newborn admissions to a neonatal intensive care unit (Hodnett, 2003).	**Quality:** **Quantity:** **Consistency:**	A A A**
Compared with outcomes from studies of labor support provided by nurses (hospital employees), studies where support was provided by a nonmedical trained or experienced woman resulted in fewer cesareans, less need for oxytocin during labor, and less need for pain medication (Hodnett, 2003; Simkin, 2002; Simkin, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A

A = good
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*no study reported harm
**multiple studies in SR

INCLUDED STUDIES

Hodnett, E., Gates, S., Hofmeyr, G., & Sakala, C. (2003). Continuous support for women during childbirth. *The Cochrane Database of Systematic Reviews* (*3*). Art. No.: CD003766.

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Lantz, P. M., Low, L. K., Varkey, S., & Watson, R. L. (2005). Doulas as childbirth paraprofessionals: Results from a national survey. *Women's Health Issues, 15*(3), 109–116. **Reason:** Not relevant. Survey of demographic characteristics of doulas, not their impact on birth outcomes.

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Step 1: Offers all birthing mothers:

- *access to professional midwifery care.*

Access to professional midwifery care is an important component of the *Ten Steps of Mother-Friendly Care* based on the following principles:

- Autonomy – In order to choose what best suits their needs, circumstances, and preferences, women must have access to all types of practitioners who are qualified to take sole responsibility for the care of childbearing women during the prenatal, intrapartum, and postpartum periods.
- Model of care – While any individual practitioner may practice a model of care conforming with the *Ten Steps of Mother-Friendly Care*, research shows that such practitioners are more likely to be midwives.

For the purposes of this document, ''professional midwifery'' is defined as a skilled attendant who has achieved official recognition as a midwife through licensure, registration, or certification. ''Access to professional midwifery care'' is defined as access to a professional midwife who is authorized to provide care independently throughout the childbearing period to women who are at low or moderate risk of complications. Professional midwives may attend births within hospitals, freestanding birth centers, the family's home, or some combination of these locations. This review does not specifically address studies pertaining to location for birth. (See the Appendix on pages 81S–88S for a review of birth locations.) However, because midwives tend to provide most of the care in out-of-hospital settings, studies of care in out-of-hospital settings are included here if midwives were the sole providers of care in that setting.

Access to Midwifery Care

Rationale for Compliance	Evidence Grade	
Compared with physicians caring for similar populations, care by professional midwives results in the following maternal outcomes:		
• more antepartum visits and/or increased length of visits (De Koninck, 2001; Fraser, 2000).	**Quality:** **Quantity:** **Consistency:**	A B A
• more education and counseling during prenatal care (e.g., nutrition, sexuality, smoking) (Oakley, 1996).	**Quality:** **Quantity:** **Consistency:**	A C NA*
• decreased incidence of antepartum and/or intrapartum hypertension (PIH, PET, preeclampsia) (Blanchette, 1995; Tucker, 1996; Turnbull, 1996).	**Quality:** **Quantity:** **Consistency:**	A B B (One study found equivalent rates of hypertension with midwifery care.)
• fewer hospital admissions during the antepartum period (Fraser, 2000; Jackson, 2003 American Journal of Public Health (AJPH); Hodnett, 2000; Tucker, 1996).	**Quality:** **Quantity:** **Consistency:**	A A B (One study found equivalent rates of hospital admissions with midwifery care.)
• fewer inductions of labor (see also Step 6, p. 42S) (Blanchette, 1995; Campbell, 1999; Davis,1994; Fraser, 2000; Harvey, 1996; Jackson, 2003 AJPH; Johnson, 2005; Tucker, 1996; Turnbull, 1996; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A A B (One study found equivalent induction rates with midwifery care.)

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Access to Midwifery Care

Rationale for Compliance	Evidence Grade	
• less need for augmentation of labor (Blanchette, 1995; Bodner-Adler, 2004; Campbell, 1999; Davis, 1994; Fraser, 2000; Harvey, 1996; Hueston, 1993; Jackson, 2003 AJPH; Johnson, 2005; Law, 1999; Tucker, 1996).	**Quality:** **Quantity:** **Consistency:**	A A B (Two studies found equivalent rates of labor augmentation rates with midwifery care.)
• increased access to food and drink in labor (Jackson, 2003 AJPH; Oakley, 1995).	**Quality:** **Quantity:** **Consistency:**	A A A
• increased use of ambulation in labor (see also Step 4, p. 25S) (Jackson, 2003 AJPH; Hundley, 1994; Oakley, 1995).	**Quality:** **Quantity:** **Consistency:**	A A A
• less use of nonsupine positions for birth (see also Step 4, p. 26S) (Bodner-Adler, 2004; De Koninck, 2001; Oakley, 1995).	**Quality:** **Quantity:** **Consistency:**	A B A
• less use of intravenous fluids in labor (see also Step 6, p. 34S) (Harvey, 1996; Jackson, 2003 AJPH; Johnson, 2005; Law, 1999; Oakley, 1995).	**Quality:** **Quantity:** **Consistency:**	A A A
• less use of amniotomy in labor (see also Step 6, p. 38S) (Fraser, 2000; Harvey, 1996; Jackson, 2003 AJPH; Johnson, 2005).	**Quality:** **Quantity:** **Consistency:**	A A A
• fewer episodes of abnormal fetal heart rate in labor (Jackson, 2003 AJPH; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	B B A
• less use of continuous electronic fetal monitoring, external and internal (see also Step 6, p. 39S) (Fraser, 2000; Jackson, 2003 AJPH; Johnson, 2005; Hundley, 1994; Oakley, 1995).	**Quality:** **Quantity:** **Consistency:**	A A A
• more effective pain management in labor, including:		
○ no need for pain medications (Turnbull, 1996).	**Quality:** **Quantity:** **Consistency:**	A B NA*
○ less need for analgesia (Jackson, 2003 AJPH; Harvey, 1996; Hodnett, 2000; Law, 1999; Oakley, 1995; Turnbull, 1996).	**Quality:** **Quantity:** **Consistency:**	A A B (Two studies found equivalent rates of analgesia use in labor with midwifery care.)
○ less need for epidural anesthesia (Blanchette, 1995; Campbell, 1999; Carr, 2000; Davis, 1994; Fraser, 2000; Jackson, 2003 AJPH; Harvey, 1996; Hodnett, 2000; Hundley, 1994; Oakley, 1995; Turnbull, 1996).	**Quality:** **Quantity:** **Consistency:**	A A B (Two studies found equivalent epidural rates with midwifery care.)
○ more use of nonpharmacological pain relief measures, including hydrotherapy, comfort measures, and other strategies (see also Step 7, p. 65S) (Campbell, 1999; Fraser, 2000; Harvey, 1996; Hundley, 1994; Jackson, 2003 AJPH; Oakley, 1995).	**Quality:** **Quantity:** **Consistency:**	A A A

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Access to Midwifery Care

Rationale for Compliance	Evidence Grade	
• increased or equivalent number of spontaneous vaginal births (Harvey, 1996; Jackson, 2003 AJPH; Law, 1999; Tucker, 1996; Walsh, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• fewer or equivalent vaginal instrumental births (vacuum extraction and forceps) (Davis, 1994; Durand, 1992; Fraser, 2000; Harvey, 1996; Jackson, 2003 AJPH; Johnson, 2005; Law, 1999; Oakley, 1995; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A A A
• fewer cesarean sections, as follows:		
○ fewer cesareans overall (Davis, 1994; Durand, 1992; Fraser, 2000; Harvey, 1996; Hueston, 1993; Jackson, 2003 AJPH; Johnson, 2005; Law, 1999; Walsh, 2004).	**Quality:** **Quantity:** **Consistency:**	A A B (One study found equivalent cesarean section rates with midwifery care.)
○ fewer cesareans in nulliparous women (Davis, 1994; Fraser, 2000).	**Quality:** **Quantity:** **Consistency:**	A A A
○ fewer cesareans in multiparous women (Davis, 1994; Fraser, 2000).	**Quality:** **Quantity:** **Consistency:**	A A A
○ more vaginal births after cesarean (VBACs) (Blanchette, 1995).	**Quality:** **Quantity:** **Consistency:**	A C NA*
○ fewer cesareans for emergencies in labor, such as fetal distress (Davis, 1994; Tucker, 1996; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A A B (One study found equivalent rates of cesarean sections for emergencies with midwifery care.)
○ fewer cesareans for inadequate progress in labor (Davis, 1994).	**Quality:** **Quantity:** **Consistency:**	A B NA*
○ fewer first cesareans (Blanchette, 1995; Davis, 1994; Fraser, 2000; Jackson, 2003 JOGGN).	**Quality:** **Quantity:** **Consistency:**	A A A
• fewer perineal injuries, as measured by:		
○ fewer episiotomies (Blanchette, 1995; Bodner-Adler, 2004; Campbell, 1999; Fraser, 2000; Harvey, 1996; Harvey, 2002; Hueston, 1993; Hundley, 1994; Jackson, 2003 AJPH; Johnson, 2005; Law, 1999; Oakley, 1995; Turnbull, 1996; Walsh, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
○ fewer 3rd- and 4th-degree lacerations (Fraser, 2000; Oakley, 1996; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A A B (One study found equivalent rates of 3rd- and 4th-degree tears with midwifery care.)
○ more intact perineums (Bodner-Adler, 2004; Campbell, 1999; Turnbull, 1996).	**Quality:** **Quantity:** **Consistency:**	A B A

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Access to Midwifery Care

Rationale for Compliance	Evidence Grade	
• lower or equivalent incidence of shoulder dystocia (Blanchette, 1995; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	B B A
• lower incidence of retained placenta (Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	B B NA*
• fewer or equivalent postpartum hemorrhages (Blanchette, 1995; Bodner-Adler, 2004; Fraser, 2000; Law, 1999; Oakley, 1996; Turnbull, 1996; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A A C (One study found an increase in postpartum hemorrhages with midwifery care in Australia.)
• lower or comparable incidence of maternal infection or need for antibiotics after birth (Blanchette, 1995; Fraser, 2000; Jackson, 2003 AJPH; Oakley, 1996).	**Quality:** **Quantity:** **Consistency:**	A B B
Compared with physicians caring for similar populations, care by professional midwives results in the following perinatal outcomes:		
• more infants exclusively breastfeeding at birth (De Koninck, 2001; Oakley, 1996).	**Quality:** **Quantity:** **Consistency:**	A B A
• more infants exclusively breastfeeding 2–4 months after birth (De Koninck, 2001).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• more infants remaining with the mother throughout hospital stay (Oakley, 1996).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• fewer or equivalent number of preterm births (Fraser, 2000; Jackson, 2003 AJPH; Tucker, 1996; Turnbull, 1996; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A B B
• fewer or equivalent number of low-birthweight infants (Blanchette, 1995; Davis, 1994; Fraser , 2000; Hueston, 1993; Jackson, 2003 AJPH; MacDorman, 1998; Turnbull, 1996; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A A B
• lower incidence of fetal distress (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A C NA*
• lower or equivalent incidence of infant acidemia when compared with physician care (Bodner-Adler, 2004; Davis, 1994).	**Quality:** **Quantity:** **Consistency:**	B C B
• fewer infants requiring resuscitation at birth (Hodnett, 2000; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A A A
• fewer infants with birth trauma (Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	B B NA*

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Access to Midwifery Care

Rationale for Compliance	Evidence Grade	
• fewer or equivalent number of infants admitted to intensive care units after birth (Harvey, 1996; Jackson, 2003 AJPH; Law, 1999; Tucker, 1996; Turnbull, 1996).	**Quality:** **Quantity:** **Consistency:**	A B B
• fewer infant sepsis workups for infection that requires treatment (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A C NA*
• similar incidence of neonatal readmission (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• fewer or comparable number of perinatal deaths (Durand, 1992; Johnson, 2005; MacDorman, 1998; Tucker, 1996; Woodcock, 1994).	**Quality:** **Quantity:** **Consistency:**	A B B
Care by professional midwives does not increase the incidence of adverse outcomes in women with risk factors such as poor access to care, low economic status, late entry to care, poor nutrition, substance abuse, and moderate to high medical risk factors. Instead, it results in fewer cesarean sections, fewer vaginal instrumental births, and more VBACs (Blanchette, 1995; Davidson, 2002; Mahoney, 2005).	**Quality:** **Quantity:** **Consistency:**	B B B
Women cared for by professional midwives report increased satisfaction in the following areas (De Koninck, 2001; Harvey, 2002; Hodnett, 2000; Hundley, 1997; Oakley, 1995; Shields, 1998; Turnbull, 1996): • relationship with their care provider (continuity of care, empathy, and the overall course of care) • access to information and counseling • quality of birth experience (feeling well prepared, feeling supported, enjoying the experience, participating in decisions, feeling care is personalized)	**Quality:** **Quantity:** **Consistency:**	A A B
Professional midwifery care reduces costs when compared with physicians working with similar populations for the following reasons (Blanchette, 1995; Carr, 2000; Fraser, 2000; Harvey, 1996; Oakley, 1995; Oakley, 1996; Turnbull, 1996): • midwives use fewer antepartum and intrapartum tests and procedures • women under the care of midwives experience fewer preterm births, fewer cesarean sections, and fewer vaginal instrumental births; thus, an attendant reduces incidence of the complications they may cause) • women under the care of midwives experience shorter postpartum stays • women under the care of midwives experience fewer hospital readmissions	**Quality:** **Quantity:** **Consistency:**	A A B (One study found equivalent rates of hospital stays and readmission rates with midwifery care.)

A = good, B = fair, NA = not applicable, PIH = pregnancy-induced hypertension, PET = preeclampsia toxemia, VBAC = vaginal birth after cesarean
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only one study

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Pang, J. W., Heffelfinger, J. D., Huang, G. J., Benedetti, T. J., & Weiss, N. S. (2002). Outcomes of planned home births in Washington State: 1989–1996. *Obstetrics and Gynecology, 100*(2), 253–259. **Reason:** Includes unplanned and possibly unattended home births. Includes unplanned home births with unqualified attendants. Includes preterm births. While it reports a high perinatal mortality, 10 of the 20 babies who died had congenital heart disease. Also, some home births may have been chosen with the parents knowing the prognosis. Selection criteria of home births studied never established.

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Step 2: Provides Accurate, Descriptive, Statistical Information About Birth Care Practices

The Coalition for Improving Maternity Services

ABSTRACT

Step 2 of the *Ten Steps of Mother-Friendly Care* insures that women will have accurate, descriptive, and statistical information about the practices and procedures for birth care at their place of birth, including measures of interventions and outcomes. This information provides a foundation for making informed decisions. The rationales and evidence in support of this step are presented.

Journal of Perinatal Education, *16*(1–Supplement), 20S–22S, doi: 10.1624/105812407X173146
Keywords: informed decision-making, patient choice, patient autonomy, patient rights

Step 2: Provides accurate, descriptive, and statistical information to the public about its practices and procedures for birth care, including measures of interventions and outcomes.

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

Accurate Information About Birth Practices

Rationale for Compliance	Evidence Grade
Providing accurate information to patients is a federal requirement under the Health Insurance Portability and Accountability Act of 1996 (HIPAA). Chapter 4 of the Consumer Rights and Responsibilities of HIPAA states (2005): Consumers have the right and responsibility to fully participate in all decisions related to their health care. Consumers who are unable to fully participate in treatment decisions have the right to be represented by parents, guardians, family members, or other conservators. In order to ensure a consumer's right and ability to participate in treatment decisions, health-care professionals should: • Provide patients with easily understood information and opportunity to decide among treatment options consistent with the informed consent process. Specifically, ◦ Discuss all treatment options with a patient in a culturally competent manner, including the option of no treatment at all. ◦ Ensure that persons with disabilities have effective communications with members of the health system in making such decisions. ◦ Discuss all current treatments a consumer may be undergoing, including those alternative treatments that are self-administered.	**Quality:** NA **Quantity:** NA **Consistency:** NA

(*Continued*)

(Continued)
Accurate Information About Birth Practices

Rationale for Compliance	Evidence Grade	
• Discuss all risks, benefits, and consequences to treatment or nontreatment. • Give patients the opportunity to refuse treatment and to express preferences about future treatment decisions. • Discuss the use of advance directives—both living wills and durable powers of attorney for health care—with patients and their designated family members. • Abide by the decisions made by their patients and/or their designated representatives consistent with the informed consent process.		
Providing accurate information and ensuring the right to informed refusal as mandated by the American College of Obstetricians and Gynecologists (ACOG, 2000): ''[A] physician must disclose to the patient the risks and benefits that a reasonable person in the patient's position would want to know in order to make an informed decision. . . . Once a patient has been informed of the material risks and benefits involved with a treatment, test, or procedure, that patient has the right to exercise full autonomy in deciding whether to undergo that treatment, test, or procedure or whether to make a choice among a variety of treatments, tests, or procedures. In the exercise of that autonomy, the informed patient also has the right to refuse to undergo any of these treatments, tests, or procedures.''	**Quality:** **Quantity:** **Consistency:**	NA NA NA
Providing evidence-based information about medical procedures does not harm women (O'Cathain, 2002; Stapleton, 2002).		NEH
	Quality:	A
	Quantity:	C (2 analyses from one study)
	Consistency:	NA
''Individuals have a basic human right to personal autonomy, and others must respect this right. This is merely an extension of the democratic concept of self-government applied to the individual. If a person gives his/her consent with complete knowledge of what he/she risks by participating in the research, he/she is allowed to take risks he/she chooses (Committee for the Protection of Human Subjects, 2005).''	**Quality:** **Quantity:** **Consistency:**	NA NA NA
Hospitals and other health-care facilities have developed Patient Bill of Rights documents to ensure patients are made aware of their rights. Integral to most of these documents is the provision of accurate data and information to patients so they may make informed choices about their care (Florida, 2005; Minnesota, 2005; New York, 2005; New Jersey, 2005).	**Quality:** **Quantity:** **Consistency:**	NA NA NA

A = good, C = weak, NA = not applicable, NEH = no evidence of harm
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

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- *Amy Romano, MSN, CNM*
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- *Sharon Storton, MA, CCHT, LMFT*
- *Deborah Woolley, PhD, CNM, LCCE*

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Elbourne, D., Richardson, M., Chalmers, I., Waterhouse, I., & Holt, E. (1987). The Newbury Maternity Care Study: A randomized controlled trial to assess a policy of women holding their own obstetric records. *British Journal of Obstetrics and Gynaecology, 94*(7), 612–619. **Reason:** Not applicable. Scope of study too narrowly defined.

National Commission. (1979). *The Belmont report: Ethical principles and guidelines for the protection of human subjects of research.* Washington, DC: U.S. Government Printing Office. **Reason:** Seminal government document; date of publication does not affect validity.

Step 3: Provides Culturally Competent Care

The Coalition for Improving Maternity Services:

Karen Salt, CCE, MA

ABSTRACT

Step 3 of the *Ten Steps of Mother-Friendly Care* insures that women receive care that is sensitive and responsive to the specific beliefs, values, and customs of the mother's ethnicity and religion. The rationale for this step and the evidence in support of its value are presented.

Journal of Perinatal Education, *16*(1–Supplement), 23S–24S, doi: 10.1624/105812407X173155
Keywords: culturally competent care, culturally appropriate services, linguistically appropriate services

Step 3: Provides culturally competent care—that is, care that is sensitive and responsive to the specific beliefs, values, and customs of the mother's ethnicity and religion.

The U.S. Office of Minority Health (2001) defines cultural and linguistic competence as a ''set of congruent behaviors, attitudes, and policies that come together in a system, agency, or among professionals that enables effective work in cross-cultural situations.''

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, see this issue's ''Methods'' article by Henci Goer on pages 5S–9S.

Culturally Competent Care

Rationale for Compliance	Evidence Grade	
Health systems that practice and employ culturally and linguistically appropriate services result in:		
• Less miscommunication due to language differences or variations in cultural understanding of health events (Anderson, 2003).	**Quality:**	A
	Quantity:	A
	Consistency:	NA*
• Increased client satisfaction with and confidence in health provider (Anderson, 2003).	**Quality:**	A
	Quantity:	C*
	Consistency:	NA*
• Increased self-awareness of disease or other health problems and use of appropriate interventions (Anderson, 2003).	**Quality:**	A
	Quantity:	B
	Consistency:	NA*
Culturally competent care can reduce the incidence of medical errors that result from language or cultural misunderstandings. Consequently, this model may potentially improve care by eliminating unnecessary or duplicate testing, as well as inappropriate treatment recommendations (Anderson, 2003; Flores, 2005).	**Quality:**	B
	Quantity:	A
	Consistency:	A

(*Continued*)

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- *Deborah Woolley, PhD, CNM, LCCE*

(Continued)
Culturally Competent Care

Rationale for Compliance	Evidence Grade	
Providing services and care sensitive to clients' cultural beliefs and language may positively affect how they access services and care in the future.		NEH
Clients with limited English proficiency may experience compromised care if they need, but do not receive, interpretation services or if ad hoc interpreters (including children and marginally bilingual health-service providers who are not trained as professional translators) attempt to facilitate medical translation (Flores, 2005; Tandon, 2005).	**Quality:** **Quantity:** **Consistency:**	C A A

A = good, B = fair, C = weak, NA = not applicable, NEH = no evidence of harm, SR = systematic review
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only one study

REFERENCE

U. S. Office of Minority Health. (2001). *National standards for culturally and linguistically appropriate services in health care.* Washington, D.C.: U.S. Department of Health and Human Services.

INCLUDED STUDIES

Anderson, L. M., Scrimshaw, S. C., Fullilove, M. T., Fielding, J. E., & Normand, J. (2003). Culturally competent healthcare systems: A systematic review. *American Journal of Preventive Medicine, 24*(35), 68–79.

Flores, G. (2005). The impact of medical interpreter services on the quality of health care: A systematic review. *Medical Care Research and Review, 62*(3), 255–299.

Tandon, S. D., Parillo, K. M., & Keefer, M. (2005). Hispanic women's perceptions of patient-centeredness during prenatal care: A mixed-method study. *Birth, 32*(4), 312–317.

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Alpers, R. R., & Zoncha, R. (1996). Comparison of cultural competence and cultural confidence of senior nursing students in a private southern university. *Journal of Cultural Diversity, 3*(1), 9–15. **Reason:** Study superseded by Anderson et al. (2003) SR.

Barton, J. A., & Brown, N. J. (1992). Evaluation study of a transcultural discovery learning model. *Public Health Nursing, 9*(4), 234–241. **Reason:** Not relevant.

Betancourt, J. R., Green, A. R., Carrillo, J. E., & Ananeh-Firempong, I. O., (2003). Defining cultural competence: A practical framework for addressing racial/ethnic disparities in health and health care. *Public Health Reports, 118*(4), 293–302. **Reason:** Not relevant.

Blackford, J., & Street, A. (2002). Cultural conflict: The impact of western feminism(s) on nurses caring for women of non-English speaking background. *Journal of Clinical Nursing, 11*(5), 664–671. **Reason:** Not relevant.

Dronin, J., & Rivet, C. (2003). Training medical students to communicate with a linguistic minority group. *Academic Medicine: Journal of the association of American Medical Colleges, 78*(6), 599–604. **Reason:** Not relevant.

Gemson, D. H., Ashford, A. R., Dickey, L .L., Raymore, S. H., Roberts, J. W., Ehrlich, B. G., et al. (1995). Putting prevention into practice. Impact of a multifaceted physician education program on prevention services in the inner city. *Archives of Internal Medicine, 155*(20), 2210–2216. **Reason:** Not relevant.

Marvel, M. K., Grow, M., & Morphew, P. (1993). Integrating family and culture into medicine: A family systems block rotation. *Family Medicine, 25*(7), 441–442. **Reason:** Not relevant.

Mayberry, R. M., Mili, F., & Ofili, E. (2000). Racial and ethnic differences in access to medical care. *Medical Care Research and Review, 57*(Suppl), 108–145. **Reason:** Study superseded by Anderson et al. (2003) SR.

Nora, L. M., Daugherty, S. R., Mattis-Peterson, A., Stevenson, L., & Goodman, L. J. (1994). Improving cross-cultural skills of medical students through medical school-community partnerships. *The Western Journal of Medicine, 16*(2), 144–147. **Reason:** Not relevant.

Scisney-Matlock, M. (2000). Systematic methods to enhance diversity knowledge gained: A proposed path to professional richness. *Journal of Cultural Diversity, 7*(2), 41–47. **Reason:** Not relevant. Speculative educational proposal.

Smith, L. S. (2001). Evaluation of an educational intervention to increase cultural competence among registered nurses. *Journal of Cultural Diversity, 8*(2), 50–63. **Reason:** Not relevant.

St. Clair, A., & McKenry, L. (1999). Preparing culturally competent practitioners. *The Journal of Nursing Education, 38*(5), 228–234. **Reason:** Not relevant. Study presents educational guidelines.

Ulrey, K. L., & Amason, P. (2001). Intercultural communication between patients and health care providers: An exploration of intercultural communication effectiveness, cultural sensitivity, stress, and anxiety. *Health Communication, 13*(4), 449–463. **Reason:** Not relevant.

Warner, J. R. (2002). Cultural competence immersion experiences: Public health among the Navajo. *Nurse Educator, 27*(4), 187–190. **Reason:** Not relevant.

KAREN SALT *is an author, childbirth educator, doula, and former cochair of the Coalition for Improving Maternity Services. She currently attends Purdue University in West Lafayette, Indiana, as a full-time doctoral student, specializing in nationalism, race, and gender studies.*

Step 4: Provides the Birthing Woman With Freedom of Movement to Walk, Move, Assume Positions of Her Choice

The Coalition for Improving Maternity Services:

Sharon Storton, MA, CCHT, LMFT

ABSTRACT

Step 4 of the *Ten Steps of Mother-Friendly Care* insures that women have the freedom to walk, move, and assume positions of their choice during labor and birth. The rationales and the evidence in support of this step are presented.

Journal of Perinatal Education, *16*(1–Supplement), 25S–27S, doi: 10.1624/105812407X173164
Keywords: movement in labor, second-stage positioning, maternal choice, maternal satisfaction

Step 4: Provides the birthing woman with the freedom to walk, move about, and assume the positions of her choice during labor and birth (unless restriction is specifically required to correct a complication) and discourages the use of the lithotomy position.

Freedom of movement in labor appears to facilitate the progress of labor and enhance childbirth satisfaction. Restricting women's movement may have adverse effects.

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

Freedom of Movement

Rationale for Compliance	Evidence Grade	
No evidence of harm found for freedom to ambulate, move about, or change position during labor and birth when restriction is not required to correct a complication.		NEH
The lithotomy position reduces blood flow to the fetus, adversely affecting the fetal heart rate. In addition, the lithotomy position raises levels of maternal stress hormones, thereby reducing uterine contractility and labor progress (Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A B A**
Ambulation, movement, and changes of position during the first stage of labor may shorten labor; no evidence suggests ambulation increases duration of labor (Albers, 1997; Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A B B

(*Continued*)

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(Continued)
Freedom of Movement

Rationale for Compliance	Evidence Grade	
Women who ambulated during the first stage of labor were less likely to have a surgical delivery, defined as cesarean section or forceps or vacuum extraction (Albers, 1997).	**Quality:** **Quantity:** **Consistency:**	A B NA*
When allowed the freedom to ambulate, move, and change position during labor and birth, most women choose to do so and find this to be an effective form of pain relief (DeClerq, 2002; Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A B A
Changes of position during second-stage labor—including ambulation, standing, kneeling, squatting, and the use of a chair or stool—in women with epidural analgesia provided no significant reductions in instrumental and operative delivery, as well as no increased risk of harm to the mother or infant from allowing the mother to use these positions when her muscle tone permitted (Roberts, 2005).	**Quality:** **Quantity:** **Consistency:**	A B A**
Women who chose a nonsupine position for birth had shorter second stages of labor, required less pain relief medication, and had fewer abnormal fetal heart rate patterns (Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A B A**
Women who assumed a nonsupine position for birth had fewer perineal injuries (Shorten, 2002; Soong, 2005; Terry, 2006), less vulvar edema, and less blood loss (Terry, 2006).	**Quality:** **Quantity:** **Consistency:**	A A A
Hands-and-knees positioning of a woman during the first stage of labor when her fetus is in a cephalic presentation but occipitoposterior position increased the chance of fetal rotation to the occipitoanterior position and significantly reduced her experience of persistent back pain (Stremler, 2005).	**Quality:** **Quantity:** **Consistency:**	A B A
Hands-and-knees positioning of a woman, as compared with sitting, during the second stage of labor is associated with a more favorable maternal experience and less pain with no significant difference in the duration of labor (Ragnar, 2006).	**Quality:** **Quantity:** **Consistency:**	A B NA*
Birth attendant preference rather than maternal preference most often indicated maternal position for birth (Shorten, 2002; Soong, 2005; Terry, 2006).	**Quality:** **Quantity:** **Consistency:**	A B A

A = good, B = fair, NA = not applicable, NEH = no evidence of harm, SR = systematic review
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only one study
**multiple studies in SR

INCLUDED STUDIES

Albers, L., Anderson, D., Cragin, L., Daniels, S. M., Hunter, C., Sedler, K. D., et al. (1997). The relationship of ambulation in labor to operative delivery. *Journal of Nurse-Midwifery, 42*(1), 4–8.

DeClercq, E., Sakala, C., Corry, M., Applebaum, S., & Risher, P. (2002). *Listening to mothers: Report of the first national U.S. survey of women's childbearing experiences.* New York: Maternity Center Association.

Ragnar, I., Altman, D., Tyden, T., & Olsson, S. E. (2006). Comparison of the maternal experience and duration of labor in two upright delivery positions—A randomised controlled trial. *British Journal of Obstetrics and Gynaecology, 113*(2), 165–170.

Roberts, C., Algert, C., Cameron, C., & Torvaldsen, S. (2005). A meta-analysis of upright positions in the second stage to reduce instrumental deliveries in women with epidural analgesia. *Acta Obstetricia et Gynecologica Scandinavica, 84,* 794–798.

Shorten, A., Donsante, J., & Shorten, B. (2002). Birth position, accoucheur and perineal outcomes: Informing women about choices for vaginal birth. *Birth, 29*(1), 18–27.

Simkin, P., & O'Hara, M. (2002). Nonpharmacologic relief of pain during labor: Systematic reviews of five methods. *American Journal of Obstetrics and Gynecology, 186,* S131–S159.

Soong, B., & Barnes, M. (2005). Maternal position at midwife attended birth and perineal trauma: Is there an association? *Birth, 32*(3), 164–169.

Stremler, R., Hodnett, E., Petryshen, P., Stevens, B., Weston, J., & Willan, A. R. (2005). Randomized controlled trial of hands-and-knees positioning for occipitoposterior position in labor. *Birth, 32*(4), 243–251.

Terry, R., Wescott, J., O'Shea, L., & Kelly, F. (2006). Postpartum outcomes in supine delivery by physicians versus nonsupine delivery by midwives. *The Journal of the American Osteopathic Association, 106*(4), 199–202.

EXCLUDED STUDIES

Allahbadia, G., & Vaidya, P. (1992). Why deliver in the supine position? *Australian and New Zealand Journal of Obstetrics & Gynaecology, 32*(2), 104–106. **Reason:** Data included in Gupta (2003).

Andrews, C., & Chzanowski, M. (2002). Maternal position, labor and comfort. *Applied Nursing Research, 3*(1), 7–13. **Reason:** Data included in Simkin (2002).

Bloom, S., McIntire, D., Kelly, M., Beimer, H., Burpo, R., Garcia, M., et al. (1998). Lack of effect of walking on labor. *New England Journal of Medicine, 339*(2), 76–79. **Reason:** Data included in Simkin (2002).

Carlson, J., Diehl, J., Sachtleben-Murray, M., & McRae, M. (1986). Maternal position during parturition in normal labor. *Obstetrics and Gynecology, 68,* 443–447. **Reason:** Data included in Simkin (2002).

Gupta, J., & Hofmeyr, G. (2003). Position in the second stage of labour for women without epidural anaesthesia. *The Cochrane Database of Systematic Reviews,* Issue 3. Art. No. CD02006.pub2. DOI:10.1002/14651858. CD002006. pub2. **Reason:** Data included in Simkin (2002).

Rooks S. (1999). Evidence-based practice and its application to childbirth care for low-risk women. *Journal of Nurse-Midwifery, 44*(4), 355–369. **Reason:** Not applicable. No meta-analysis included, rendering material an article rather than a systematic review.

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Step 5: Has Clearly Defined Policies, Procedures for Collaboration, Consultation, Links to Community Resources

The Coalition for Improving Maternity Services:

Karen Salt, CCE, MA

ABSTRACT

Step 5 of the *Ten Steps of Mother-Friendly Care* ensures that the hospital, birth center, or home birth service has clearly defined policies and procedures for collaborating and consulting with other maternity services and for linking the mother and baby to appropriate community services during both the prenatal and the postpartum periods. The rationales and evidence in support of this step are presented.

Journal of Perinatal Education, *16*(1–Supplement), 28S–31S, doi: 10.1624/105812407X173173
Keywords: continuity of care, collaborative care, continuity of caregivers, breastfeeding support

Step 5: Has clearly defined policies and procedures for:

- **collaborating and consulting throughout the perinatal period with other maternity services, including communicating with the original caregiver when transfer from one birth site to another is necessary; and**
- **linking the mother and baby to appropriate community resources, including prenatal and postdischarge follow up and breastfeeding support.**

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

Health systems that engage in collaborative and consultative care approaches embrace the tenets of collaborative care and the goals of maintaining continuity of caregivers. Hodnett (1998) notes that "continuity of caregivers" can be defined as care provided by the same caregiver or a small group of caregivers throughout the perinatal period. Collaborative care often incorporates elements of continuity of care; however, Jackson and colleagues (2003) stress that this approach can expand beyond clinical caregivers to collaboration with and among perinatal health educators, nutrition counselors, and social service agencies. Consequently, both approaches provide benefits to childbearing women.

Step 5: Has clearly defined policies and procedures for:

- *collaborating and consulting throughout the perinatal period with other maternity services, including communicating with the original caregiver when transfer from one birth site to another is necessary.*

Policies for Collaboration/Consultation

Rationale for Compliance	Evidence Grade	
Women who receive continuity of care during pregnancy, childbirth, and the postpartum period:		
• give birth with less frequent use of epidural anesthesia (Jackson, 2003).	**Quality:** B **Quantity:** A **Consistency:** NA*	
• have babies who are less likely to need resuscitation after birth (Hodnett, 1998).	**Quality:** A **Quantity:** A **Consistency:** A	
• have fewer episiotomies (Hodnett, 1998; Jackson, 2003).	**Quality:** A **Quantity:** A **Consistency:** A	
Women who do not receive continuity of care:		
• are less likely to feel supported during labor (Hodnett, 1998).	**Quality:** A **Quantity:** A **Consistency:** NA*	
• are less likely to feel prepared for parenthood (Hodnett, 1998).	**Quality:** A **Quantity:** A **Consistency:** NA*	
• are less likely to discuss pregnancy and postpartum concerns and problems with their caregiver(s) (Hodnett, 1998).	**Quality:** A **Quantity:** A **Consistency:** NA*	
Collaborative care approaches also affect health outcomes. Women receiving this kind of care may have:		
• more spontaneous vaginal births (Jackson, 2003).	**Quality:** B **Quantity:** A **Consistency:** NA*	
• more access to supportive postpartum services (Jackson, 2003).	**Quality:** B **Quantity:** A **Consistency:** NA*	
A collaborative care model can affect the health of high-risk babies by reducing the likelihood of developing life-threatening illnesses, requiring admission to a pediatric intensive care unit and shortening the length of stay in such units (Broyles, 2000).	**Quality:** B **Quantity:** A **Consistency:** NA*	
Retaining high-risk pregnant women and high-risk infants (e.g., infants weighing less than 2,000 g) in lower-level hospitals significantly increases mortality rates from potentially preventable causes in low- and very-low-birth-weight infants (Mayfield, 1990; Powell, 1995).	**Quality:** A **Quantity:** A **Consistency:** A	
Failure to implement a collaborative system can affect appropriate patient transfer to facilities offering a higher level of care. For example, Wall (2004) reported that nonclinical factors, such as procedural or economic issues, can affect the transfer of babies weighing less than 1,250 g from one birth facility to another (Wall, 2004).	**Quality:** B **Quantity:** A **Consistency:** NA*	

A = good, B = fair, NA = not applicable, NEB = no evidence of benefit
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

Members of the CIMS Expert Work Group were:

- *Henci Goer, BA, Project Director*
- *Mayri Sagady Leslie, MSN, CNM*
- *Judith Lothian, PhD, RN, LCCE, FACCE*
- *Amy Romano, MSN, CNM*
- *Karen Salt, CCE, MA*
- *Katherine Shealy, MPH, IBCLC, RLC*
- *Sharon Storton, MA, CCHT, LMFT*
- *Deborah Woolley, PhD, CNM, LCCE*

INCLUDED STUDIES

Broyles, R. S., Tyson, J. E., Heyne, E. T., Heyne, R. J., Hickman, J. F., Swint, M., et al. (2000). Comprehensive follow-up care and life-threatening illnesses among high-risk infants: A randomized controlled trial. *Journal of the American Medical Association, 284*(16), 2070–2076.

Hodnett, E. D. (1998). Continuity of caregivers for care during pregnancy and childbirth (Review). *Cochrane Database Systematic Reviews,* Issue 3. Art. No: CD000062. DOI: 10.1002/14651858.CD000062.

Jackson, D. J., Lang, J. M., Swartz, W. H., Ganiats, T. G., Fullerton, J., Ecker, J., et al. (2003). Outcomes, safety, and resource utilization in a collaborative care birth

center program compared with traditional physician-based perinatal care. *American Journal of Public Health, 93*(6), 999–1006.

Mayfield, J. A., Rosenblatt, R. A., Baldwin, L. M., Chu, J., & Logerfo, J. P. (1990). The relation of obstetrical volume and nursery level to perinatal mortality. *American Journal of Public Health, 80*(7), 819–823.

Powell, S. L., Holt, V. L., Hickok, D. E., Easterling, T., & Connell, F. A. (1995). Recent changes in delivery site of low-birth-weight infants in Washington: Impact on birth weight-specific mortality. *American Journal of Obstetrics and Gynecology, 173,* 1585–1592.

Wall, S. N., Handler, A. S., & Park, C. G. (2004). Hospital factors and nontransfer of small babies: A marker of perinatal care? *Journal of Perinatology, 24,* 351–359.

EXCLUDED STUDIES

Brousseau, D. C., Meurer, J. R., Isenberg, M. L., Kuhn, E. M., & Gorelick, M. H. (2004). Association between infant continuity of care and pediatric emergency department utilization. *Pediatrics, 113,* 738–741. **Reason:** Small sample size.

Cabana, M. D., & Jee, S. H. (2004). Does continuity of care improve patient outcomes? *The Journal of Family Practice, 53*(12), 974–980. **Reason:** Not relevant. This systematic review (SR) dealt with sustained continuity of care in outpatient settings.

D'Amour, D., Goulet, L., Labadie, J. F., Bernier, L., & Pineault, R. (2003). Accessibility, continuity and appropriateness: Key elements in assessing integration of perinatal services. *Health & Social Care in the Community, 11*(5), 397–404. **Reason:** Not relevant. Study evaluated whether care met clinical guidelines.

Davey, M., Brown, S., & Bruinsma, F. (2005). What is it about antenatal continuity of caregiver that matters to women? *Birth, 32*(4), 262–271. **Reason:** Poorly designed: 1) Survey response rate from targeted participants was less than the standard 70%, calling into question its generalizability; and 2) questionnaire was sent 5 months after birth and relied exclusively on participants' memories of who they saw (and the nature of their appointments) during their antenatal care.

Ekström, A. E., Widström, A., & Nissen, E. (2006). Does continuity of care by well-trained breastfeeding counselors improve a mother's perception of support? *Birth, 33*(2), 123–130. **Reason:** Poorly designed. Inconsistency in follow-through of study protocol by the health professionals trained in breastfeeding counseling and support rendered it difficult to assess impact of intervention.

Gill, J. M., & Mainous, A. G., III. (1998). The role of provider continuity in preventing hospitalizations. *Archives of Family Medicine, 7,* 352–357. **Reason:** Have better-quality, more relevant research.

Mainous, A. G., III, Goodwin, M. A., & Stange, K. C. (2004). Patient-physician shared experiences and value patients place on continuity of care. *Annals of Family Medicine, 2*(5), 452–454. **Reason:** Have better-quality, more relevant research.

Morgan, E. D., Pasquarella, M., & Holman, J. R. (2004). Continuity of care and patient satisfaction in a family practice clinic. *The Journal of the American Board of Family Practice, 17,* 341–346. **Reason:** Have better-quality, more relevant research.

Rooks, J. P., Weatherby, N. L., & Ernst, E. K. M. (1992). The National Birth Center Study. Part III—Intrapartum and immediate postpartum and neonatal complications and transfers, postpartum and neonatal care, outcomes, and client satisfaction. *Journal of Nurse-Midwifery, 37*(6), 361–397. **Reason:** Study superseded by Hodnett (1998) SR.

Saultz, J. W., & Albedaiwi, W. (2004). Interpersonal continuity of care and patient satisfaction: A critical review. *Annals of Family Practice, 2*(5), 445–451. **Reason:** Not relevant. Review included studies of military veterans and retired men.

Waldenström, U., Brown, S., McLachlan, H., Forster, D., & Brennecke, S. (2000). Does team midwife care increase satisfaction with antenatal, intrapartum, and postpartum care? A randomized controlled trial. *Birth, 27*(3), 156–167. **Reason:** Have better-quality, more relevant research.

Step 5: Has clearly defined policies and procedures for:

- *linking the mother and baby to appropriate community resources, including prenatal and postdischarge follow-up and breastfeeding support.*

Policies for Linking to Community Resources

Rationale for Compliance	Evidence Grade	
In-home postpartum care improves breastfeeding outcomes for mothers of term newborns (McKeever, 2002).	**Quality:** **Quantity:** **Consistency:**	A A NA*
Postdischarge home visits are cost-effective for reducing need for hospital-based services for dehydration and jaundice (Paul, 2004).	**Quality:** **Quantity:** **Consistency:**	A A NA

(*Continued*)

(Continued)
Policies for Linking to Community Resources

Rationale for Compliance	Evidence Grade	
Peer support received consistently throughout the perinatal period improves breastfeeding initiation and duration (Haider, 2000; Kistin, 1994).	**Quality:**	A
	Quantity:	A
	Consistency:	A
Volunteer (unpaid) postpartum support does not affect breastfeeding outcomes (Graffy, 2004).	**Quality:**	B
	Quantity:	B
	Consistency:	NA*

A = good, B = fair, NA = not applicable
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study

INCLUDED STUDIES

Graffy, J., Taylor, J., Williams, A., & Eldridge, S. (2004). Randomised controlled trial of support from volunteer counsellors for mothers considering breast feeding. *BMJ, 328,* 1–6.

Haider, R., Ashworth, A., Kabir, I., & Huttly, S. (2000). Effect of community-based peer counselors on exclusive breastfeeding practices in Dhaka, Bangladesh: A randomized controlled trial. *Lancet, 356,* 643–647.

Kistin, N., Abramson, R., & Dublin, P. (1994). Effect of peer counselors on breastfeeding initiation, exclusivity, and duration among low-income urban women. *Journal of Human Lactation, 10*(1), 11–15.

McKeever, P., Stevens, B., Miller, K., MacDonell, J., Gibbins, S., Guerriere, D., et al. (2002). Home versus hospital breastfeeding support for newborns: A randomized controlled trial. *Birth, 29*(4), 258–265.

Paul, I., Phillips, T., Widome, M., & Hollenbeak, C. (2004). Cost-effectiveness of postnatal home nursing visits for prevention of hospital care for jaundice and dehydration. *Pediatrics, 114*(4), 1015–1022.

EXCLUDED STUDIES

Gagnon, A., Dougherty, G., Jimenez, V., & Leduc, N. (2002). Randomized trial of postpartum care after hospital discharge. *Pediatrics, 109*(6), 1074–1080. **Reason:** Not relevant. No group did not receive postpartum care.

Morrell, C., Spiby, H., Stewart, P., Walters, S., & Morgan, A. (2000). Costs and effectiveness of community postnatal support workers: Randomized controlled trial. *BMJ, 321,* 593–598. **Reason:** Not applicable. Control group received extensive postnatal support as well.

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Step 6: Does Not Routinely Employ Practices, Procedures Unsupported by Scientific Evidence

The Coalition for Improving Maternity Services:

Henci Goer, BA
Mayri Sagady Leslie, MSN, CNM
Amy Romano, MSN, CNM

ABSTRACT

Step 6 of the *Ten Steps of Mother-Friendly Care* addresses two issues: 1) the routine use of interventions (shaving, enemas, intravenous drips, withholding food and fluids, early rupture of membranes, and continuous electronic fetal monitoring; and 2) the optimal rates of induction, episiotomy, cesareans, and vaginal births after cesarean. Rationales for compliance and systematic reviews are presented.

Journal of Perinatal Education, *16*(1–Supplement), 32S–64S, doi: 10.1624/105812407X173182
Keywords: labor preparation; perineal shaving, labor; enema, labor; intravenous drip, adverse effects; intravenous drip, labor; intravenous nutrition, labor; obstetric procedures, adverse effects; NPO, labor; nutrition, labor; oral intake, labor; amniotomy artificial rupture of membranes; electronic fetal monitoring; intrapartum cardiotocography; elective induction; labor induction; labor induced; spontaneous labor rates; rates of induction; induction and adverse effects; maternal satisfaction and induction; episiotomy, adverse effects; episiotomy, median; episiotomy, mediolateral; episiotomy rate; cesarean; cesarean rate; cesarean, adverse effects; vaginal birth, adverse effects; obstetric birth, adverse effects; pelvic-floor dysfunction; urinary incontinence; anal incontinence; vaginal birth after cesarean (VBAC); VBAC rates; elective repeat cesarean; VBAC and induction of labor

Step 6: Does not routinely employ practices and procedures that are unsupported by scientific evidence, including, but not limited to, the following:

- **shaving [for vaginal birth];**
- **enemas;**
- **intravenous drips (IVs);**
- **withholding nourishment or water;**
- **early rupture of membranes; and**
- **[continuous] electronic fetal monitoring [intrapartum cardiotocography].**

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

Limits interventions, as follows:

- **induction rate of 10% or less;**
- **episiotomy rate of 20% or less, with a goal of 5% or less;**

- **total cesarean rate of 10% or less in community hospitals, and 15% or less in tertiary hospitals; and**
- **vaginal birth after cesarean (VBAC) rate of 60% or more, with a goal of 75% or more.**

Step 6: Does not routinely employ practices and procedures that are unsupported by scientific evidence, including, but not limited to, the following:

- *shaving [for vaginal birth]*

Shaving for Vaginal Birth

Rationale for Compliance	Evidence Grade	
The rationale for pubic and perineal shaving for vaginal birth is to prevent infection. However:		NEB
• maternal infection rates do not differ between shaved and unshaved women (Basevi, 2001).	**Quality:**	B
	Quantity:	B
	Consistency:	A**
• shaved women experience irritation, redness, superficial scratches, burning, and itching (Basevi, 2001).	**Quality:**	C (Only 1 study, and it does not report adverse effects in the unshaved group.)
	Quantity:	B
	Consistency:	NA*

A = good, B = fair, C = weak, NA = not applicable, NEB = no evidence of benefit
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study
**multiple studies in systematic review (SR)

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

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- *Sharon Storton, MA, CCHT, LMFT*
- *Deborah Woolley, PhD, CNM, LCCE*

INCLUDED STUDIES

Basevi, V., & Lavender, T. (2001). Routine perineal shaving on admission in labour. *Cochrane Database of Systematic Reviews,* (1), CD001236.

EXCLUDED STUDIES

Johnston, R. A., & Sidall, R. S. (1922). Is the usual method of preparing patients for delivery beneficial or necessary? *American Journal of Obstetrics and Gynecology, 4,* 645–650. **Reason:** Data included in Basevi (2001).

Kantor, H. I., Rember, R., Tabio, P., & Buchanon, R. (1965). Value of shaving the pudendal-perineal area in delivery preparation. *Obstetrics & Gynecology, 25,* 509–512. **Reason:** Data included in Basevi (2001).

Kovavisarach, E., & Jirasettasiri, P. (2005). Randomised controlled trial of perineal shaving versus hair cutting in parturients on admission in labor. *Journal of the Medical Association of Thailand, 88*(9), 1167–1171. **Reason:** No untreated group. Women were either shaved or had pubic hair trimmed to 0.5 cm. All received enema and episiotomy, both of which could affect infection rates. Therefore, this trial is not generalizable to populations not undergoing these interventions.

Step 6: Does not routinely employ practices and procedures that are unsupported by scientific evidence, including, but not limited to, the following:

- *enemas*

Enemas

Rationale for Compliance	Evidence Grade	
Although these rationales are given for the routine use of enemas:		NEB
• Routine enema does not enhance dilation rate (Rutgers, 1993; Tzeng, 2005).	**Quality:**	C
	Quantity:	A
	Consistency:	A
• Enemas do not affect mode of vaginal delivery (Tzeng, 2005).	**Quality:**	C
	Quantity:	B
	Consistency:	NA*
• Enemas do not reduce neonatal infection rates (Tzeng, 2005).	**Quality:**	C
	Quantity:	B
	Consistency:	NA*
• Enemas do not reduce maternal infection rates (Tzeng, 2005).	**Quality:**	C
	Quantity:	B
	Consistency:	NA*
Some women dislike having enemas (Rutgers, 1993).	**Quality:**	C
	Quantity:	C
	Consistency:	NA*

A = good, B = fair, C = weak, NA = not applicable, NEB = no evidence of benefit
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study

INCLUDED STUDIES

Rutgers, S. (1993). Hot, high and horrible. Should routine enemas still be given to women in labour? *The Central African Journal of Medicine, 39*(6), 117–120.

Tzeng, Y. L., Shih, Y. J., Teng, Y. K., Chiu, C. Y., & Huang, M. Y. (2005). Enema prior to labor: A controversial routine in Taiwan. *The Journal of Nursing Research, 13*(4), 263–270.

EXCLUDED STUDIES

Cuervo, L. G., Bernal Mdel, P., & Mendoza, N. (2006). Effects of high volume saline enemas vs no enema during labour—The N-Ma randomised controlled trial [ISRCTN43153145]. *BMC Pregnancy and Childbirth, 6*, 8. **Reason:**

- Does not exclude women having cesarean sections.
- Underpowered to detect differences in maternal and neonatal infections.
- Extremely high combined infection rate of 46% not generalizable to other populations.
- Fails to consider possible adverse effects of high-volume enemas.

Cuervo, L. G., Rodriguez, M. N., & Delgado, M. B. (2000). Enemas during labor. *Cochrane Database of Systematic Reviews,* (2), CD000330. **Reason:** Poorly designed:

- The SR includes only 2 trials, one of them the lead author's unpublished thesis data. Of the 30 outcomes reported, 28 of them are based on his data alone.
- The SR reports 10 separate outcomes related to neonatal infection, all but one from the lead author's trial alone, so it is hardly surprising that a couple of them turn out to be significant just by chance.
- No evidence presented that lead author's trial evaluated whether infective organisms were colonic in origin.
- Investigators reject trials for arbitrary reasons such as too few perinatal infections without providing sources to support what the expected rate should be.

Kovavisarach, E., & Sringamvong, W. (2005). Enema versus no-enema in pregnant women on admission in labor: A randomized controlled trial. *Journal of the Medical Association of Thailand, 88*(12), 1763–1767. **Reason:** Does not distinguish between formed stool and diarrhea when measuring contamination. Formed stool is less likely to contaminate the perineum. Does not define infection. No power calculation. Ninety percent episiotomy rate. Presence or absence of episiotomy wound could affect perineal infection rates; therefore, study not generalizable to populations not experiencing high episiotomy rates.

Step 6: Does not routinely employ practices and procedures that are unsupported by scientific evidence, including, but not limited to, the following:

- *intravenous drips (IVs)*

Intravenous Drips

Rationale for Compliance	Evidence Grade	
Common rationales for routine intravenous drips (IVs) include supplying fluids, providing an ''open vein'' in case of emergency, and, in some cases, supplying calories. However:		
• If women drink and eat as desired in labor, the need for routine replacement fluids and calories disappears.		NEB
• No study found showing that having an IV in place improves outcomes.		NEB
IVs can cause discomfort and distress (Simkin, 1986; Tourangeau, 1999).	**Quality:**	C
	Quantity:	B
	Consistency:	A
IVs interfere with mobility. There is no formal evidence of this, other than a survey reporting that of women who said they were confined to bed, two thirds gave being ''connected to things'' as the reason (Declercq, 2002).	**Quality:**	B (''Connected to things'' could mean monitoring equipment as well as IVs.)
However, the need to deal with the IV line and pole necessarily interferes with mobility.	**Quantity:**	A
	Consistency:	NA*
Infusing excessive volumes of IV fluid can cause:		
• anemia [a,b] (Carvalho, 1991; Kempen, 1990).	**Quality:**	B
	Quantity:	C
	Consistency:	A
• reductions in colloid osmotic pressure [a,c] (Park, 1996).	**Quality:**	B
	Quantity:	C
	Consistency:	NA*
Infusing electrolyte-free solutions can cause hyponatremia [a,d] (Higgins, 1996; Stratton, 1995).	**Quality:**	C
	Quantity:	B
	Consistency:	A
Infusing glucose-containing solutions can cause neonatal hyperglycemia [a,e] (Nordstrom, 1995).	**Quality:**	C
	Quantity:	C
	Consistency:	NA*

A = good, B = fair, C = weak, NA = not applicable, NEB = no evidence of benefit

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only 1 study

[a]These studies reported few or no clinical symptoms; however, trials were small and participants had uncomplicated pregnancies. This means both that trials would be unlikely to detect uncommon events and that participants would be unlikely to experience them.

[b]One concern with anemia is that it increases maternal risks (e.g., the likelihood of needing transfusion) should there be a hemorrhage.

[c]Reductions in colloid osmotic pressure can lead to edema, including fluid in maternal and fetal lungs (Park, 1996).

[d]Hyponatremia can lead to transient neonatal tachypnea and, in severe cases, to seizure in the newborn and seizures or coma in the mother (Grylack, 1984; Stratton, 1995).

[e]Studies published before 1990 confirm that infusing glucose solutions can cause fetal hyperglycemia and that this can result in hypoglycemia after birth when the maternal source of glucose is withdrawn (Grylack, 1984; Philipson, 1987).

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Grylack, L. J., Chu, S. S., & Scanlon, J. W. (1984). Use of intravenous fluids before cesarean section: Effects on perinatal glucose, insulin, and sodium homeostasis. *Obstetrics & Gynecology, 63*(5), 654–658.

Park, G. E., Hauch, M. A., Curlin F., Datta, S., & Bader, A. M. (1996). The effects of varying volumes of crystalloid administration before cesarean delivery on maternal hemodynamics and colloid osmotic pressure. *Anesthesia and Analgesia, 83*(2), 299–303.

Philipson, E. H., Kalhan, S. C., Riha, M. M., & Pimentel, R. (1987). Effects of maternal glucose infusion on fetal acid-base status in human pregnancy. *American Journal of Obstetrics and Gynecology, 157*(4, Pt. 1), 866–873.

Stratton, J. F., Stronge, J., & Boylan, P. C. (1995). Hyponatraemia and non-electrolyte solutions in labouring primigravida. *European Journal of Obstetrics, Gynecology, and Reproductive Biology, 59*(2), 149–151.

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Carvalho, J. C., Mathias, R. S., Senra, W. G., Torres, M. L., Adam, C., Vasconcelos, A., et al. (1991). Hemoglobin concentration variation and blood volume expansion during epidural anesthesia for cesarean section. *Regional Anesthesia, 16*(1S), 73.

Declercq, E., Sakala, C., Corry, M. P., Applebaum, S., & Risher, P. (2002). *Listening to mothers: Report of the first national U.S. survey of women's childbearing experiences.* New York: Maternity Center Association.

Higgins, J., Gleeson, R., Holohan, M., Cooney, C., & Darling, M. (1996). Maternal and neonatal hyponatraemia: A comparison of Hartmanns solution with 5% dextrose for the delivery of oxytocin in labour. *European Journal of Obstetrics, Gynecology, and Reproductive Biology, 68*(1–2), 47–48.

Kempen, P. M., & Tick, R. C. (1990). Hemodilution, regional block and cesarean section. *Regional Anesthesia, 15*(1S), 9.

Nordstrom, L., Arulkumaran, S., Chua, S., Ratnam, S., Ingemarsson, I., Kublickas, M., et al. (1995). Continuous maternal glucose infusion during labor: Effects on maternal and fetal glucose and lactate levels. *American Journal of Perinatology, 12*(5), 357–362.

Park, G. E., Hauch, M. A., Curlin, F., Datta, S., & Bader, A. M. (1996). The effects of varying volumes of crystalloid administration before cesarean delivery on maternal hemodynamics and colloid osmotic pressure. *Anesthesia and Analgesia, 83*(2), 299–303.

Simkin, P. (1986). Stress, pain, and catecholamines in labor: Part 2. Stress associated with childbirth events: A pilot survey of new mothers. *Birth, 13*(4), 234–240. **Reason:** Published before 1990, but study is a unique source of data on the issue of maternal satisfaction.

Stratton, J. F., Stronge, J., & Boylan, P. C. (1995). Hyponatraemia and non-electrolyte solutions in labouring primigravida. *European Journal of Obstetrics, Gynecology, and Reproductive Biology, 59*(2), 149–151.

Tourangeau, A., Carter, N., Tansil, N., McLean, A., & Downer, V. (1999). Intravenous therapy for women in labor: Implementation of a practice change. *Birth, 26*(1), 31–36.

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Cerri, V., Tarantini, M., Zuliani, G., Schena, V., Redaelli, C., & Nicolini, U. (2000). Intravenous glucose infusion in labor does not affect maternal and fetal acid-base balance. *The Journal of Maternal-Fetal Medicine, 9*(4), 204–208. **Reason:** No information on how participants randomized. No power calculation. Substantial difference in sizes of groups. Study fails to evaluate all important outcomes.

Garite, T. J., Weeks, J., Peters-Phair, K., Pattillo, C., & Brewster, W. R. (2000). A randomized controlled trial of the effect of increased intravenous hydration on the course of labor in nulliparous women. *American Journal of Obstetrics and Gynecology, 183*(6), 1544–1548. **Reason:** Not relevant. Study concludes that increasing the rate of intravenous hydration decreases the incidence of prolonged labor, but the step mandates abandoning routine IV hydration and permitting laboring women to self-regulate oral intake of fluids.

Hauch, M. A., Gaiser, R. R., Hartwell, B. L., & Datta, S. (1995). Maternal and fetal colloid osmotic pressure following fluid expansion during cesarean section. *Critical Care Medicine, 23*(3), 510–514. **Reason:** Have better quality and more recent research. The following year, the same group published another study measuring colloid osmotic pressure (Park, 1996), which is included.

Step 6: Does not routinely employ practices and procedures that are unsupported by scientific evidence, including, but not limited to, the following:

- *withholding nourishment or water*

Oral Intake

Rationale for Compliance	Evidence Grade
The rationale for denying oral intake is to reduce the risk of pulmonary aspiration and the morbidity and mortality that can result from aspiration should cesarean section under general anesthesia be required. However: • The likelihood of aspiration is vanishingly small. In the Netherlands, where women are freely allowed oral intake (Scheepers, 1998), the mortality rate from aspiration during cesarean surgery is 1.8 per 100,000 (Schuitemaker, 1997). Using the cesarean rate in first-time mothers (31%) as a proxy for unplanned cesareans (Declercq, 2002), multiplying it by the percentage of cesareans performed under general anesthesia in the United States (15%) (Hawkins, 1997), and multiplying that result by 1.8 per 100,000, the likelihood of a fed woman undergoing an unplanned cesarean under general anesthesia dying of pulmonary aspiration calculates to 8 per 10 million or 1 in 1,250,000. Moreover, this is a worst-case scenario. The Dutch study does not report the condition of the women at the time they underwent surgery. A study of 13,400 emergency surgeries under general anesthesia reported no deaths from aspiration in patients in reasonably good health (ASA physical status rankings of I or II) (Warner, 1993). • No length of time since previous oral intake guarantees having a stomach volume below the danger threshold of 25 ml (Carp, 1992).	NEB

(*Continued*)

(Continued)
Oral Intake

Rationale for Compliance	Evidence Grade	
Depriving women of oral fluids causes moderate to high stress in many laboring women; depriving them of food causes moderate to high stress in some women (Simkin, 1986).	**Quality:**	C (It is possible that most of the women reporting that oral fluid deprivation caused stress were not receiving IV fluids.)
	Quantity:	C
	Consistency:	NA*
Calories ingested in labor are digested (Kubli, 2002; Scrutton, 1999).	**Quality:**	A
	Quantity:	B
	Consistency:	A

A = good, B = fair, C = weak, NA = not applicable, NEB = no evidence of benefit
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study

INCLUDED STUDIES

Carp, H., Jayaram, A., & Stoll, M. (1992). Ultrasound examination of the stomach contents of parturients. *Anesthesia and Analgesia, 74*(5), 683–687.

Declercq, E., Sakala, C., Corry, M. P., Applebaum, S., & Risher, P. (2002*). Listening to mothers: Report of the first national U.S. survey of women's childbearing experiences.* New York: Maternity Center Association.

Hawkins, J. L., Gibbs, C. P., Orleans, M., Martin-Salvaj, G., & Beaty, B. (1997). Obstetric anesthesia work force survey, 1981 versus 1992. *Anesthesiology, 87*(1), 135–143.

Kubli, M., Scrutton, M. J., Seed, P. T., & O'Sullivan, G. (2002). An evaluation of isotonic ''sport drinks'' during labor. *Anesthesia and Analgesia, 94*(2), 404–408, table of contents.

Scheepers, H. C., Essed, G. G., & Brouns, F. (1998). Aspects of food and fluid intake during labour. Policies of midwives and obstetricians in The Netherlands. *European Journal of Obstetrics, Gynecology, and Reproductive Biology, 78*(1), 37–40.

Schuitemaker, N., van Roosmalen, J., Dekker, G., van Dongen, P., van Geijn, H., & Gravenhorst, J. B. (1997). Maternal mortality after cesarean section in The Netherlands. *Acta Obstetricia et Gynecologica Scandinavica, 76*(4), 332–334.

Scrutton, M. J., Metcalfe, G. A., Lowy, C., Seed, P. T., & O'Sullivan, G. (1999). Eating in labour. A randomised controlled trial assessing the risks and benefits. *Anaesthesia, 54*(4), 329–334.

Simkin, P. (1986). Stress, pain, and catecholamines in labor: Part 2. Stress associated with childbirth events: A pilot survey of new mothers. *Birth, 13*(4), 234–240. **Reason:** Published before 1990, but study is a unique source of data on the issue of maternal satisfaction.

Warner, M. A., Warner, M. E., & Weber, J. G. (1993). Clinical significance of pulmonary aspiration during the perioperative period. *Anesthesiology, 78*(1), 56–62.

EXCLUDED STUDIES

Agarwal, A., Chari, P., & Singh, H. (1989). Fluid deprivation before operation. The effect of a small drink. *Anaesthesia, 44*(8), 632–634. **Reason:** Have better quality research on same topic. Participants were not pregnant women.

CNM Data Group. (1999). Oral intake in labor. Trends in midwifery practice. The CNM Data Group, 1996. *Journal of Nurse-Midwifery, 44*(2), 135–138. **Reason:** Study not relevant.

Hawkins, J. L., Koonin, L. M., Palmer, S. K., & Gibbs, C. P. (1997). Anesthesia-related deaths during obstetric delivery in the United States, 1979–1990. *Anesthesiology, 86*(2), 277–284. **Reason:** Study not relevant.

Michael, S., Reilly, C. S., & Caunt, J. A. (1991). Policies for oral intake during labour. A survey of maternity units in England and Wales. *Anaesthesia, 46*(12), 1071–1073. **Reason:** Study not relevant.

Parsons, M., Bidewell, J., & Nagy, S. (2006). Natural eating behavior in latent labor and its effect on outcomes in active labor. *Journal of Midwifery & Women's Health, 51*(1), e1–6. **Reason:** Study not relevant.

Scheepers, H. C., Thans, M. C., de Jong, P. A., Essed, G., Le Cessie, S., & Kanhai, H. (2001). Eating and drinking in labor: The influence of caregiver advice on women's behavior. *Birth, 28*(2), 119–123. **Reason:** Study not relevant.

Tranmer, J. E., Hodnett, E. D., Hannah, M. E., & Stevens, B .J. (2005). The effect of unrestricted oral carbohydrate intake on labor progress. *Journal of Obstetric, Gynecologic, and Neonatal Nursing,* 34(3), 319–328. **Reason:** Study underpowered to detect differences in rare adverse outcomes. Study underpowered to

detect differences in dystocia of less than 38%. Study confounded by:

- restricting oral intake with epidural use and 79% of oral intake group had epidurals;
- IV solutions usually contained lactate or glucose;
- nearly half of oral intake group did not have oral intake; and
- other factors that could adversely affect labor progress, including epidural anesthesia, induction, confinement to bed.

Two thirds of the oral intake group reported moderate or severe thirst, indicating that they did not, in fact, have free access to oral intake.

Step 6: Does not routinely employ practices and procedures that are unsupported by scientific evidence, including, but not limited to, the following:

- *early rupture of membranes*

Amniotomy

Rationale for Compliance	Evidence Grade	
Amniotomy is believed to shorten labor and, by so doing, reduce the number of cesarean sections for slow progress and improve neonatal outcomes by reducing exposure to the stress of overly long labors. However:		NEB
• Routine amniotomy shortens mean duration of labor by only a modest amount (1–2 hrs) (Fraser, 1999).	**Quality:** **Quantity:** **Consistency:**	B [a] A A**
• Early amniotomy has less effect than amniotomy later in labor (Fraser, 1993).	**Quality:** **Quantity:** **Consistency:**	B A N*
• Routine amniotomy fails to reduce the cesarean section rate (Fraser, 1999; Rouse, 1994).	**Quality:** **Quantity:** **Consistency:**	B [a] A B (Of 10 trials included in Fraser [1999], 7 reported higher cesarean rates in the amniotomy group, 2 reported lower rates, and 1 small trial had no cesareans.)
• Routine amniotomy has no clinically significant neonatal benefits (Fraser, 1999).	**Quality:** **Quantity:** **Consistency:**	B [a] A A**
Routine amniotomy may increase the risk of nonreassuring fetal heart rate (FHR) (Fraser, 1993; Fraser, 1999, Garite, 1993; Mercer, 1995).	**Quality:** **Quantity:** **Consistency:**	B A B (Fraser [1999] did not find an increased incidence, but reviewers note that a reanalysis, taking into account that amniotomy shortened labor, did increase incidence. An increase in episodes of nonreassuring FHR is biologically plausible in that releasing the amniotic fluid increases pressure on the fetal head and umbilical cord during contractions.)
Early amniotomy may increase the maternal and neonatal infection rate (Fraser, 1999; Mercer, 1995; Rouse, 1994; Soper, 1996).	**Quality:** **Quantity:** **Consistency:**	B A B [a] (Fraser [1999], a SR, did *not* find an increased incidence, but other studies find a strong association between duration of ruptured membranes, time, and invasive procedures.)

(*Continued*)

(Continued)
Amniotomy

Rationale for Compliance	Evidence Grade	
Amniotomy can lead to umbilical cord prolapse (Roberts, 1997; Usta, 1999).	**Quality:**	A
	Quantity:	B
	Consistency:	A

A = good, B = fair, NEB = no evidence of benefit

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only 1 study

**multiple studies in SR

[a]Randomized controlled trials (RCTs) of amniotomy and, hence, systematic reviews of those trials suffer from confounding factors that could affect labor progress, occurrence of adverse events (abnormal fetal heart rate, infection, cesarean section), or both, specifically:

- Substantial proportions of women in the control group, more than half in some cases, also had amniotomies.
- Women in the control group were more likely to have oxytocin (Fraser, 1999).
- Women had vaginal examinations after membrane rupture and, in some trials, internal monitoring in both arms of the trial.

In addition, trials included only women with full-term, uncomplicated pregnancies. This means that differences between groups might be wider than they appear. First, in studies where amniotomy appears to be harmless, this might not have been the case had not so many women in the control group had amniotomies or had the baby's ability to withstand stress been less than optimal. Second, where studies report harmful effects, the difference between amniotomy and control group might have been more pronounced.

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Fraser, W. D., Turcot, L., Krauss, I., & Brisson-Carrol, G. (1999). Amniotomy for shortening spontaneous labour. *The Cochrane Database of Systematic Reviews*, (4), CD000015.

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Fraser, W. D., Marcoux, S., Moutquin, J. M., & Christen, A. (1993). Effect of early amniotomy on the risk of dystocia in nulliparous women. The Canadian Early Amniotomy Study Group. *The New England Journal of Medicine, 328*(16), 1145–1149.

Fraser, W. D., Turcot, L., Krauss, I., & Brisson-Carrol, G. (1999). Amniotomy for shortening spontaneous labour. *The Cochrane Database of Systematic Reviews*, (4), CD000015.

Garite, T. J., Porto, M., Carlson, N. J., Rumney, P. J., & Reimbold, P. A. (1993). The influence of elective amniotomy on fetal heart rate patterns and the course of labor in term patients: A randomized study. *American Journal of Obstetrics and Gynecology, 168*(6, Pt. 1), 1827–1831; discussion 1831–1832.

Mercer, B. M., McNanley, T., O'Brien, J. M., Randal, L., & Sibai, B. M. (1995). Early versus late amniotomy for labor induction: A randomized trial. *American Journal of Obstetrics and Gynecology, 173*(4), 1321–1325.

Roberts, W. E., Martin, R. W., Roach, H. H., Perry, K. G., Jr., Martin, J. N., Jr., & Morrison, J. C. (1997). Are obstetric interventions such as cervical ripening, induction of labor, amnioinfusion, or amniotomy associated with umbilical cord prolapse? *American Journal of Obstetrics and Gynecology, 176*(6), 1181–1183; discussion 1183–1185.

Rouse, D. J., McCullough, C., Wren, A. L., Owen, J., & Hauth, J. C. (1994). Active-phase labor arrest: a randomized trial of chorioamnion management. *Obstetrics & Gynecology, 83*(6), 937–940.

Soper, D. E., Mayhall, C. G., & Froggatt, J. W. (1996). Characterization and control of intraamniotic infection in an urban teaching hospital. *American Journal of Obstetrics and Gynecology, 175*(2), 304–309; discussion 309–310.

Usta, I. M., Mercer, B. M., & Sibai, B. M. (1999). Current obstetrical practice and umbilical cord prolapse. *American Journal of Perinatology, 16*(9), 479–484.

EXCLUDED STUDIES

Barrett, J. F., Savage, J., Phillips, K., & Lilford, R. J. (1992). Randomized trial of amniotomy in labour versus the intention to leave membranes intact until the second stage. *British Journal of Obstetrics and Gynaecology, 99*(1), 5–9. **Reason:** Quality poor enough to invalidate results. The Cochrane SR (Fraser, 1999) excluded the study because of "inequality between groups suggesting error in randomization technique."

Brisson-Carroll, G., Fraser, W., Breart, G., Krauss, I., & Thornton, J. (1996). The effect of routine early amniotomy on spontaneous labor: A meta-analysis. *Obstetrics & Gynecology, 87*(5, Pt. 2), 891–896. **Reason:** This SR of amniotomy was superseded by the Cochrane SR (Fraser, 1999).

Cammu, H., & Van Eeckhout, E. (1996). A randomised controlled trial of early versus delayed use of amniotomy and oxytocin infusion in nulliparous labour. *British Journal of Obstetrics and Gynaecology, 103*(4), 313–318. **Reason:** This is an RCT of Active Management of Labor.

Step 6: Does not routinely employ practices and procedures that are unsupported by scientific evidence, including, but not limited to, the following:

- *[continuous] electronic fetal monitoring [intrapartum cardiotocography]*

Continuous Electronic Fetal Monitoring

Rationale for Compliance	Evidence Grade	
Compared with intermittent auscultation, routine continuous electronic fetal monitoring (EFM) in low-risk women fails to reduce perinatal death rates, low APGAR scores, admissions to special care nursery, or the incidence of cerebral palsy (CP) (Thacker, 2001).	**Quality:** **Quantity:** **Consistency:**	A A A**
Compared with intermittent auscultation, routine continuous EFM significantly reduces the incidence of neonatal seizure (Thacker, 2001). However, that benefit was found in a trial in an institution that mandates a high-dose oxytocin protocol for any woman not progressing at the average rate (MacDonald, 1985). The likelihood of uterine hyperstimulation and, therefore, the likelihood of distressing the fetus rise as oxytocin dosage rises. A more physiologic regimen might reduce or eliminate the benefit of closer monitoring. In any case, no long-term benefits were found (Grant, 1989). Of the other nine trials in the Cochrane review, seven failed to find a difference and two found a nonsignificant difference, but all nine were underpowered to detect a difference in this rare outcome.	**Quality:** **Quantity:** **Consistency:**	A A B
Compared with intermittent auscultation, routine continuous EFM in women in preterm labor fails to improve neonatal outcomes (Luthy, 1987).	**Quality:** **Quantity:** **Consistency:**	B C NA*
No trials could be found evaluating routine continuous EFM with epidural analgesia, physiologic oxytocin augmentation or induction protocols, or VBAC labors. Other than one RCT of continuous EFM in women in preterm labor, published in 1987 (see above), no RCTs have evaluated the benefits versus harms of routine continuous EFM in women with fetuses at high risk of being unable to tolerate labor.		Benefit unknown; harm established (see below)
The association between FHR patterns in labor and condition at birth is weak (Milsom, 2002; Sameshima, 2004). The association between condition at birth and long-term adverse outcome is weak (Low, 1990; Milsom, 2002; Yudkin, 1994). Therefore, the association between FHR patterns and neurologic injury is necessarily weak. This means that refinements of EFM technology such as computer analysis of fetal heart rate tracings or fetal electrocardiogram analysis are extremely unlikely to improve its ability to predict encephalopathy or CP.	**Quality:** **Quantity:** **Consistency:**	B A A
Compared with intermittent auscultation, routine continuous EFM increases the likelihood of vaginal instrumental birth and cesarean section (Thacker, 2001). The excess risk of cesarean section is greater in low-risk pregnancies and in trials with no follow-up test to verify distress (Thacker, 2001).	**Quality:** **Quantity:** **Consistency:**	A A A
The use of internal fetal monitoring increases the likelihood of infection (Soper, 1996). In addition, the fact that EFM increases the likelihood of cesarean surgery means it necessarily increases the likelihood of infection because cesarean surgery increases the incidence of infection over vaginal birth (Maternity Center Association (MCA), 2004).	**Quality:** **Quantity:** **Consistency:**	A B A
In cases where membranes are intact, internal EFM involves amniotomy. Amniotomy may increase the likelihood of episodes of nonreassuring FHR (see Step 6, p. 38S).	**Quality:** **Quantity:** **Consistency:**	See Step 6, p. 38S for grades.
Continuous EFM necessarily interferes with mobility. There is no formal evidence of this, other than a survey reporting that of women who said they were confined to bed, two thirds gave being ''connected to things'' as the reason (Declercq, 2002).	**Quality:** **Quantity:** **Consistency:**	B (''Connected to things'' could mean IVs as well as monitoring equipment.) A NA*
Monitoring from a central unit necessarily decreases interaction between nurses and laboring women. Supportive care is highly valued by laboring women (Hodnett, 2002).	**Quality:** **Quantity:** **Consistency:**	A A A

(*Continued*)

(Continued)
Continuous Electronic Fetal Monitoring

Rationale for Compliance	Evidence Grade
The admission test strip—that is, the routine use of continuous EFM for a limited period at hospital admission—fails to provide neonatal benefits. However, it increases the use of continuous EFM (Impey, 2003; Mires, 2001).	**Quality:** B **Quantity:** A **Consistency:** A
The admission test strip may increase the likelihood of operative birth (cesarean plus vaginal instrumental birth) (Impey, 2003; Mires, 2001).	**Quality:** B **Quantity:** A **Consistency:** C (Mires [2001] reported that an admission test strip increased the likelihood of operative delivery; Impey [2003] did not find an increase. Differences between trial results may reflect differing philosophies and policies among study institutions.)

A = good, B = fair, C = weak, NA = not applicable
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study
**multiple studies in SR

INCLUDED STUDIES

Declercq, E., Sakala, C., Corry, M. P., Applebaum, S., & Risher, P. (2002). *Listening to mothers: Report of the first national U.S. survey of women's childbearing experiences.* New York: Maternity Center Association.

Grant, A., O'Brien, N., Joy, M. T., Hennessy, E., & MacDonald, D. (1989). Cerebral palsy among children born during the Dublin randomised trial of intrapartum monitoring. *Lancet,* 2(8674), 1233–1236. **Reason:** Published before 1990 but this study follows up a key trial of EFM included in Thacker (2001) systematic review.

Hodnett, E. (2002). Pain and women's satisfaction with the experience of childbirth: A systematic review. *American Journal of Obstetrics and Gynecology, 186,* S160–S172.

Impey, L., Reynolds, M., MacQuillan, K., Gates, S., Murphy, J., & Sheil, O. (2003). Admission cardiotocography: A randomised controlled trial. *Lancet, 361*(9356), 465–470.

Low, J. A., Muir, D. W., Pater, E. A., & Karchmar, E. J. (1990). The association of intrapartum asphyxia in the mature fetus with newborn behavior. *American Journal of Obstetrics and Gynecology, 163*(4, Pt. 1), 1131–1135.

Luthy, D. A., Shy, K. K., van Belle, G., Larson, E. B., Hughes, J. P., Benedetti, T. J., et al. (1987). A randomized trial of electronic fetal monitoring in preterm labor. *Obstetrics & Gynecology,* 69(5), 687–695. **Reason:** Published before 1990 but trial included in Thacker (2001) systematic review and is a unique source of data on this topic.

MacDonald, D., Grant, A., Sheridan-Pereira, M., Boylan, P., & Chalmers, I. (1985). The Dublin randomized controlled trial of intrapartum fetal heart rate monitoring. *American Journal of Obstetrics and Gynecology, 152*(5), 524–539. **Reason:** Study published before 1990 but trial included in Thacker (2001) systematic review and raises key point not addressed in that review.

Maternity Center Association. (2004). Harms of cesarean versus vaginal birth: A systematic review. In Childbirth Connection, *What every pregnant woman needs to know about cesarean section* (booklet; 2nd edition 2006, revised; pp. 20–27). New York: Author. Also, retrieved December 17, 2006, from http://childbirthconnection.org/article.asp?ck=10271

Milsom, I., Ladfors, L., Thiringer, K., Niklasson, A., Odeback, A., & Thornberg, E. (2002). Influence of maternal, obstetric and fetal risk factors on the prevalence of birth asphyxia at term in a Swedish urban population. *Acta Obstetricia et Gynecologica Scandinavica, 81*(10), 909–917.

Mires, G., Williams, F., & Howie, P. (2001). Randomised controlled trial of cardiotocography versus Doppler auscultation of fetal heart at admission in labour in low risk obstetric population. *BMJ, 322*(7300), 1457–1460; discussion 1460–1462.

Sameshima, H., Ikenoue, T., Ikeda, T., Kamitomo, M., & Ibara, S. (2004). Unselected low-risk pregnancies and the effect of continuous intrapartum fetal heart rate monitoring on umbilical blood gases and cerebral palsy. *American Journal of Obstetrics and Gynecology, 190*(1), 118–123.

Soper, D. E., Mayhall, C. G., & Froggatt, J. W. (1996). Characterization and control of intraamniotic infection in an urban teaching hospital. *American Journal of Obstetrics and Gynecology, 175*(2), 304–309; discussion 309–310.

Thacker, S. B., & Stroup, D. F. (2001). Continuous electronic heart rate monitoring for fetal assessment during labor. *Cochrane Database of Systematic Reviews* (2), CD000063.

Yudkin, P. L., Johnson, A., Clover, L. M., & Murphy, K. W. (1994). Clustering of perinatal markers of birth

asphyxia and outcome at age five years. *British Journal of Obstetrics and Gynaecology*, *101*(9), 774–781.

EXCLUDED STUDIES

Badawi, N., Kurinczuk, J. J., Keogh, J. M., Alessandri, L. M., O'Sullivan, F., Burton, P. R., et al. (1998). Intrapartum risk factors for newborn encephalopathy: The Western Australian case-control study. *BMJ, 317*(7172), 1554–1558. **Reason:** Not relevant.

Cheyne, H., Dunlop, A., Shields, N., & Mathers, A. M. (2003). A randomised controlled trial of admission electronic fetal monitoring in normal labour. *Midwifery, 19*(3), 221–229. **Reason:** Poorly designed. Study was underpowered.

Nelson, K. B., Dambrosia, J. M., Ting, T. Y., & Grether, J. K. (1996). Uncertain value of electronic fetal monitoring in predicting cerebral palsy. *The New England Journal of Medicine, 334*(10), 613–618. **Reason:** Not relevant.

Step 6: Limits interventions, as follows:

- *induction rate of 10% or less*

For the purposes of this document, induced labors are defined as labors started by artificial means of whatever kind. They are associated with an increased incidence of adverse outcomes compared with labors of spontaneous onset; however, it is possible that, in some instances, this increase may result from medical complications that may have led to the use of induction. In order to determine adverse effects related to the procedure itself, this section is confined to studies of elective induction—that is, induction for nonmedical reasons such as convenience.

Induction of Labor

Rationale for Compliance	Evidence Grade	
When compared with similar populations beginning labor spontaneously, elective inductions result in the following maternal outcomes:		
• increased use of analgesia (Boulvain, 2001).	**Quality:**	A
	Quantity:	A
	Consistency:	NA*
• increased use of epidural anesthesia (Boulvain, 2001; Cammu, 2002; Glantz, 2005; Heinberg, 2002; Maslow, 2000; Prysak, 1998; Vahratian, 2005; van Gemund, 2003).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• increased incidence of nonreassuring fetal heart rate patterns (Glantz, 2005).	**Quality:**	A
	Quantity:	B
	Consistency:	NA*
• increased or equivalent incidence of intrapartum fever (Glantz, 2005; Luthy, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• increased incidence of shoulder dystocia (Dublin, 2000).	**Quality:**	B
	Quantity:	B
	Consistency:	NA*
• increased or equivalent incidence of vaginal instrumental birth (vacuum extractor or forceps birth) (Cammu, 2002; Dublin, 2000; Glantz, 2005; Vahratian, 2005; van Gemund, 2003).	**Quality:**	B
	Quantity:	A
	Consistency:	A
• increased risk of cesarean section for all mothers (Boulvain, 2001; Cammu, 2002; Glantz, 2005; Hoffman, 2006; Maslow, 2000; Prysak, 1998; Vahratian, 2005; van Gemund, 2003).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• increased risk of cesarean section for nulliparous women (Cammu, 2002; Dublin, 2000; Glantz, 2005; Hoffman, 2006; Luthy, 2004; Maslow, 2000; Prysak, 1998; Seyb, 1999; van Gemund, 2003; Vrouenraets, 2005; Yeast, 1999).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• increased risk of cesarean section for multiparous women (Hoffman, 2006; van Gemund, 2003).	**Quality:**	B
	Quantity:	A
	Consistency:	A
In addition, the following factors increase the risk of cesarean with elective induction:		
• cervical ripening is required and/or the Bishop's score is less than 5 (Heinberg, 2002; Prysak, 1998; Vahratian, 2005; Vrouenraets, 2005).	**Quality:**	A
	Quantity:	A
	Consistency:	A

(*Continued*)

(Continued)
Induction of Labor

Rationale for Compliance	Evidence Grade	
• prior cesarean section (see Step 6, p. 56S)		
• age 25 years or older. The risk increases further at age 35 years or older. (Ecker, 2001; Luthy, 2004; Maslow, 2000; Vrouenraets, 2005).	**Quality:** **Quantity:** **Consistency:**	B A A
• use of epidural analgesia (Prysak, 1998; Seyb, 1999; Vrouenraets, 2005).	**Quality:** **Quantity:** **Consistency:**	B A B
• body mass index (BMI) greater than 31 (Seyb, 1999; Vrouenraets, 2005).	**Quality:** **Quantity:** **Consistency:**	B B A
When compared with similar populations beginning labor spontaneously, elective inductions result in the following neonatal outcomes:		
• more or comparable numbers of low-birth-weight infants (<2,500 g) (Vrouenraets, 2005; Heinberg, 2002).	**Quality:** **Quantity:** **Consistency:**	B B A
• increased need for neonatal resuscitation (Boulvain, 2001)	**Quality:** **Quantity:** **Consistency:**	A B NA*
• increased or equivalent incidence of admission to neonatal intensive care units (Boulvain, 2001; Cammu, 2002; Prysak, 1998).	**Quality:** **Quantity:** **Consistency:**	A A B
• increased need for neonatal phototherapy to treat jaundice (Boulvain, 2001).	**Quality:** **Quantity:** **Consistency:**	A B NA*
When compared with similar populations beginning labor spontaneously, elective inductions result in increased costs (Maslow, 2000).	**Quality:** **Quantity:** **Consistency:**	B B NA*
When compared with similar populations beginning labor spontaneously, elective inductions result in an increased length of hospital stay (Heinberg, 2002; Glantz, 2005; van Gemund, 2003; Vrouenraets, 2005).	**Quality:** **Quantity:** **Consistency:**	A A A
The World Health Organization convened an international consensus conference on appropriate use of technology for birth. Participants evaluated national induction rates with respect to neonatal outcomes and determined that rates higher than 10% could not be justified (World Health Organization, 1985; M. Wagner, personal communication, August 8, 2005).		
• A large study of a model of care attempting to achieve maximum health outcomes with the minimal use of medical intervention reported a 10% induction rate (Johnson, 2005). The study comprised 5,418 women intending home birth who reached term with a live fetus and who had not been referred for pregnancy complications. Of those, 90% achieved spontaneous labor without induction. Because the vast majority of inductions are done electively or for postdates, suspected macrosomia, or prelabor rupture of membranes at term—all categories that could potentially apply to this population—the percentage of inductions that might have been done during the preterm period would have been small. Therefore, this population serves as a reasonable proxy for an achievable induction rate overall.	**Quality:** **Quantity:** **Consistency:**	B A NA*

A = good, B = fair, NA = not applicable
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study

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Step 6: Limits interventions, as follows:

- *episiotomy rate of 20% or less, with a goal of 5% or less*

The RCTs of liberal versus restricted use of episiotomy testify to the difficulties of changing entrenched practice. In most trials, sizeable percentages of women in the ''restrict episiotomy'' arm were given episiotomies. Of the seven RCTs conducted to date, the episiotomy rate in the restrictive arm was 10% or less in only two and exceeded 30% in four (Hartmann, 2005). Proper data analysis of an RCT demands that investigators keep participants with their assigned group (''intent to treat'') regardless of actual treatment. To do otherwise would defeat random allotment, the principal advantage of this study design. In trials where treatment depends little on clinician judgment, few protocol violations are likely to occur, and crossover between groups is rarely an issue. However, where this is not the case and where clinician opinion favors the intervention—as is the case with many clinicians and episiotomy—high crossover rates can occur, causing a serious problem with data interpretation. By commingling the treatments, a high degree of protocol violation decreases the power of the study to detect differences between groups. This can make it falsely appear that no difference exists between groups when, in fact, it does. For example, because many women in the ''restrictive use of episiotomy'' arm of the sole RCT of median episiotomy had episiotomies, an ''intent to treat'' analysis showed no difference between groups in the incidence of anal sphincter tears (Klein, 1992). In fact, an episiotomy preceded all but one of the 53 anal injuries.

Clinician preference for performing episiotomy causes a secondary problem in establishing a goal episiotomy rate based on data from the RCTs. The 20% rate established in the Coalition for Improving Maternity Services's *Mother-Friendly Childbirth Initiative* came from the best available evidence at the time: the Cochrane systematic review. However, as can be seen below, much lower rates than this can be supported as upper limitations for performing this procedure.

Episiotomy

Rationale for Compliance	Evidence Grade	
Although these rationales are given for routine or frequent use of episiotomy, in fact, compared with no episiotomy:		NEB
• Neither median nor mediolateral episiotomy reduces the incidence of anal sphincter lacerations (Eason, 2000; Hartmann, 2005; Hudelist, 2005; Larsson, 1991; MCA, 2004; Renfrew, 1998).	**Quality:** **Quantity:** **Consistency:**	B A A
• Neither median nor mediolateral episiotomy improves neonatal outcomes (Argentine Episiotomy Trial Collaborative Group, 1993; Dannecker, 2004; Klein, 1992).	**Quality:** **Quantity:** **Consistency:**	A A A
• Neither median nor mediolateral episiotomy causes less pain than spontaneous tears (Eason, 2000; Hartmann, 2005; Renfrew, 1998).	**Quality:** **Quantity:** **Consistency:**	B A A
• Neither median nor mediolateral episiotomies heal better or faster than spontaneous tears (Hartmann, 2005; Klein, 1994).	**Quality:** **Quantity:** **Consistency:**	A A A
• Neither median nor mediolateral episiotomy prevents urinary stress incontinence in either the short- or the long-term (Eason, 2000; Ewings, 2005; Hartmann, 2005; MCA, 2004; Renfrew, 1998).	**Quality:** **Quantity:** **Consistency:**	A A A

(*Continued*)

(Continued)
Episiotomy

Rationale for Compliance	Evidence Grade
• Neither median nor mediolateral episiotomy prevents anal incontinence (Hartmann, 2005; MCA, 2004).	**Quality:** A **Quantity:** A **Consistency:** A
• Neither median nor mediolateral episiotomy preserves pelvic floor strength (Eason, 2000; Hartmann, 2005; MCA, 2004; Renfrew, 1998).	**Quality:** A **Quantity:** A **Consistency:** A
• Neither median nor mediolateral episiotomy improves sexual functioning (Eason, 2000; Hartmann, 2005; MCA, 2004; Renfrew, 1998).	**Quality:** A **Quantity:** A **Consistency:** A
Episiotomy causes more pain than spontaneous tears (Hartmann, 2005; Klein, 1994; Larsson, 1991).	**Quality:** A **Quantity:** A **Consistency:** A
Women with episiotomies experience more problems with healing compared with women experiencing spontaneous lacerations (Larsson, 1991; McGuinness, 1991).	**Quality:** A **Quantity:** B **Consistency:** A
Women with intact perineums experience the least pain, have the strongest pelvic floors, and experience the best sexual functioning after childbirth (Klein, 1994).	**Quality:** A **Quantity:** B **Consistency:** NA*
Both median and mediolateral episiotomy adversely affect sexual functioning (Hartmann, 2005; Klein, 1994).	**Quality:** B **Quantity:** A **Consistency:** A
Median episiotomy predisposes to anal sphincter lacerations (Eason, 2000; Klein, 1992, 1994; Renfrew, 1998).	**Quality:** A **Quantity:** A **Consistency:** A
Anal sphincter injury is associated with anal sphincter weakness and defects seen on ultrasound. Anal sphincter weakness or defect increases the risk of anal incontinence (MCA, 2004).	**Quality:** A **Quantity:** A **Consistency:** A**
Both median and mediolateral episiotomy increase the risk of anal incontinence (Hartmann, 2005; MCA, 2004).	**Quality:** A **Quantity:** A **Consistency:** A
Median episiotomy weakens the pelvic floor (Klein, 1994).	**Quality:** A **Quantity:** B **Consistency:** NA*
Performing mediolateral episiotomy for ''imminent tear'' does not decrease anal injury rates (Dannecker, 2004; Larsson, 1991). (Performing median episiotomy for this reason would increase anal sphincter laceration rates because of its predisposition to extend.)	**Quality:** A **Quantity:** B **Consistency:** A
Avoiding median episiotomy during vaginal instrumental birth (forceps or vacuum extraction) reduces the likelihood of anal laceration (Combs, 1990; Helwig, 1993).	**Quality:** A **Quantity:** A **Consistency:** A
Episiotomy rates in mixed-risk, mixed-parity women can be less than 1% among all provider types (obstetricians, family practitioners, midwives) (Albers, 2005).	**Quality:** A **Quantity:** NA to reporting a rate **Consistency:** NA to reporting a rate
Episiotomy rates in low-risk, mixed-parity women can be 5% or less (Johnson, 2005; MCA, 2004).	**Quality:** A **Quantity:** NA to reporting a rate **Consistency:** NA to reporting a rate
Episiotomy rates in low-risk nulliparous women can average 9% and can be as low as 2% (MCA, 2004).	**Quality:** A **Quantity:** NA to reporting a rate **Consistency:** NA to reporting a rate

A = good, B = fair, NA = not applicable, NEB = no evidence of benefit

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only 1 study

**multiple studies in SR

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to 7 months. Six months or more is a more reasonable time frame in which to evaluate pelvic floor dysfunction.

Dannecker, C., Hillemanns, P., Strauss, A., Hasbargen, U., & Hepp, H. (2005). Episiotomy and perineal tears presumed to be imminent: The influence on the urethral pressure profile, analmanometric and other pelvic floor findings—Follow-up study of a randomized controlled trial. *Acta Obstetricia et Gynecologica Scandinavica,* 84(1), 65–71. **Reason:** This secondary analysis of an RCT of liberal versus restrictive mediolateral episiotomy reported urinary and anal incontinence according to the ''intent to treat.'' However, half the 27 women in the restrictive arm who were followed up had an episiotomy, and 17% of the 34 women who were followed up in the liberal arm did not. Study underpowered to detect differences in incontinence. No evaluation of frequency or severity of incontinence.

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Kettle, C. (2005). Perineal care. *Clinical Evidence,* (13), 1780–1795. **Reason:** Secondary source. Summarizes Carroli (1999), a SR that has been superseded by Hartmann (2005), plus Dannecker (2004) for the only outcome relevant here.

W

Childbirth Connection's ''Alert'' document, NIH Cesarean Conference: Interpreting Meeting and Media Reports *(updated October 2006), contains a cogent analysis of the flaws and weaknesses of the March 2006 NIH State-of-the-Science Conference. View Childbirth Connection's document online at http://www.childbirthconnection.org/article.asp?ck=10375*

Step 6: Limits interventions, as follows:

- *total cesarean rate of 10% or less in community hospitals, and 15% or less in tertiary hospitals*

Current arguments articulated in the March 2006 National Institutes of Health (NIH) State-of-the-Science Conference Statement against setting a goal cesarean rate rest on four premises (NIH, 2006):

- Planned cesarean surgery is as safe or nearly as safe as vaginal birth provided women limit family size to one or two children (p. 12).
- Planned cesarean surgery is less risky than unplanned cesarean surgery (p. 6).
- Cesarean section may prevent urinary incontinence (p. 6).
- Currently recommended rate limits are opinion based and artificial (p. 4).

As this portion of Step 6 makes clear, cesarean section significantly increases the risk of a long list of adverse outcomes in mothers and babies, some of them catastrophic. It is true that planned cesarean surgery reduces the risk of certain harms compared with unplanned surgery. Nonetheless, the woman still emerges with a uterine scar and substantial possibility of dense surgical adhesions, both of which can have long-term consequences for her future health and reproduction.

As can be seen below, cesarean section offers little protection from urinary or anal incontinence in the childbearing years and none at all in older women. Even the minimal short-term benefits are reported in studies that did not take into account the effects of modifiable elements of conventional obstetric management in injuring and weakening the pelvic floor. Chief among these are both median and mediolateral episiotomy and vaginal instrumental delivery (MCA, 2004). Other flaws that make it difficult to determine the true excess risk, if any, of vaginal birth are (MCA, 2004):

- Definition of incontinence: Studies often combine women with mild symptoms with more severe problems or fail to distinguish frequent from infrequent symptoms.
- Time elapsed since birth: Symptoms of incontinence become milder and less frequent over time.

Moreover, urinary incontinence can often be abated or cured by conservative measures, such as losing weight or engaging in a program of pelvic floor exercises (Groutz, 2004; MCA, 2004).

Finally, the oft-cited 10–15% maximum cesarean rate first recommended in 1985 by the World Health Organization (WHO) after an international consensus conference was neither opinion-based nor artificially derived (WHO, 1985). In fact, it was founded upon the statistic that ''[c]ountries with some of the lowest perinatal mortality rates in the world have caesarean section rates of less than 10%'' (WHO, 1985, p. 437).

As can be seen below as well, that maximum has since been confirmed by numerous studies demonstrating that cesarean rates can be 15% or less in unselected populations without any deleterious effect on maternal or perinatal outcomes. Indeed, women and babies are likely to be healthier because they have not been unnecessarily exposed to the harms of cesarean delivery.

Cesarean

Rationale for Compliance	Evidence Grade	
When compared with vaginal birth, cesarean section increases the likelihood of these adverse maternal outcomes:		
• death (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	B A A**
• hysterectomy (Burrows, 2004; Forna, 2004; Kwee, 2006; MCA, 2004; Selo-Ojeme, 2005): Hysterectomy increases the risk of other intraoperative complications (bladder injury) and postoperative complications (hematologic, infectious, pulmonary, genitourinary, gastrointestinal, cardiovascular, psychiatric, neurologic) (Forna, 2004; Selo-Ojeme, 2005).	**Quality:** **Quantity:** **Consistency:**	A A A
• thromboembolic events (deep venous clots, pulmonary embolism, stroke) (Burrows, 2004; Koroukian, 2004; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• surgical injuries (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A NA*** However, surgical injuries to bladder, bowel, or blood vessels do not occur in vaginal birth.
• anesthetic complications (Koroukian, 2004).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• longer postpartum stays (Liu, 2005; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• hospital readmissions (Liu, 2005; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• hospital readmission sooner after discharge and for longer duration (Liu, 2005).	**Quality:** **Quantity:** **Consistency:**	A A NA*
• infections (Burrows, 2004; Koroukian, 2004; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• hemorrhage requiring transfusion (cesarean during labor) (Burrows, 2004).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• more severe and longer lasting postpartum pain (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A**
• unsatisfactory birth experience (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A

(*Continued*)

(Continued)
Cesarean

Rationale for Compliance	Evidence Grade	
• reduced early contact with newborn (MCA, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A**
• negative early reaction to infant (MCA, 2004).	**Quality:**	B
	Quantity:	B
	Consistency:	A
• may cause depression (Carter, 2006; MCA, 2004). Inconsistent findings may be explained by variations in the context in which the cesarean occurs, differences in the woman's expectations, and the quality of her birth experience.	**Quality:**	B
	Quantity:	A
	Consistency:	C
• psychological trauma (MCA, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A**
• poor overall mental health and self-esteem (MCA, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• poor overall physical functioning (MCA, 2004).	**Quality:**	B
	Quantity:	A
	Consistency:	A**
• chronic pain (Declercq, 2002; Latthe, 2006; MCA, 2004; Nikolajsen 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• adhesions (Lyell, 2005; Myers, 2005; Phipps, 2005): Adhesions can cause chronic pain and increase the likelihood of surgical injury during future operations.	**Quality:**	A
	Quantity:	A
	Consistency:	A
• bowel obstruction (MCA, 2004).	**Quality:**	A
	Quantity:	B
	Consistency:	A**
When compared with vaginal birth, cesarean section increases the likelihood of these adverse neonatal outcomes:		
• surgical laceration (Dessole, 2004; MCA, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• respiratory complications serious enough to require admission to a special care nursery (Gerten, 2005; MCA, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• may increase frequency of special care nursery admission (Fogelson, 2005).	**Quality:**	B
	Quantity:	B
	Consistency:	NA*
• not breastfeeding/failure of breastfeeding (MCA, 2004).	**Quality:**	B
	Quantity:	A
	Consistency:	A**
• may increase likelihood of asthma (Juhn, 2005; Maitra, 2004; MCA, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	B
• sensitivity to allergens (Laubereau, 2004; Negele, 2004).	**Quality:**	B
	Quantity:	B
	Consistency:	A

(*Continued*)

(Continued)
Cesarean

Rationale for Compliance	Evidence Grade	
When compared with vaginal birth, a history of cesarean section increases the likelihood of these adverse reproductive outcomes:		
• infertilty (MCA, 2004; Mollison, 2005; Smith, 2006). Although studies consistently find fewer subsequent births to women after cesarean at first birth compared with first vaginal birth, it is not possible to determine from population-based studies whether decreased fertility is associated with cesarean surgery or to confounding factors that both reduce fertility and increase the likelihood of cesarean section.	**Quality:** **Quantity:** **Consistency:**	B A A
• involuntary infertility (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• voluntary infertility (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A NA***
• ectopic pregnancy (MCA, 2004; Mollison, 2005). A variation specific to cesarean section is implantation within the cesarean scar (Jurkovic, 2003; Maymon, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• placenta previa (Getahun, 2006; MCA, 2004; Olive, 2005).	**Quality:** **Quantity:** **Consistency:**	A A A
• major maternal morbidity in cases of placenta previa compared with women with placenta previa who have no history of cesarean section (Olive, 2005). Major maternal morbidity defined as severe postpartum hemorrhage, acute renal failure, admission to intensive care, ventilation, shock, disseminated intravascular coagulation, or hysterectomy or other procedures to control bleeding or prevent maternal death.	**Quality:** **Quantity:** **Consistency:**	B A NA*
• placenta accreta (MCA, 2004). This is associated with high rates of catastrophic and life-threatening outcomes, including hysterectomy, severe hemorrhage, and the complications that accompany severe hemorrhage, such as disseminated intravascular coagulation, need for additional surgery, and maternal death (Forna, 2004; Makoha, 2004; Selo-Ojeme, 2005; Silver, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• placental abruption (Getahun, 2006; MCA, 2004; Tikkanen, 2006).	**Quality:** **Quantity:** **Consistency:**	A A A
• uterine rupture in future pregnancies or labors (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A**
When compared with vaginal birth, a history of cesarean section increases the likelihood of these adverse outcomes for babies of future pregnancies:		
• perinatal death (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A**
• may increase unexplained stillbirth at term (Bahtiyar, 2006; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A B
• low birth weight and preterm birth (MCA, 2004; Seidman, 1994).	**Quality:** **Quantity:** **Consistency:**	A A A

(*Continued*)

(Continued)
Cesarean

Rationale for Compliance	Evidence Grade	
• congenital malformation (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A C**
• central nervous system injury (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A B NA***
Elective cesarean section offers minimal protective benefit against moderate to severe urinary incontinence in the short term and none at all in the long term (Chin, 2006; Groutz 2004; MCA, 2004). The excess percentage of women experiencing urinary incontinence at 1 year is 6% or less.	**Quality:** **Quantity:** **Consistency:**	A A A
Elective cesarean section offers minimal protective benefit against anal incontinence in the short term and none at all in the long term (MCA, 2004). The excess percentage of women experiencing anal incontinence at 1 year is about 3%.	**Quality:** **Quantity:** **Consistency:**	A A A
The cesarean section rate can safely be 7% or less in a mixed parity, low-risk population (Gould, 2004; Johnson, 2005; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
The cesarean section rate can safely be 12% or less in a mixed parity, mixed-risk population (MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A**
The cesarean section rate can safely be 11% or less in a low-risk, nulliparous population (Johnson, 2005; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A

A = good, B = fair, C = weak, NA = not applicable
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study
**multiple studies in a SR
***only 1 study in a SR

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Dessole, S., Cosmi, E., Balata, A., Uras, L., Caserta, D., Capobianco, G., et al. (2004). Accidental fetal lacerations during cesarean delivery: Experience in an Italian level III university hospital. *American Journal of Obstetrics and Gynecology, 191*(5), 1673–1677.

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- clinically insignificant differences between cesarean rates, especially between overall expected and higher-than-expected rates (8% vs. 13% vs. 14%);
- failure to define asphyxia;
- clinically insignificant absolute difference in asphyxia/trauma rates between hospitals at and below predicted cesarean-section rates (1.29% low, 1.26% expected, absolute difference 3 per 10,000); and
- the assumption that care in expected rate hospitals was optimal.

Bhattacharya, S., Porter, M., Harrild, K., Naji, A., Mollison, J., van Teijlingen, E., et al. (2006). Fertility and assisted reproduction—Absence of conception after caesarean section: Voluntary or involuntary? *BJOG, 113*(3), 268–275. **Reason:** Insufficient response rate. Only 60% of women returned the questionnaire: 75% of women having cesareans versus 50% of women having spontaneous vaginal births and instrumental vaginal births. Overall weakness and discrepancy in rate of return groups creates a high potential for biased results.

Bloom, S. L., Spong, C. Y., Weiner, S. J., Landon, M. B., Rouse, D. J., Varner, M. W., et al. (2005). Complications of anesthesia for cesarean delivery. *Obstetrics & Gynecology, 106*(2), 281–287. **Reason:** Study not relevant.

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Eggesbo, M., Botten, G., Stigum, H., Samuelsen, S. O., Brunekreef, B., & Magnus, P. (2005). Cesarean delivery and cow milk allergy/intolerance. *Allergy, 60*(9), 1172–1173. **Reason:** Underpowered to detect differences between groups. Investigators state that cow milk allergy/intolerance is more common in cesarean despite confidence interval that crosses 1. Text differs from table data.

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Kabir, A. A., Steinmann, W. C., Myers, L., Khan, M. M., Herrera, E. A., Yu, S., et al. (2004). Unnecessary cesarean delivery in Louisiana: An analysis of birth certificate data. *American Journal of Obstetrics and Gynecology, 190*(1), 10–19; discussion 3A. **Reason:** Study looks at changes in cesarean rate with respect to indications and risk factors in Louisiana from 1993 to 2000 and concludes that 17% of primary and 43% of repeat cesarean sections were potentially unnecessary. However, included studies are more relevant to the purpose of establishing that the cesarean rate can be reduced without compromising outcomes in that they show that low cesarean rates do not increase adverse outcomes. This study is also not useful for making a statement about the percentage of cesareans that may be unnecessary because of rapidly changing practice patterns. For example, the VBAC rate has declined precipitously since 2000.

Mahoney, S. F., & Malcoe, L. H. (2005). Cesarean delivery in Native American women: Are low rates explained by practices common to the Indian health service? *Birth, 32*(3), 170–178. **Reason:** Poorly designed. Study does not report neonatal outcomes or compare them to a similar population with higher cesarean rates. There is no means to evaluate the safety of having a low cesarean rate.

McKenna, D. S., Ester, J. B., & Fischer, J. R. (2003). Elective cesarean delivery for women with a previous anal sphincter rupture. *American Journal of Obstetrics and Gynecology, 189*(5), 1251–1256. **Reason:** Poorly designed. Study is a risk-benefit analysis of elective cesarean in women with anal sphincter laceration at first birth. Weaknesses include the following:

- Defines anal incontinence as leakage of gas as well as fecal incontinence or urgency. Most cases of incontinence are confined to gas leakage, which means weighing the adverse effects of major surgery against the benefits of preventing flatus. The investigators calculate that, for every 1,880 cases of anal incontinence prevented, one woman will die. In the Year 2000, 12 additional women would die to prevent 22,107 cases of anal incontinence.
- Assumes elective cesarean prevents all cases of anal incontinence and, at the same time, cites a study in the discussion in which 3% of women having elective cesarean had anal incontinence at 10 months postpartum.
- Calculates a 5.3% incidence of anal injury in the first pregnancy without accounting for the contribution of modifiable factors such as median episiotomy or vaginal instrumental birth.
- Fails to include consideration of many excess risks of cesarean surgery and repeat cesarean surgery from the comparison with vaginal birth, including infertility, ectopic pregnancy, uterine rupture, placental abruption, or any excess perinatal morbidity or mortality.

McKinnie, V., Swift, S. E., Wang, W., Woodman, P., O'Boyle, A., Kahn, M., et al. (2005). The effect of pregnancy and mode of delivery on the prevalence of urinary and fecal incontinence. *American Journal of Obstetrics and Gynecology, 193*(2), 512–517; discussion 517–518. **Reason:** Poorly designed. No information on episiotomy, which, because this is a U.S. study, would be median episiotomy and, therefore, an important confounding factor for anal sphincter injury and weakness. No power calculation. Not population based. No consideration of time since most recent birth. Incontinence symptoms diminish markedly in prevalence and severity in the first 6 months after childbirth.

National Collaborating Centre for Women's and Children's Health. (2004, April). *Caesarean section. Clinical guideline.* London: RCOG Press. Also, retrieved December 17, 2006, from http://www.nice.org.uk/pdf/CG013fullguideline.pdf **Reason:** Have better quality research. The Maternity Center Association (2004) SR reviews many of the same studies and addresses a broader range of issues of interest to women and clinicians in making informed decisions, and it excludes studies for reasons that this SR fails to consider. For example, this review accepts Cochrane Database systematic reviews with an unacceptably high degree of protocol violations (crossovers between treatment groups), while the Maternity Center Association (2004) SR does not.

Pollack, J., Nordenstam, J., Brismar, S., Lopez, A., Altman, D., & Zetterstrom, J. (2004). Anal incontinence after vaginal delivery: A five-year prospective cohort study. *Obstetrics & Gynecology, 104*(6), 1397–1402. **Reason:** Not applicable. No cesarean comparison group.

Press, J., Klein, M. C., & von Dadelszen, P. (2006). Mode of delivery and pelvic floor dysfunction: A systematic review of the literature on urinary and fecal incontinence and sexual dysfunction by mode of delivery. In *Medscape*. Retrieved December 16, 2006, from http://www.medscape.com/viewprogram/4989_pnt **Reason:** Poorly written. Study fails to reveal methodology.

Puza, S., Roth, N., Macones, G. A., Mennuti, M. T., & Morgan, M. A. (1998). Does cesarean section decrease the incidence of major birth trauma? *Journal of Perinatology, 18*(1), 9–12. **Reason:** Poorly designed. This before/after study looks at whether the increase in cesarean rates resulted in decreased neonatal trauma without investigating other factors that might have changed along with change in cesarean rates.

Rouse, D. J., Landon, M., Leveno, K. J., Leindecker, S., Varner, M., Caritis, S., et al. (2004). The Maternal-Fetal Medicine Units cesarean registry: Chorioamnionitis at term and its duration-relationship to outcomes. *American Journal of Obstetrics and Gynecology, 191*(1), 211–216. **Reason:** Have better-quality research. Investigators conclude that chorioamnionitis increased maternal and neonatal morbidity after cesarean, but defined chorioamnionitis as intrapartum fever without accounting for epidural use.

Rouse, D. J., Leindecker, S., Landon, M., Bloom, S., Varner, M., Moawad, A., et al. (2005). The MFMU Cesarean Registry: Uterine atony after primary cesarean delivery. *American Journal of Obstetrics and Gynecology, 193*(3, Pt. 2), 1056–1060. **Reason:** Not applicable. No vaginal birth comparison group.

Seffah, J. D. (2005). Re-laparotomy after Cesarean section. *International Journal of Gynaecology and Obstetrics, 88*(3), 253–257. **Reason:** Study not applicable. Carried out in a resource-poor country (Ghana).

Sule, S. T., & Nwasor, E. O. (2005). Factors affecting blood loss at cesarean section. *International Journal of Gynaecology and Obstetrics, 88*(2), 150–151. **Reason:** Study not applicable. Carried out in a resource-poor country (Nigeria).

Taylor, L. K., Simpson, J. M., Roberts, C. L., Olive, E. C., & Henderson-Smart, D. J. (2005). Risk of complications in a second pregnancy following caesarean section in the first pregnancy: A population-based study. *The Medical Journal of Australia, 183*(10), 515–519. **Reason:** Study not relevant. There is no statistical analysis of outcomes at second birth of all women having cesarean at first birth versus all women having first vaginal birth. Study compares maternal and neonatal outcomes of:

- all women having initial cesarean followed by planned VBAC with all women having first vaginal birth and laboring in second pregnancy; and
- all women having initial cesarean followed by planned repeat cesarean section with all women

having first vaginal birth and planned cesarean section at second birth.

Tran, T. S., Jamulitrat, S., Chongsuvivatwong, V., & Geater, A. (2000). Risk factors for postcesarean surgical site infection. *Obstetrics & Gynecology, 95*(3), 367–371. **Reason:** Study not applicable. Carried out in a resource-poor country (Viet Nam).

Vermillion, S. T., Lamoutte, C., Soper, D. E., & Verdeja, A. (2000). Wound infection after cesarean: Effect of subcutaneous tissue thickness. *Obstetrics & Gynecology, 95*(6, Pt. 1), 923–926. **Reason:** Have more recent research

Viktrup, L., & Lose, G. (2001). The risk of stress incontinence 5 years after first delivery. *American Journal of Obstetrics and Gynecology, 185*(1), 82–87. **Reason:** Cannot determine relationship between obstetric management and incontinence.

Waterstone, M., Bewley, S., & Wolfe, C. (2001). Incidence and predictors of severe obstetric morbidity: Case-control study. *BMJ, 322*(7294), 1089–1093; discussion 1093–1094. **Reason:** Have more recent research.

Zanardo, V., Simbi, A. K., Savio, V., Micaglio, M., & Trevisanuto, D. (2004). Neonatal resuscitation by laryngeal mask airway after elective cesarean section. *Fetal Diagnosis and Therapy, 19*(3), 228–231. **Reason:** Poorly designed. Study examines need for neonatal resuscitation after elective cesarean, but defines ''elective cesarean'' as being carried out ''before labor,'' which means the cesareans may not all have been truly elective, that is, without medical indication. Fogelson (2005), an included study (see p. 53S), reported on respiratory outcomes after truly elective cesareans, that is, women undergoing ''uncomplicated, term, elective repeat cesareans.''

Step 6: Limits interventions, as follows:

- *VBAC rate of 60% or more, with a goal of 75% or more*

Several decades of research into the question of planned VBAC versus elective repeat cesarean have produced hundreds of studies involving tens of thousands of women and a large body of knowledge on the subject. Nonetheless, many of the prominent studies are beset by serious problems that make it difficult to gauge the true comparative risks of planned vaginal birth versus elective repeat cesarean—problems that, moreover, tend to bias the picture in favor of repeat cesarean. The problems include the following:

- Planning status cannot be determined accurately in population-based studies large enough to detect differences between groups for rare, but severe, adverse outcomes. Without knowing whether repeat cesareans were truly elective and VBAC women and their babies were healthy at labor onset, we cannot have confidence that outcomes are attributable to birth route. Even the sole prospective study (Landon et al., 2004) suffers from this defect (Goer, 2005).
- Most studies comparing the two birth routes report only on outcomes occurring in the perinatal period. They do not take into account the escalating risks of accumulating cesarean surgeries when drawing conclusions about the balance between the potential harms of planned vaginal birth versus planned repeat surgery. Because of the increased risk of uterine scar rupture during VBAC labor and the increased cesarean complication rate in unplanned cesareans, there may be equipoise or near equipoise between the two alternatives provided that women limit family size to two children. However, sizeable percentages of women will go on to have more pregnancies, intended or unintended. According to the 2002 U.S. National Survey of Family Growth, 36% of women aged 40 to 44 years have more than two children (U.S. Department of Health and Human Services, 2005). That percentage will be much higher among populations where large families are the norm. The increasing risk of dense surgical adhesions and the resultant potential for experiencing chronic pain, injuries during future surgeries, and bowel obstruction is also missing from the equation.
- Scar rupture rates and vaginal birth rates in women planning VBAC depend heavily on care provider philosophy and policies regarding VBAC. Modifiable factors such as preset limits on labor duration, inducing and augmenting labor, what agents and dosages are used for those procedures, and uterine suture technique and material at the initial surgery have profound effects, as the wide ranges reported for these outcomes in the various studies attest.

When the long-term view is taken, it becomes clear that maximizing VBAC rates among women who choose VBAC and minimizing the risk of scar rupture during planned vaginal births will produce the best maternal-child health and reproductive outcomes. This is because those goals reduce exposure to the potential harms of repeated cesarean surgeries, of VBAC labors, and to the excess morbidity attendant on

unplanned cesarean sections. It also bears pointing out that the policies and procedures espoused in the *Ten Steps of Mother-Friendly Care* will best promote safer VBAC and higher VBAC rates. In furtherance of those twin goals, clinicians have the obligation to provide women with complete, unbiased, and evidence-based information on the comparative benefits and harms of planned vaginal birth versus planned repeat cesarean so that they may make an informed decision.

Nonetheless, regardless of the care provider's opinion of the relative safety of the two options in any individual case, the choice rests solely in the hands of the pregnant woman, unless she chooses to cede her right to her care provider. VBAC denial, or instituting restrictions that amount to VBAC denial, constitutes coercion in that it forces women to consent to major surgery in order to obtain care. The American College of Obstetricians and Gynecologists (2000) guarantees women freedom from this violation of their rights, as the following passage makes clear:

> *Once a patient has been informed of the material risks and benefits involved with a treatment, test, or procedure, that patient has the right to exercise full autonomy in deciding whether to undergo the treatment, test, or procedure or whether to make a choice among a variety of treatments, tests, or procedures. In the exercise of that autonomy, the informed patient also has the right to refuse to undergo any of these treatments, tests, or procedures. . . . Performing an operative procedure on a patient without the patient's permission can constitute 'battery' under common law. In most circumstances this is a criminal act. . . . Such a refusal [of consent] may be based on religious beliefs, personal preference, or comfort.* (pp. 46–47)

Note that, although cesarean section is a "procedure" (something that requires a care provider to take positive action for it to occur), planned vaginal birth is not because labor is the inevitable end of pregnancy. Note too that the right to refuse is not predicated on the woman having what the clinician considers an acceptable reason.

Some have claimed that the weaknesses of the studies cannot be overcome without a randomized controlled trial, and, indeed, one is currently underway in Australia.[a] As will be seen below, however, those weaknesses do not prevent arriving at an adequate understanding of the comparative benefits and harms of planned vaginal birth versus planned cesarean surgery, an understanding that is, moreover, unlikely to be improved by such a trial for the reasons listed above.

VBAC

Rationale for Compliance	Evidence Grade	
Compared with one cesarean birth, accumulating cesarean surgeries imposes increasing risks of (see pp. 48S–56S for risks of an individual cesarean):		
• adhesions (Makoha, 2004; Seidman, 1994): Known risks of adhesions include chronic pain, the possibility of causing intestinal obstruction, and increased risk of injury during subsequent surgeries.	**Quality:** **Quantity:** **Consistency:**	A A A
• cesarean scar ectopic pregnancy (Jurkovic, 2003; Maymon, 2004).	**Quality:** **Quantity:** **Consistency:**	A B A
• placenta previa (Getahun, 2006; Makoha, 2004; MCA, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• placenta accreta (Silver, 2004): Placenta accreta is associated with high rates of catastrophic and life-threatening outcomes, including hysterectomy, severe hemorrhage and the complications that accompany severe hemorrhage such as disseminated intravascular coagulation, need for additional surgery, and maternal death (Forna, 2004; Makoha, 2004; Selo-Ojeme, 2005; Silver, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A

(*Continued*)

(Continued)
VBAC

Rationale for Compliance	Evidence Grade	
• placenta previa/accreta [b] (Chattopadhyay, 1993; Makoha, 2004; Miller, 1997; Silver, 2004; To, 1995).	**Quality:** **Quantity:** **Consistency:**	A A A
• hemorrhage requiring transfusion [c] (Makoha, 2004; Silver, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• hysterectomy (Kwee, 2006; Makoha, 2004; Selo-Ojeme, 2005; Silver, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• bladder injury [d] (Makoha, 2004; Phipps, 2005).	**Quality:** **Quantity:** **Consistency:**	A B A
• neonatal respiratory complications (Seidman, 1994).	**Quality:** **Quantity:** **Consistency:**	C C NA*
Compared with planned vaginal birth, elective repeat cesarean section increases the risk of:		
• maternal infection (Guise, 2003).	**Quality:** **Quantity:** **Consistency:**	C B A**
• hemorrhage requiring transfusion [c] (Guise, 2003; Macones, 2005; Mozurkewich, Hutton 2000).	**Quality:** **Quantity:** **Consistency:**	A A B
• hysterectomy (Guise, 2003; Mozurkewich, 2000).	**Quality:** **Quantity:** **Consistency:**	B A B (One SR reported fewer hysterectomies; the other reported similar rates.)
• neonatal respiratory complications (Loebel, 2004).	**Quality:** **Quantity:** **Consistency:**	B C NA*
Vaginal birth appears to be protective against symptomatic scar rupture (Lieberman, 2001; Macones, 2005; Smith, 2004).	**Quality:** **Quantity:** **Consistency:**	B A A
The incidence of symptomatic uterine scar rupture can be 4 per 1,000 planned vaginal births or fewer [e] (Gonen 2006; Guise, 2003; Landon et al., 2004; Lieberman, 2004; Loebel, 2004; McMahon, 1996; Mozurkewich, 2000; Smith, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
Planned repeat cesarean does not eliminate the possibility of symptomatic uterine scar rupture (Lydon-Rochelle, 2001; Mozurkewich, 2000).	**Quality:** **Quantity:** **Consistency:**	B A A
Systematic reviews that calculate absolute excess risk (the arithmetic difference between the two rates) of symptomatic uterine scar rupture with planned VBAC compared with planned repeat cesarean report values of 2.3 and 2.7 per 1,000 (Guise, 2003; Mozurkewich, 2000). This means that 270–435 elective cesareans would be needed to prevent one scar rupture (number needed to treat).	**Quality:** **Quantity:** **Consistency:**	A A A
The perinatal mortality rate associated with symptomatic uterine scar rupture during VBAC labor is extremely low:		

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(Continued)
VBAC

Rationale for Compliance	Evidence Grade	
• The perinatal mortality rate associated with symptomatic uterine scar rupture during planned vaginal birth ranges from 1.5 to 4.0 per 10,000 VBAC labors (Guise, 2003; Landon et al., 2004; Lydon-Rochelle, 2001; Mozurkewich, 2000; Smith 2002).	**Quality:** **Quantity:** **Consistency:**	A A NA to reporting a range of rates
• The excess risk of perinatal death associated with symptomatic uterine scar rupture compared with planned cesarean section ranges from 1.4 to 2.6 per 10,000 planned VBACs (Guise, 2004; Landon et al., 2004). To put this number into perspective, the excess risk of losing the pregnancy associated with having mid-trimester amniocentesis is 60 per 10,000 (Seeds, 2004). This means from 3,846 to 7,142 elective cesareans would be needed to prevent one perinatal death.	**Quality:** **Quantity:** **Consistency:**	A A NA to reporting a range of rates
Conclusions in the two studies examining the issue differ on whether a decision-to-incision interval of less than 20 minutes improves outcomes in cases of symptomatic uterine scar rupture (Guise, 2003). The study finding that it did included cases in which the infant required resuscitation but sustained no morbidity. If these cases are removed from consideration, only one case of asphyxia remains among the babies with later emergent delivery.	**Quality:** **Quantity:** **Consistency:**	B B C
Modifiable factors may increase the risk of symptomatic uterine scar rupture. These include:		
• induction of labor with oxytocin (Delaney, 2003; Guise, 2003; Landon et al., 2004; Lieberman, 2001; Locatelli, 2004; Lydon-Rochelle, 2001; Macones, 2005; Smith, 2004).	**Quality:** **Quantity:** **Consistency:**	B A C [f]
• induction of labor with PGE2 (Delaney, 2003; Guise, 2003; Locatelli, 2004; Lydon-Rochelle, 2001; Macones 2005; Smith, 2004).	**Quality:** **Quantity:** **Consistency:**	B A C [f]
• induction of labor with misoprostol (Lieberman, 2001; Plaut, 1999; Wing, 1998).	**Quality:** **Quantity:** **Consistency:**	B B A
• augmentation of labor (Gonen, 2006; Landon et al., 2004; Macones, 2005; Lieberman, 2001).	**Quality:** **Quantity:** **Consistency:**	A A B [g]
• possibly single-layer uterine closure [h] (Bujold, 2002; Durnwald, 2003).	**Quality:** **Quantity:** **Consistency:**	B B C [i]
Adverse outcomes in planned vaginal births occur mostly in women having cesarean sections (Landon et al., 2004; Loebel, 2004; McMahon, 1996; Phipps, 2005). This argues for policies that maximize likelihood of vaginal birth.	**Quality:** **Quantity:** **Consistency:**	A A A
Three out of four women or more in an unselected population who plan VBAC should have a vaginal birth. This implies that VBAC rates lower than 70% are due to modifiable factors.		
• Many studies and systematic reviews report VBAC rates around 75% in an unselected population, and rates as high as 87% are reported (Gonen, 2006; Guise, 2003; Landon et al., 2004; Lieberman, 2004; Locatelli, 2004; Loebel, 2004; Macones, 2005; Smith, 2002).	**Quality:** **Quantity:** **Consistency:**	A A NA to reporting a range of rates
• Rates of 95% have been reported in women with optimal profiles for VBAC (Guise, 2003).	**Quality:** **Quantity:** **Consistency:**	A NA to reporting a rate NA to reporting a rate

(*Continued*)

(Continued)
VBAC

Rationale for Compliance	Evidence Grade	
• Rates as high as 81% have been reported among women with no prior vaginal birth (Lieberman, 2004).	**Quality:** **Quantity:** **Consistency:**	A NA to reporting a rate NA to reporting a rate
• Even when maternal history and obstetric factors are suboptimal for VBAC, the chance of VBAC can be at least 50/50 (Guise, 2003; Landon, 2004; Macones, 2005; Rosen, 1990).	**Quality:** **Quantity:** **Consistency:**	A A A
Inducing labor appears to reduce the likelihood of vaginal birth (Delaney, 2003; Guise, 2003; Landon, 2004; Locatelli, 2004).[j]	**Quality:** **Quantity:** **Consistency:**	C A A

A = good, B = fair, C = weak, NA = not applicable
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study
**multiple studies in a SR
***only 1 study in a SR
[a]The Australian trial is being protested by Australian grassroots normal birth advocates who question the ethics of assigning healthy women to major abdominal surgery when so little new knowledge can be gained.
[b]The authors of a case series on cesarean scar ectopic pregnancies theorized that placenta previa/accreta results when a cesarean scar implantation develops into an intrauterine pregnancy (Jurkovic, 2003).
[c]Need for transfusion was used rather than hemorrhage because it is a more objective measure of blood loss. In addition, definitions of hemorrhage vary between vaginal birth and surgical delivery. The usual definition of hemorrhage at vaginal birth is 500 ml, whereas for surgery it is 1,000 ml. Moreover, while blood loss is hard to measure accurately in either case, it is especially so at vaginal birth.
[d]Surgical injury at repeat cesarean is more common because of the presence of adhesions.
[e]Studies report higher scar rupture rates, but the fact that rates this low are reported in large, unselected VBAC populations indicates that substantially higher rates are almost certainly due to modifiable factors.
[f]Inconsistencies can probably be explained by variations in protocol and patient selection (Locatelli, 2004; Macones, 2005). For example, one study reported an increase in scar rupture with the combination of induction with oxytocin and PGE2 but not with either agent used separately (Macones, 2005).
[g]Inconsistencies may be explained by variations in oxytocin augmentation protocols.
[h]One study found a significant increase with single-layer closure while another did not. The trial that did not raised the issue of differences in suture material and technique between the two studies possibly affecting scar strength (Durnwald, 2003). No systematic reviews could be found addressing the issue of material and technique and scar strength in subsequent VBAC labors. Until this controversy is settled, a conservative approach would dictate using double-layer closure because many studies predating the use of single-layer closure report symptomatic scar rupture rates less than 5 per 1,000.
[i]Inconsistencies may be explained by variations in suture material and technique.
[j]Only one study reporting this adjusted for the fact that indications for labor induction might also increase the likelihood of cesarean section (Delaney, 2003).

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Hashima, J. N., Eden, K. B., Osterweil, P., Nygren, P., & Guise, J. M. (2004). Predicting vaginal birth after cesarean delivery: A review of prognostic factors and screening tools. *American Journal of Obstetrics and Gynecology, 190*(2), 547–555. **Reason:** Study based on data from Guise (2003) SR.

Hendler, I., & Bujold, E. (2004). Effect of prior vaginal delivery or prior vaginal birth after cesarean delivery on obstetric outcomes in women undergoing trial of

labor. *Obstetrics & Gynecology, 104*(2), 273–277. **Reason:** Failure to find a significant difference in scar rupture rate with prior vaginal birth or VBAC could be a Type II error. Rates are 1.5% with no prior vaginal birth, 0.5% with prior vaginal birth before the cesarean, and 0.3% with prior VBAC, but only 198 and 321 women, respectively, fell into these categories. Investigators note a higher dehiscence rate with prior VBAC because 5/24 women had a dehiscence at repeat cesarean or emergency postpartum laparotomy. However, we have no reason to believe that dehiscence occurred at the same rate in the 297 women who had uneventful VBACs.

McDonagh, M. S., Osterweil, P., & Guise, J. M. (2005). The benefits and risks of inducing labour in patients with prior caesarean delivery: A systematic review. *BJOG, 112*(8), 1007–1015. **Reason:** Poorly designed. SR includes 2 RCTs and 12 observational studies. Problems include the following:

- Neither RCT evaluates usual induction protocols. One is a trial of mifepristone and the other administers PGE2 once weekly.
- These two trials are the only studies of oxytocin that report data on induction separate from augmentation. Starting labor versus augmenting a labor already in progress is likely to have different effects on both repeat cesarean rates and scar rupture rates.
- One study is of misoprostol, an agent not recommended for inducing women with uterine scars because of its strong association with scar rupture. This trial is included in a meta-analysis of scar rupture.

McNally, O. M., & Turner, M. J. (1999). Induction of labour after 1 previous Caesarean section. *The Australian & New Zealand Journal of Obstetrics & Gynaecology, 39*(4), 425–429. **Reason:** Study lacks statistical strength. Study evaluated safety and effectiveness of oxytocin induction in women with prior cesarean, but only included 103 women, not enough to detect a modest, but important, difference in scar rupture rates.

Pare, E., Quinones, J. N., & Macones, G. A. (2006). Vaginal birth after caesarean section versus elective repeat caesarean section: Assessment of maternal downstream health outcomes. *BJOG, 113*(1), 75–85. **Reason:** Not applicable. Study develops a decision model.

Ravasia, D. J., Wood, S. L., & Pollard, J. K. (2000). Uterine rupture during induced trial of labor among women with previous cesarean delivery. *American Journal of Obstetrics and Gynecology, 183*(5), 1176–1179. **Reason:** Study excluded from Guise (2003) SR.

Richardson, B. S., Czikk, M. J., daSilva, O., & Natale, R. (2005). The impact of labor at term on measures of neonatal outcome. *American Journal of Obstetrics and Gynecology, 192*(1), 219–226. **Reason:** Poorly designed. Investigators state they exclude deaths attributable to labor, but they give no information on how they made that distinction. Study fails to distinguish scar dehiscence from symptomatic scar rupture.

Roberts, R. G., Bell, H. S., Wall, E. M., Moy, J. G., Hess, G. H., & Bower, H. P. (1997). Trial of labor or repeated cesarean section. The woman's choice. *Archives of Family Medicine, 6*(2), 120–125. **Reason:** Other included SRs excluded studies that failed to distinguish between scar dehiscence and rupture. This one failed to do so.

Rosen, M. G., Dickinson, J.C., & Westhoff, C. L. (1991). Vaginal birth after cesarean: A meta-analysis of morbidity and mortality. *Obstetrics & Gynecology, 77*(3), 465–470. **Reason:** Other included SRs excluded studies that failed to distinguish between scar dehiscence and rupture. This one failed to do so.

Sims, E. J., Newman, R. B., & Hulsey, T. C. (2001). Vaginal birth after cesarean: To induce or not to induce. *American Journal of Obstetrics and Gynecology, 184*(6), 1122–1124. **Reason:** Study excluded from Guise (2003) SR, an included study here.

Stone, C., Halliday, J., Lumley, J., & Brennecke, S. (2000). Vaginal births after Caesarean (VBAC): A population study. *Paediatric and Perinatal Epidemiology, 14*(4), 340–348. **Reason:** Questionable generalizability and relevance. Study evaluates scar ruptures and perinatal deaths in Australian women giving birth in 1995 whose birth immediately prior to the index birth was a cesarean. The VBAC rate (56%) was substantially below what can be achieved in women planning vaginal birth, making its generalizabilty questionable. The authors attribute this to excluding women with prior cesarean but a vaginal birth in the penultimate birth. Excluding these women also makes the relevance of the study questionable. The authors depend on ICD codes to determine uterine rupture, but acknowledge that accuracy is poor. They cite a scar rupture rate in women having VBAC labor as 0.2% and no scar ruptures in women having repeat cesarean section. However, two occurred in multiparous women whose penultimate birth was vaginal, but who might have had a cesarean prior to that, and two women whose previous birth route was not identified. This means the actual scar rupture rate in the VBAC group may have been higher than reported. They exclude a case of scar rupture before labor in a multiparous woman whose penultimate birth and birth in 1995 were both cesareans. This is puzzling, as she would seem to fit their criteria for inclusion. She would then be a case of scar rupture in the planned cesarean group. All in all, this study does not seem to have any useful data for supporting or refuting any of the VBAC rationales or establishing a reasonable VBAC rate.

Taylor, D. R., Doughty, A. S., Kaufman, H., Yang, L., & Iannucci, T. A. (2002). Uterine rupture with the use of PGE2 vaginal inserts for labor induction in women with previous cesarean sections. *The Journal of Reproductive Medicine, 47*(7), 549–554. **Reason:** Study not applicable. The high uterine rupture rate (1.8%) implies iatrogenic factors involved.

Tucker, J. M., Hauth, J. C., Hodgkins, P., Owen, J., & Winkler, C. L. (1993). Trial of labor after a one- or two-layer closure of a low transverse uterine incision. *American Journal of Obstetrics and Gynecology, 168*(2),

545–546. **Reason:** Investigators compared scar rupture rates in VBAC labor in 149 women with single-layer uterine suturing in prior delivery versus 143 women with double-layer suturing. If the absolute increase in scar rupture rate is a few percent, which it appears to be, based on larger studies, this is still an important difference, but this study is underpowered to detect it.

Uygur, D., Gun, O., Kelekci, S., Ozturk, A., Ugur, M., & Mungan, T. (2005). Multiple repeat caesarean section: Is it safe? *European Journal of Obstetrics, Gynecology, and Reproductive Biology, 119*(2), 171–175. **Reason:** Study lacks statistical strength. Investigators compared outcomes in 301 women with 2 or more prior cesareans with a control group of 301 women with 1 prior cesarean section. Only 44 women had 3 or 4 prior cesareans. Study is underpowered to detect uncommon but clinically important differences between groups in morbidity and certainly cannot detect differences in mortality. Moreover, investigators excluded women with placenta previa, which is strongly associated with the number of prior cesareans.

Zelop, C. M, Shipp, T. D., Repke, J. T., Cohen, A., Caughey, A. B., & Lieberman, E. (1999). Uterine rupture during induced or augmented labor in gravid women with one prior cesarean delivery. *American Journal of Obstetrics and Gynecology, 181*(4), 882–886. **Reason:** Study excluded from Guise (2003) SR, an included study here.

Zweifler, J., Garza, A., Hughes, S., Stanich, M. A., Hierholzer, A., & Lau, M. (2006). Vaginal birth after cesarean in California: before and after a change in guidelines. *Annals of Family Medicine, 4*(3), 228–234. **Reason:** Poorly designed. This before-and-after study looks at the effect on maternal and neonatal mortality in California before and after stricter guidelines for VBAC were implemented. Many factors could affect results besides the decrease in VBACs.

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Step 7: Educates Staff in Nondrug Methods of Pain Relief and Does Not Promote Use of Analgesic, Anesthetic Drugs

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ABSTRACT

Step 7 of the *Ten Steps of Mother-Friendly Care* insures that staff are knowledgeable about nondrug methods of pain relief and that analgesic or anesthetic drugs are not promoted unless required to correct a complication. The rationales for compliance and systematic reviews are presented on massage, hypnosis, hydrotherapy, and the use of opioids, regional analgesia, and anesthesia.

Journal of Perinatal Education, *16*(1–Supplement), 65S–73S, doi: 10.1624/105812407X173191
Keywords: hypnosis and labor, hypnotherapy and labor, massage and labor, complementary therapies and labor, hydrotherapy and labor, waterbirth, water and birth, nonpharmacological pain management, analgesia and labor, nurses and pain labor, back pain and therapy and labor, movement and labor, posture and labor, maternal satisfaction, complementary therapy, opioids, epidural analgesia

Step 7: Educates staff in nondrug methods of pain relief and does not promote the use of analgesic or anesthetic drugs not specifically required to correct a complication.

Step 7: Educates staff in nondrug methods of pain relief: massage, hypnosis, hydrotherapy.

Nondrug Pain Relief

Rationale for Compliance	Evidence Grade
In contrast to medication, there is minimal to no risk of adverse side effects from nondrug methods of pain relief. Massage, hypnosis, and hydrotherapy have been shown to provide significant benefits.[a] In addition, the implementation of comfort measures, cognitive strategies, and other self-efficacy techniques can contribute to a woman's sense of mastery over the birth experience and, therefore, her satisfaction with herself and that experience (Lowe, 2002). Nondrug pain relief methods can be used alone or in conjunction with medicinal modes of pain relief and, as such, should be available to all laboring women in all settings.	NEH

(*Continued*)

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

(Continued)
Nondrug Pain Relief

Rationale for Compliance	Evidence Grade	
When compared with similar populations receiving comparable clinical care, massage and encouraging touch had the following benefits:		
• reduced maternal pain (Huntley, 2004; Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A A A
• reduced maternal stress and anxiety (Huntley, 2004; Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A B A
• women stated that the touch or massage helped them cope with labor, ease their pain, and feel comforted, reassured, accepted, and encouraged (Huntley, 2004; Simkin, 2001).	**Quality:** **Quantity:** **Consistency:**	A A A
When compared with similar populations receiving comparable clinical care, hypnosis during labor had the following benefits:		
• reduced need for analgesia (Cyna, 2004; Huntley, 2004; Smith, 2003).	**Quality:** **Quantity:** **Consistency:**	A A (2 meta-analyses) B (The Smith meta-analysis found no difference in pain relief, although 2 of the 3 individual studies did.)
• pain less severe than those not using hypnosis (Cyna, 2004; Huntley, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A
• greater maternal satisfaction with pain relief (Smith, 2003).	**Quality:** **Quantity:** **Consistency:**	A A (meta-analysis) A
• shorter duration of labor (Cyna, 2004).	**Quality:** **Quantity:** **Consistency:**	A A (meta-analysis) B
• reduced need for augmentation of labor with oxytocin (Cyna, 2004; Smith, 2003).	**Quality:** **Quantity:** **Consistency:**	A A (meta-analysis) A
• increased incidence of spontaneous births (Cyna, 2004; Smith 2003).	**Quality:** **Quantity:** **Consistency:**	A B A
Use of hypnosis had no reported adverse effects in any study.		NEH
When compared with similar populations, women who used hydrotherapy (warm-water immersion in a tub) had the following results:		
• reduced maternal blood pressure (Cluett, 2004, *Cochrane*).	**Quality:** **Quantity:** **Consistency:**	A B NA**
• reported less anxiety during early labor (Benfield, 2001).	**Quality:** **Quantity:** **Consistency:**	A C NA*
• reported less pain during the first stage of labor (Benfield, 2001; Cluett, 2004, *Cochrane*; Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A A A

(*Continued*)

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

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Nondrug Pain Relief

Rationale for Compliance	Evidence Grade	
• reduced need for analgesia and/or anesthesia (Cluett, 2004, *BMJ*; Cluett, 2004, *Cochrane*).	**Quality:** **Quantity:** **Consistency:**	A A B
• reduced need for augmentation in women with slow labors (Cluett, 2004, *BMJ*).	**Quality:** **Quantity:** **Consistency:**	A A NA*
• reported feeling they coped better with pushing efforts (Cluett, 2004, *Cochrane*).	**Quality:** **Quantity:** **Consistency:**	B B** NA**
• fewer fetal malpresentations such as occiput posterior and deep occiput transverse positions (Simkin, 2002).	**Quality:** **Quantity:** **Consistency:**	A A A
• reported that hydrotherapy gave them more satisfaction with freedom of movement and with experience of privacy (Cluett, 2004, *BMJ*).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• reported that hydrotherapy gave them more control over the labor process, which was highly valued (Hall, 1998).	**Quality:** **Quantity:** **Consistency:**	A B NA*
The use of hydrotherapy had no adverse effects with respect to:		NEH
• duration of labor, method of delivery, infection in mother or baby, or umbilical cord pH, including when rupture of membranes occurred or admission to the neonatal intensive care unit (Simkin, 2002; Benfield, 2001; Cluett, 2004, *BMJ*; Cluett, 2004, *Cochrane*).	**Quality:** **Quantity:** **Consistency:**	A A A

A = good, B = fair, C = weak, NA = not applicable, NEH = no evidence of harm

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only one study

**one study in SR

[a]The benefits of continuous labor support from a trained or experienced woman can be found in Step 1 on p. 12S. The benefits of freedom of movement and nonsupine positioning for pushing and birth can be found in Step 4 on pp. 25S–27S. Nondrug methods such as acupuncture and intradermal water injections have not been included in this review because they are more invasive and require specialized skills. Birth in water, as opposed to hydrotherapy, is also not addressed because this is a clinical practice, not a pain-relief method.

INCLUDED STUDIES

Benfield, R. D., Herman, J., Katz, V. L., Wilson, S. P., & Davis, J. M. (2001). Hydrotherapy in labor. *Research in Nursing & Health, 24*(1), 57–67.

Cluett, E. R., Nikodem, V. C., McCandlish, R. E., & Burns, E. E. (2004). Immersion in water in pregnancy, labour and birth. *Cochrane Database of Systematic Reviews* (2), CD000111.

Cluett, E. R., Pickering, R. M., Getliffe, K., & St. George Saunders, N. J. (2004). Randomised controlled trial of labouring in water compared with standard of augmentation for management of dystocia in first stage of labour. *British Medical Journal, 328*(7435), 314.

Cyna, A. M., McAuliffe, G. L., & Andrew, M. I. (2004). Hypnosis for pain relief in labour and childbirth: A systematic review. *British Journal of Anaesthesia, 93*(4), 505–511.

Hall, S. M., & Holloway, I. M. (1998). Staying in control: Women's experiences of labour in water. *Midwifery, 14*(1), 30–36.

Huntley, A. L., Coon, J. T., & Ernst, E. (2004). Complementary and alternative medicine for labor pain: A systematic review. *American Journal of Obstetrics and Gynecology, 191*(1), 36–44.

Lowe, N. K. (2002). The nature of labor pain. *American Journal of Obstetrics and Gynecology, 186*(5 Suppl. Nature), S16–24.

Simkin, P. P., & O'Hara, M. (2002). Nonpharmacologic relief of pain during labor: Systematic reviews of five methods. *American Journal of Obstetrics and Gynecology, 186*(5 Suppl. Nature), S131–159.

Smith, C. A., Collins, C. T., Cyna, A. M., & Crowther, C. A. (2003). Complementary and alternative therapies for pain management in labour. *Cochrane Database of Systematic Reviews,* (2), CD003521.

EXCLUDED STUDIES

Andersen, B., Gyghagen, M., & Nielsen, T. (1996). Warm bath during labour. Effects on labour duration and

maternal and fetal infectious morbidity. *Journal of Obstetrics and Gynaecology, 16,* 326–330. **Reason:** Data included in Simkin (2002).

Cammu, H., Clasen, K., Van Wettere, L., & Derde, M. P. (1994). 'To bathe or not to bathe' during the first stage of labor. *Acta Obstetricia et Gynecologica Scandinavica, 73*(6), 468–472. **Reason:** Data included in Simkin (2002); Cluett (2004), *BMJ*.

Chang, M. Y., Wang, S. Y., & Chen, C. H. (2002). Effects of massage on pain and anxiety during labour: A randomized controlled trial in Taiwan. *Journal of Advanced Nursing, 38*(1), 68–73. **Reason:** Data included in Huntley (2004).

Eckert, K., Turnbull, D., & MacLennan, A. (2001). Immersion in water in the first stage of labor: A randomized controlled trial. *Birth, 28*(2), 84–93**. Reason:** Data included in Simkin (2002); Cluett (2004), *BMJ*.

Eriksson, M., Mattsson, L. A., & Ladfors, L. (1997). Early or late bath during the first stage of labour: A randomised study of 200 women. *Midwifery, 13*(3), 146–148. **Reason:** Data included in Simkin (2002); Cluett (2004), *BMJ*.

Field, T., Hernandez-Reif, M., Taylor, S., Quintino, O., & Burman, I. (1997). Labor pain is reduced by massage therapy. *Journal of Psychosomatic Obstetrics and Gynaecology, 18*(4), 286–291. **Reason:** Data included in Simkin (2002).

Harmon, T. M., Hynan, M. T., & Tyre, T. E. (1990). Improved obstetric outcomes using hypnotic analgesia and skill mastery combined with childbirth education. *Journal of Consulting and Clinical Psychology, 58*(5), 525–530. **Reason:** Data included in Huntley (2004); Cyna (2004).

Labrecque, M., Nouwen, A., Bergeron, M., & Rancourt, J. F. (1999). A randomized controlled trial of nonpharmacologic approaches for relief of low back pain during labor. *The Journal of Family Practice, 48*(4), 259–263. **Reason:** Data included in Simkin (2002).

Lenstrup, C., Schantz, A., Berget, A., Feder, E., Roseno, H., & Hertel, J. (1987). Warm tub bath during delivery. *Acta Obstetricia et Gynecologica Scandinavica, 66*(8), 709–712. **Reason:** Data included in Simkin (2002).

Martin, A. A., Schauble, P. G., Rai, S. H., & Curry, R. W, Jr. (2001). The effects of hypnosis on the labor processes and birth outcomes of pregnant adolescents. *The Journal of Family Practice, 50*(5), 441–443. **Reason:** Data included in Smith (2003).

Ohlsson, G., Buchhave, P., Leandersson, U., Nordstrom, L., Rydhstrom, H., & Sjolin, I. (2001). Warm tub bathing during labor: Maternal and neonatal effects. *Acta Obstetricia et Gynecologica Scandinavica, 80*(4), 311–314. **Reason:** Data included in Simkin (2002); Cluett (2004), *BMJ*.

Rush, J., Burlock, S., Lambert, K., Loosley-Millman, M., Hutchison, B., & Enkin, M. (1996). The effects of whirlpool baths in labor: A randomized, controlled trial. *Birth, 23*(3), 136–143. **Reason:** Data included in Simkin (2002); Cluett (2004), *BMJ*.

Schorn, M. N., McAllister, J. L., & Blanco, J. D. (1993). Water immersion and the effect on labor. *Journal of Nurse-Midwifery, 38*(6), 336–342. **Reason:** Data included in Simkin (2002); Cluett (2004), *BMJ*.

Step 7: Does not promote the use of analgesic or anesthetic drugs not specifically required to correct a complication

Opioids

The opioids commonly used in labor are one of several synthetic derivatives of morphine or morphine itself injected either intramuscularly or intravenously. Derivatives include Demerol/Pethidine/meperidine; Stadol/butorphanol; Nubain/nalbuphine; and Dilauded/hydromorphone.

Opioids

Rationale for Compliance	Evidence Grade	
Opioids may cause unpleasant side effects such as drowsiness, nausea, and vomiting (Bricker, 2002; Tsui, 2004).	**Quality:** **Quantity:** **Consistency:**	B A B
Newborns of women who use opioids during labor (Bricker, 2002):		
• can experience respiratory depression in the first hours following birth.	**Quality:** **Quantity:** **Consistency:**	A A A (SR with multiple studies)
• can be less alert in the first hours following birth.	**Quality:** **Quantity:** **Consistency:**	A A A (SR with multiple studies)

(*Continued*)

(Continued)
Opioids

Rationale for Compliance	Evidence Grade	
• can experience a delay in the onset of successful feeding.	**Quality:**	A
	Quantity:	A
	Consistency:	A (SR with multiple studies)
• may be more likely to become addicted to opioids or amphetamines in later life.	**Quality:**	B
	Quantity:	C
	Consistency:	A (SR with multiple studies)

A = good, B = fair, C = weak, SR = systematic review
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs

INCLUDED STUDIES

Bricker, L., & Lavender, T. (2002). Parenteral opioids for labor pain relief: A systematic review. *American Journal of Obstetrics and Gynecology, 186*(5 Suppl. Nature), S94–109.

Tsui, M. H. Y., Kee, W. D. N., Ng, F. F., & Lau, T. K. (2004). A double-blinded randomized placebo-controlled study of intramuscular pethidine for pain relief in the first stage of labour. *BJOG, 111*, 648–655.

EXCLUDED STUDIES

None

Step 7: Does not promote the use of analgesic or anesthetic drugs not specifically required to correct a complication: Regional anesthesia/analgesia

Regional Anesthesia/Analgesia

Regional anesthesia/analgesia for labor includes the epidural and the combined spinal/epidural.

The research that examines regional anesthesia/analgesia for labor is confounded by the following factors:

- Few studies compare groups using various pain medications with groups that use none.
- Almost all women in published comparative studies have been exposed to drugs, procedures, and restrictions that could also adversely affect the mother, baby, or labor pattern.
- Large percentages of women in many of the randomized controlled trials who are assigned to the ''no epidural'' group ultimately have epidurals. This reduces the likelihood of detecting differences between groups.
- Background cesarean rates in several randomized controlled trials are much lower than found in reports of conventional obstetric management. This means that factors influencing outcomes, such as timing of epidural initiation and policies and philosophies regarding management of women with epidurals, are not taken into account. Consequently, trial results cannot be generalized to conventionally managed populations.
- Background cesarean rates may be so high that the use or nonuse of epidurals can have little influence.

Regional Anesthesia/Analgesia

Rationale for Compliance	Evidence Grade	
Compared with epidural anesthesia *without* the addition of intrathecal opioids, babies in utero of women receiving a combined spinal/epidural (with intrathecal opioids) may be more likely to experience bradycardia (Lieberman, 2002; Mardirosoff, 2002).	**Quality:**	B
	Quantity:	A
	Consistency:	B

(*Continued*)

(Continued)
Regional Anesthesia/Analgesia

Rationale for Compliance	Evidence Grade	
Compared with epidural anesthesia without the addition of opioids, women receiving a combined spinal/epidural (with opioids):		
• can experience severe itching (Mayberry, 2002).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• may be more sedated (Mayberry, 2002).	**Quality:**	B
	Quantity:	B
	Consistency:	B
Compared with women randomly assigned to using no pain medication or exclusively opioid pain medication during labor, women randomly assigned to having epidurals:		
• may experience a longer first-stage labor (Alexander, 2002; Anim-Somuah, 2006; Lieberman, 2002; Sharma, 2004).	**Quality:**	B
	Quantity:	A
	Consistency:	B
• can experience a longer second-stage labor (Alexander, 2002; Anim-Somuah, 2006; Feinstein, 2002; Lieberman, 2002; Liu, 2004; Sharma, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• have increased likelihood of malposition of the fetal head (Anim-Somuah, 2006; Lieberman, 2002).	**Quality:**	B
	Quantity:	B
	Consistency:	B
• have increased likelihood of oxytocin use (Alexander, 2002; Anim-Somuah, 2006; Liu, 2004; Sharma, 2004).	**Quality:**	B
	Quantity:	A
	Consistency:	A
• have increased likelihood of hypotension (Anim-Somuah, 2006).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• have increased likelihood of instrumental vaginal delivery (Alexander, 2002; Anim-Somuah, 2006; Lieberman, 2002; Liu, 2004; Sharma, 2004).	**Quality:**	B
	Quantity:	A
	Consistency:	A
• have increased likelihood of third- and fourth-degree tears associated with the increased incidence of instrumental vaginal deliveries (Lieberman, 2002).	**Quality:**	B
	Quantity:	A
	Consistency:	A
• may have increased likelihood of cesarean section for fetal distress (Anim-Somuah, 2006; Liu, 2004).	**Quality:**	B
	Quantity:	A
	Consistency:	C
• may have increased likelihood of having a cesarean for dystocia (Anim-Somuah, 2006; Feinstein, 2002; Liu, 2004).	**Quality:**	B
	Quantity:	A
	Consistency:	C
• have increased likelihood of fever during labor (Anim-Somuah, 2006; Lieberman, 2002).[a]	**Quality:**	A
	Quantity:	A
	Consistency:	A
The newborns of women who had a fever in labor may be more likely to experience seizures in the neonatal period (Lieberman, 2002).	**Quality:**	A
	Quantity:	C
	Consistency:	A
Compared with babies in utero of women not using pain medication, the fetuses of women having epidurals may have increased incidence of transient heart-rate abnormalities (Lieberman, 2002).	**Quality:**	B
	Quantity:	B
	Consistency:	B

(*Continued*)

(Continued)
Regional Anesthesia/Analgesia

Rationale for Compliance	Evidence Grade	
Compared with newborns of women who did not receive intrathecal narcotics, the newborns of women who did receive intrathecal narcotics may experience more difficulty breastfeeding during the first hours/days after birth, in direct proportion to the amount of intrathecal narcotic the mother received (Beilin, 2005; Jordan, 2005; Lieberman, 2002; Radzyminski, 2003, 2005).	**Quality:** **Quantity:** **Consistency:**	B C B
Compared with the newborns of women not using pain medication, the newborns of women having epidurals have increased likelihood of jaundice (Lieberman, 2002).	**Quality:** **Quantity:** **Consistency:**	B B B
Epidural placement before 4 cm dilation may increase (Lieberman, 2002):		
• the likelihood of fetal malposition.	**Quality:** **Quantity:** **Consistency:**	B C C
• the likelihood of instrumental vaginal delivery.	**Quality:** **Quantity:** **Consistency:**	B B B
• the likelihood of cesarean section.	**Quality:** **Quantity:** **Consistency:**	B A C[b]
Women whose epidurals are discontinued late in labor (rather than after birth) do not demonstrate a decreased incidence of the adverse delivery outcomes associated with epidurals (Lieberman, 2002; Torvaldsen, 2004).	**Quality:** **Quantity:** **Consistency:**	B B NA*
Women having epidurals may be more likely to experience hemorrhage immediately after birth. (Lieberman, 2002).	**Quality:** **Quantity:** **Consistency:**	B B B
Women having epidurals may be more likely to experience difficulty urinating in the first few hours after birth (Anim-Somuah, 2006; Lieberman, 2002).	**Quality:** **Quantity:** **Consistency:**	B B B

A = good, B = fair, C = weak

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

*only one study

[a]Because newborns are especially vulnerable to infection, babies born to mothers who run fevers in labor are likely to be separated from their mothers for observation in the nursery, undergo septic workups, and possibly have prophylactic IV antibiotic therapy until cultures rule out infection. This subjects the baby to painful, unpleasant procedures; interferes with bonding and establishing breastfeeding; and can greatly increase parental anxiety.

[b]Wong (2005), an excluded study, has been cited as evidence that early epidural placement, as compared with later placement, does not affect cesarean rates. It is not included as evidence for this rationale because this trial did not actually compare early to late epidurals. Women in the ''early epidural'' arm were given spinals/epidurals. Most did not receive the epidural component until 4 cm dilation or later, the same timing as the ''late epidural'' group. Spinal opioid, in contrast to epidural anesthetic, has not been shown to affect labor progress.

Klein (2006) observes that neither previous nor current Cochrane reviewers of epidural versus nonepidural analgesia evaluated the effect of late versus early epidural initiation. If they had, Klein notes they would have found that early epidural placement more than doubled the likelihood of cesarean delivery OR 2.59 (95% CI 1.29–5.23).

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Chang, Z. M., & Heaman, J. I. (2005). Epidural analgesia during labor and delivery: Effects on the initiation and continuation of effective breastfeeding. *Journal of Human Lactation, 21*(3), 305–314. **Reason:** Poorly designed. High potential for self-selection bias. Although there is a power calculation, authors admit it was not valid for the instruments they ultimately used. Study did not control for or describe type or dose of epidural infusions.

Choi, P., Galinski, S., Takeuchi, L., Tamayo, C., & Jadad, A. (2003). PDPH is a common complication blockade in parturients: A meta-analysis of obstetrical studies. *Canadian Journal of Anaesthesia, 50*(5), 460–469. **Reason:** Planned meta-analysis, but studies extracted too heterogeneous, so limited analysis to narrative on onset and duration, with small meta-analysis of pooled data.

Dickinson, J., Paech, M., McDonald, S., & Evans, S. (2002). The impact of intrapartum analgesia on labour and delivery outcomes in nulliparous women. *The Australian & New Zealand Journal of Obstetrics & Gynaecology, 42*(1), 65–72. **Reason:** Data included in most recent Cochrane systematic reviews.

Eriksson, S., Olausson, P., & Olofsson, C. (2005). Use of epidural analgesia and its relation to caesarean and instrumental deliveries—A population-based study of 94,217 primiparae. *European Journal of Obstetrics, Gynecology, and Reproductive Biology, 128,* 1–6. **Reason:** Poorly designed. The study estimated the number of subjects who used epidurals and did not connect each subject with her own outcomes.

Henderson, J., Dickinson, J., Evans, S., McDonald, S., & Paech, M. (2003). Impact of intrapartum epidural analgesia on breast-feeding duration. *The Australian & New Zealand Journal of Obstetrics & Gynaecology, 43*, 372–377. **Reason:** Intended to be a randomized controlled trial but was converted to observational study because of high crossover rate. Conclusions add nothing to the body of knowledge. This issue is addressed in Anim-Somuah (2006) *Cochrane* review.

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This "review" used articles relatively easy to find in Medline and CINAHL (but no other database), because the authors wanted to see what kind of data busy clinicians might be likely to encounter. There are better-quality data in Anim-Somuah (2006).

Reynolds, F., Sharma, S., & Seed, P. (2002). Analgesia in labour and fetal acid-base balance: a meta-analysis comparing epidural with systemic opioid analgesia. *BJOG, 109,* 344–353. **Reason:** Have better-quality, more recent research.

Volmanen, P., Valanne, J., & Alahuhta, S. (2004). Breastfeeding problems after epidural analgesia for labour: a retrospective cohort study of pain, obstetrical procedures and breast-feeding practices. *International Journal of Obstetric Anesthesia, 13,* 24–29. **Reason:** Not relevant. Old data with small response rate.

Wong, C. A., Scavone, B. M., Peaceman, A. M., McCarthy, R. J., Sullivan, J. T., Diaz, N. T., et al. (2005). The risk of cesarean delivery with neuraxial analgesia given early versus late in labor. *New England Journal of Medicine, 352*(7), 655–665. **Reason:** Poorly designed. Randomization unsuccessful; two groups differed little in actual timing of epidural in labor.

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Step 8: Encourages All Mothers, Families to Touch, Hold, Breastfeed, Care for Their Babies

The Coalition for Improving Maternity Services:

Sharon Storton, MA, CCHT, LMFT

ABSTRACT

Step 8 of the *Ten Steps to Mother-Friendly Care* encourages all mothers and families, including those with sick or premature newborns or infants with congenital problems, to touch, hold, breastfeed, and care for their babies to the extent compatible with their conditions. The rationales for compliance with the step and systematic review are presented.

Journal of Perinatal Education, *16*(1–Supplement), 74S–76S, doi: 10.1624/105812407X173209
Keywords: parent care of ill or premature neonates or infants, neonatal intensive care, NICU, and parents

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

Step 8: Encourages all mothers and families, including those with sick or premature newborns or infants with congenital problems, to touch, hold, breastfeed, and care for their babies to the extent compatible with their conditions.

Keeping mothers and babies together, including infants with medical problems, enhances attachment, increases breastfeeding initiation and duration, and decreases infant stress. There is no evidence of harm in encouraging mothers and families to touch, hold, breastfeed, and care for their babies to the extent compatible with their condition.

Touch, Hold, Breastfeed

Rationale for Compliance	Evidence Grade	
No evidence of harm was found for encouraging mothers and families to touch, hold, breastfeed, and care for their babies to the extent compatible with their conditions.		NEH
No evidence of harm was found for encouraging mothers and families of sick or premature infants or infants with congenital problems to touch, hold, breastfeed, and care for their infants to the extent compatible with their conditions.		NEH
Touching, holding, and caring for healthy infants enhance attachment between mothers and babies (Anderson, 2003; DiMatteo, 1996; Klaus, 1998; Rowe-Murray, 2001; Wendland-Carro, 1999).	**Quality:** **Quantity:** **Consistency:**	A A A

(*Continued*)

Rationale for Compliance	Evidence Grade	
Touching, holding, and caring for sick or premature infants or infants with congenital problems enhances attachment between mothers and babies (Charpak, 2001; DiMatteo, 1996; Feldman, 1999; Klaus, 1998; Rowe-Murray, 2001; Schroeder, 2006; Tessier, 1998; Wendland-Carro, 1999).	**Quality:** **Quantity:** **Consistency:**	A A A
Eliminating or minimizing separation for procedures whenever possible reduces distress in healthy infants and mothers (Anderson, 2003; Gray, 2000; Klaus, 1998).	**Quality:** **Quantity:** **Consistency:**	A A A
Eliminating or minimizing separation for procedures whenever possible reduces distress in sick or premature infants, infants with congenital problems, and mothers (Feldman, 1999; Klaus, 1998; Mörelius, 2005).	**Quality:** **Quantity:** **Consistency:**	A A A
Minimizing separation during the hospital stay increases breastfeeding initiation and duration in mothers with healthy infants (Anderson, 2003; Klaus, 1998).	**Quality:** **Quantity:** **Consistency:**	B B A
Unimpeded early skin-to-skin contact increases breastfeeding initiation and duration in mothers with healthy infants (Anderson, 2003; Klaus, 1998).	**Quality:** **Quantity:** **Consistency:**	A A A
Breastfeeding is universally accepted as the biologically normal human infant-feeding method.		
• Lack of breastfeeding accounts for 13% of all deaths among children under 5 years of life, worldwide (Jones, 2003).	**Quality:** **Quantity:** **Consistency:**	A A A
• Infants in the United States who are not breastfed are 25% more likely to die between 28 days and 1 year of life than breastfed infants (Chen, 2004).	**Quality:** **Quantity:** **Consistency:**	A A NA*
• A mother's relative risk of acquiring breast cancer decreases 4.3% for every 12 months of breastfeeding, above and beyond the 7% risk reduction for each birth (Collaborative Group on Hormonal Factors in Breast Cancer, 2002).	**Quality:** **Quantity:** **Consistency:**	A A A**
• Infants should be exclusively breastfed for the first 6 months of life, followed by appropriate introduction of complementary foods and continued breastfeeding (Kramer, 2004).	**Quality:** **Quantity:** **Consistency:**	A A A**
• Breastfeeding mitigates the harmful effects of organochlorine compounds to which infants are exposed prenatally. (Ribas-Fito, 2003).	**Quality:** **Quantity:** **Consistency:**	A A NA*

A = good, B = fair, NA = not applicable, NEH = no evidence of harm
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only 1 study
**multiple studies in SR

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

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- *Sharon Storton, MA, CCHT, LMFT*
- *Deborah Woolley, PhD, CNM, LCCE*

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Yngve, A., & Sjostrom, M. (2001). Breastfeeding in countries of the European Union and EFTA: Current and proposed recommendations, rationale, prevalence, duration and trends. *Public Health Nutrition, 4,* 631–645. **Reason:** Data included in Chen (2004).

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Step 9: Discourages Nonreligious Circumcision of the Newborn

The Coalition for Improving Maternity Services:

Karen Salt, CCE, MA
Amy Romano, MSN, CNM

ABSTRACT

Step 9 of the *Ten Steps of Mother-Friendly Care* discourages nonreligious circumcision of the newborn. The rationale for compliance and systematic review are presented.

Journal of Perinatal Education, *16*(1–Supplement), 77S–78S, doi: 10.1624/105812407X173218
Keywords: circumcision, pain and circumcision, urinary tract infection and circumcision

Step 9: Discourages nonreligious circumcision of the newborn.
Although a number of studies suggest that circumcision may confer some benefit in adulthood (a reduced risk of rare penile cancer and decreased risk of HIV infection in some populations), members of the Expert Work Group (EWG) of the Coalition for Improving Maternity Services (CIMS) chose to exclude from review studies of adults. No evidence confirms that circumcision needs to be performed in the newborn period in order to prevent conditions that present in adolescence or adulthood. Adult males can make their own informed decisions related to prophylactic circumcision. The EWG reviewed studies of infants and young children and noted the research on pain experienced during infant circumcision and the availability of lower-risk strategies to reduce the risk of urinary tract infection in infants.

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

Discourages Non-Religious Circumcision

Rationale for Compliance	Evidence Grade
Circumcision of the male newborn is the most common procedure performed on children worldwide (Singh-Grewal, 2005). Although practitioners advocating for routine circumcision of newborns cite studies suggesting that circumcision may reduce the risk of certain diseases, they fail to address: • No-risk or lower-risk alternatives that may achieve the same benefits, such as breastfeeding to reduce urinary tract infections in infants. • Pain experienced by the newborn. Although practitioners advocate a number of pain-management strategies, no intervention completely eliminates the pain response in newborns undergoing circumcision (Brady-Fryer, 2004). Newborns experience pain postcircumcision.	NEB

(*Continued*)

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

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- *Sharon Storton, MA, CCHT, LMFT*
- *Deborah Woolley, PhD, CNM, LCCE*

(Continued)
Discourages Non-Religious Circumcision

Rationale for Compliance	Evidence Grade	
More uncircumcised infant males will experience urinary tract infections in the first 3 years of life, with protective effects of circumcision diminishing over time. This will be offset by a 2–10% complication rate associated with the procedure. Assuming a 2% complication rate, circumcising 1,000 urologically normal infant males will prevent 9 cases of urinary tract infection, but provoke complications in 20 babies (Singh-Grewal, 2005).	**Quality:**	B
	Quantity:	A
	Consistency:	B

A = good, B = fair, NEB = no evidence of benefit
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs

INCLUDED STUDIES

Brady-Freyer, B., Wiebe, N., & Lander, J. A. (2004). Pain relief for neonatal circumcision. *Cochrane Database of Systematic Reviews* (3): CD004217.

Singh-Grewal, D., Macdessi, J., & Craig, J. (2005). Circumcision for the prevention of urinary tract infection in boys: A systematic review of randomized trials and observational studies. *Archives of Disease in Childhood, 90,* 853–858.

EXCLUDED STUDIES

Newman, A. G., & Austin, E. (2002). Making the cut? Dealing with the complications of incomplete circumcisions. *Neonatal Intensive Care, 15*(6), 39–41, 50. **Reason:** Poorly designed. Sample size too small

Rickwood, A. M. K., Kenny, S. E., & Donnell, S. C. (2000). Towards evidence-based circumcision of English boys: Survey of trends in practice. *BMJ, 321,* 792–793. **Reason:** Not applicable. Study looks at practice trends.

Schoen, E. J., Colby, C. J., & Ray, G. T. (2000). Newborn circumcision decreases incidence and costs of urinary tract infections during the first year of life. *Pediatrics, 105*(4.1), 789–793. **Reason:** Study superseded by Singh-Grewal, Macdessi, and Craig (2005).

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Step 10: Strives to Achieve the WHO/UNICEF *Ten Steps of the Baby-Friendly Hospital Initiative* to Promote Successful Breastfeeding

The Coalition for Improving Maternity Services

ABSTRACT

Step 10 of the *Ten Steps of Mother-Friendly Care* is the *Ten Steps to Baby-Friendly*. These steps promote, protect, and support breastfeeding. Rationales for compliance with the WHO/UNICEF *Ten Steps of the Baby-Friendly Hospital Initiative* and a systematic review of the evidence related to the impact of the *Ten Steps to Baby-Friendly* on breastfeeding are presented.

Journal of Perinatal Education, *16*(1–Supplement), 79S–80S, doi: 10.1624/105812407X173227
Keywords: breastfeeding, Baby-Friendly Hospital Initiative, hospital practices and breastfeeding

Step 10: Strives to achieve the WHO-UNICEF *Ten Steps of the Baby-Friendly Hospital Initiative* to promote successful breastfeeding:

- **Have a written breastfeeding policy that is routinely communicated to all health-care staff.**
- **Train all health-care staff in skills necessary to implement this policy.**
- **Inform all pregnant women about the benefits and management of breastfeeding.**
- **Help mothers initiate breastfeeding within one half-hour of birth.**
- **Show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infants.**
- **Give newborn infants no food or drink other than breast milk, unless medically indicated.**
- **Practice rooming in: Allow mothers and infants to remain together 24 hours a day.**
- **Encourage breastfeeding on demand.**
- **Give no artificial teat or pacifiers (also called "dummies" or "soothers") to breastfeeding infants.**
- **Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from hospitals or clinics.**

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

The *Ten Steps to Baby-Friendly* has influenced change in hospital practices, which has had a positive impact on breastfeeding duration and some indices of infant health.

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

Members of the CIMS Expert Work Group were:

- *Henci Goer, BA, Project Director*
- *Mayri Sagady Leslie, MSN, CNM*
- *Judith Lothian, PhD, RN, LCCE, FACCE*
- *Amy Romano, MSN, CNM*
- *Karen Salt, CCE, MA*
- *Katherine Shealy, MPH, IBCLC, RLC*
- *Sharon Storton, MA, CCHT, LMFT*
- *Deborah Woolley, PhD, CNM, LCCE*

Ten Steps to Baby Friendly

Rationale for Compliance	Evidence Grade	
Hospital-based breastfeeding promotion interventions can extend duration of exclusive breastfeeding (Lutter, 1997; Merten, 2005).	**Quality:** **Quantity:** **Consistency:**	A A A
Infants born in facilities that adhere to the *Baby Friendly Hospital Initiative's* (BFHI) *Ten Steps to Successful Breastfeeding* are significantly more likely to be breastfeeding at 12 months than those who are not. They are also more likely to be exclusively breastfed at 3 and 6 months and have significantly fewer gastrointestinal tract infections and atopic eczema than those who are not (Kramer, 2001). Similarly, infants born at BFHI facilities are more likely to be exclusively breastfed through 5 months of age. Further, birth at such facilities also increases median duration of any, full, and exclusive breastfeeding. The effects of BFHI are stronger for mothers of infants born at facilities that implement BFHI more fully (Merten, 2005).	**Quality:** **Quantity:** **Consistency:**	A A A

A = good

Quality = aggregate of quality ratings for individual studies

Quantity = magnitude of effect, numbers of studies, and sample size or power

Consistency = the extent to which similar findings are reported using similar and different study designs

INCLUDED STUDIES

Kramer, M. S., Chalmers, B., Hodnett, E. D., Sevkovskaya, Z., Dzikovich, I., Shapiro, S., et al. (2001). Promotion of Breastfeeding Intervention Trial (PROBIT): A randomized trial in the Republic of Belarus. *The Journal of the American Medical Association, 285*(4), 413–420.

Lutter, C., Perez-Escamilla, R., Segal, A., Sanghvi, T., Teruya, K., & Wickham, C. (1997). The effectiveness of a hospital-based program to promote exclusive breast-feeding among low-income women in Brazil. *American Journal of Public Health, 87*, 659–663.

Merten, S., Dratva, J., & Ackermann-Liebrich, U. (2005). Do baby-friendly hospitals influence breastfeeding duration on a national level? *Pediatrics, 116*(5), e702–e708.

EXCLUDED STUDIES

Coutinho, S. B., de Lira, P .I., de Carvalho Lima, M., & Ashworth, A. (2005). Comparison of the effect of two systems for the promotion of exclusive breastfeeding. *Lancet, 366*(9491), 1094–1100. **Reason:** Not applicable. No non-*Baby-Friendly Hospital Initiative* comparison group.

Merten, S., & Ackermann-Liebrich, U. (2004). Exclusive breastfeeding rates and associate factors in Swiss baby-friendly hospitals. *Journal of Human Lactation, 20*(1), 9–17. **Reason:** Poorly designed. Extensive crossover between groups.

Appendix: Birth Can Safely Take Place at Home and in Birthing Centers

The Coalition for Improving Maternity Services:

Mayri Sagady Leslie, MSN, CNM
Amy Romano, MSN, CNM

ABSTRACT

Although most women in the United States give birth in hospitals, a substantial body of research suggests that planned home birth or birth in freestanding birth centers have equally good or better outcomes for low-risk women. Out-of-hospital birth often facilitates mother-friendly care. Rationales and systematic reviews of both home birth and freestanding birth center birth are presented.

Journal of Perinatal Education, 16(1–Supplement), 81S–88S, doi: 10.1624/105812407X173236
Keywords: home birth, midwives, midwifery, maternal satisfaction, birth center, birthing center, birth center outcomes, birth center transfer, safety and home birth, home birth and outcomes

The Coalition for Improving Maternity Services (CIMS) *Mother-Friendly Childbirth Initiative* is grounded in the principle that birth can safely take place at home and in birthing centers as well as in hospitals. Although many believe that hospitals are the safest environment for labor and birth, research shows that equally good or better outcomes can be achieved in low-risk women having planned home births or giving birth in freestanding birth centers. Because of its inherently noninterventive and more intimate nature, out-of-hospital birth facilitates mother-friendly care.

For a description and discussion of the methods used to determine the evidence basis of the Ten Steps of Mother-Friendly Care, *see this issue's "Methods" article by Henci Goer on pages 5S–9S.*

HOME BIRTH

For the purposes of this review, home birth has the following characteristics:

- woman is at low risk for complications,
- birth is planned to take place at home, and
- care provider is qualified to provide care in the home setting (this will usually be a professional midwife).

Studies of unplanned home births or home birth with no qualified provider have been excluded.

Care in the home birth setting is consistent with mother-friendly care as defined in this document. The largest prospective study of home births with professional midwives in North America (54,418) found the following (Johnson & Daviss, 2005):

- 92% did not have intravenous fluids during labor (see Step 6 on pp. 32S–64S),
- 90% had fetal heart rate monitoring via intermittent auscultation (Doppler or fetoscope) instead of continuous electronic monitoring (see Step 6),

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- 90% achieved spontaneous labor (see Step 6),
- 2% had an episiotomy (see Step 6), and
- 3.7% had a cesarean section (see Step 6).

Home Birth

Rationale for Compliance	Evidence Grade
Compared with a similar population of women having hospital births, planned home births with a qualified attendant resulted in the following maternal outcomes (including mothers who intended to give birth at home at the onset of labor but were transferred to the hospital at some time during or after labor):	
• similar rates of antepartum and/or intrapartum hypertension (PIH, pre-eclampsia) (Ackermann-Liebrich, 1996; Wiegers, 1996).	**Quality:** A **Quantity:** B **Consistency:** A
• fewer or similar rates of induction of labor (Janssen, 2002; Johnson, 2005; Olsen, 1997; Weigers, 1996).	**Quality:** A **Quantity:** A **Consistency:** A
• fewer or similar rates of augmentation of labor (Janssen, 2002; Johnson, 2005; Olsen, 1997; Weigers, 1996).	**Quality:** A **Quantity:** A **Consistency:** A
• lower incidence of active phase arrest of labor in multiparous women (cessation of progress in cervical dilation after 3–4 cm in women with prior births) (Wiegers, 1996).	**Quality:** A **Quantity:** C **Consistency:** NA*
• less use of intravenous fluids in labor (see also Step 6, p. 34S) (Johnson, 2005).	**Quality:** B **Quantity:** A **Consistency:** NA*
• less use of amniotomy in labor (see also Step 6, p. 38S) (Janssen, 2002; Johnson, 2005).	**Quality:** A **Quantity:** A **Consistency:** A
• similar incidence of abnormal fetal heart rate in labor (Wiegers, 1996; Woodcock, 1994).	**Quality:** B **Quantity:** B **Consistency:** A
• less use of continuous electronic fetal monitoring (external and internal) (Janssen, 2002; Johnson, 2005).	**Quality:** A **Quantity:** A **Consistency:** A
• increased choice of movement and birth position in labor (see also Step 4, pp. 24S–26S) (Ackermann-Liebrich, 1996).	**Quality:** A **Quantity:** B **Consistency:** NA*
• less need for analgesia in labor (Ackermann-Liebrich, 1996; Janssen, 2002).	**Quality:** A **Quantity:** A **Consistency:** A
• less need for epidural and/or spinal anesthesia in labor (Janssen, 2002; Johnson, 2005).	**Quality:** A **Quantity:** A **Consistency:** A
• fewer vaginal instrumental deliveries (vacuum extraction and forceps) (Janssen, 2002; Johnson, 2005; Olsen, 1997).	**Quality:** A **Quantity:** A **Consistency:** A
• fewer cesarean sections as follows: ○ fewer or equivalent cesareans (Janssen, 2002; Johnson, 2005; Olsen, 1997; Wiegers, 1996).	**Quality:** A **Quantity:** A **Consistency:** A

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(Continued)
Home Birth

Rationale for Compliance	Evidence Grade
○ fewer cesareans in nulliparous women (Janssen, 2002).	**Quality:** A **Quantity:** B **Consistency:** NA*
○ fewer cesareans in multiparous women (Janssen, 2002).	**Quality:** A **Quantity:** A **Consistency:** NA*
○ fewer cesareans in women who have had a cesarean before (more vaginal births after cesarean) (Janssen, 2002).	**Quality:** A **Quantity:** B **Consistency:** NA*
○ fewer cesareans for labor progress disorders (labor dystocia, failure to progress, cephalopelvic disproportion, arrest of labor) (Janssen, 2002).	**Quality:** A **Quantity:** B **Consistency:** NA*
○ fewer or equivalent cesareans for emergencies in labor, such as fetal distress (Janssen, 2002; Woodcock, 1994).	**Quality:** B **Quantity:** B **Consistency:** A
• fewer perineal injuries as measured by:	
○ more intact perineums (Ackermann-Liebrich, 1996; Janssen, 2002).	**Quality:** B **Quantity:** A **Consistency:** A
○ fewer episiotomies (Janssen, 2002; Johnson, 2005; Olsen, 1997; Wiegers 1996).	**Quality:** A **Quantity:** A **Consistency:** A
○ fewer or similar rates of anal sphincter laceration (Olsen, 1997; Wiegers, 1996).	**Quality:** A **Quantity:** A **Consistency:** A
• reduced need for maternal blood transfusion (Wiegers, 1996).	**Quality:** B **Quantity:** B **Consistency:** NA*
• less or equivalent incidence of maternal infection or need for antibiotics after birth (Janssen, 2002; Wiegers, 1996).	**Quality:** A **Quantity:** A **Consistency:** A
Among women having a home birth after a hospital birth, 85% said they preferred the home birth experience and, of those planning more children, 91% said they would plan a home birth (Davies, 1996).	**Quality:** B **Quantity:** B **Consistency:** NA*
Compared with similar women having hospital births, planned home births with a qualified attendant resulted in the following perinatal outcomes:	
• similar percentages of low-birth-weight infants (Ackermann-Liebrich, 1996; Janssen, 2002; Wiegers, 1996).	**Quality:** A **Quantity:** B **Consistency:** B
• similar rates of infants admitted to intensive care units (Wiegers, 1996).	**Quality:** A **Quantity:** B **Consistency:** NA*
• less or similar rate of birth traumas (Durand, 1992; Wiegers, 1996; Woodcock 1994).	**Quality:** A **Quantity:** A **Consistency:** A
• similar perinatal mortality rates for infants born to low-risk mothers planning homebirths (Gulbransen, 1997; Janssen, 2002; Olsen 1997).	**Quality:** A **Quantity:** A **Consistency:** A

(*Continued*)

(Continued)
Home Birth

Rationale for Compliance	Evidence Grade	
• increased incidence of neonatal acidemia in home-born infants compared with hospital-born infants. (Ackermann-Liebrich, 1996). However, evaluation by neutral pediatricians between day 2 and day 6 of life showed no differences between home- and hospital-born infants. Study authors explained that lower blood pH measurements are probably an artifact arising from the common practice of delayed cord clamping at home births and the additional time needed to transport blood samples to the hospital for analysis.	**Quality:** **Quantity:** **Consistency:**	B B NA*

A = good; B = fair; C = weak; NA = not applicable; PIH = pregnancy-induced hypertension
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only one study

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Davies, J., Hey, E., Reid, W., & Young, G. (1996). Prospective regional study of planned home births. Home Birth Study Steering Group. *BMJ, 313*(7068), 1302–1306.

Durand, A. M. (1992). The safety of home birth: The farm study. *American Journal of Public Health, 82*(3), 450–453.

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Janssen, P. A., Lee, S. K., Ryan, E. M., Etches, D. J., Farquharson, D. F., Peacock, D., et al. (2002). Outcomes of planned home births versus planned hospital births after regulation of midwifery in British Columbia. *Canadian Medical Association Journal, 166*(3), 315–323.

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Olsen, O. (1997). Meta-analysis of the safety of home birth. *Birth, 24*(1), 4–13; discussion 4–6.

Wiegers, T. A., Keirse, M. J., van der Zee, J., & Bergh, G. A. H. (1996). Outcome of planned home and planned hospital births in low risk pregnancies: Prospective study in midwifery practices in the Netherlands. *BMJ, 313*(7068), 1309–1313.

Woodcock, H. C., Read, A. W., Bower, C., Stanley, F. J., & Moore, D. J. (1994). A matched cohort study of planned home and hospital births in Western Australia 1981–1987. *Midwifery, 10*(3), 125–135.

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Anderson, R. E., & Murphy, P. A. (1995). Outcomes of 11,788 planned home births attended by certified nurse-midwives. A retrospective descriptive study. *Journal of Nurse-Midwifery, 40*(6), 483–492. **Reason:** Had better quality, more recent research; no comparative data included.

Bastian, H., Keirse, M. J., & Lancaster, P. A. (1998). Perinatal death associated with planned home birth in Australia: Population based study. *BMJ, 317*(7155), 384–388. **Reason:** Poor study design. Population includes high-risk mothers (twins, intra-uterine growth retardation, preterm, breech) and outcomes not adjusted for these factors.

Murphy, P. A., & Fullerton, J. (1998). Outcomes of intended home births in nurse-midwifery practice: A prospective descriptive study. *Obstetrics and Gynecology, 92*(3), 461–470. **Reason:** Not applicable. Lacks comparative analysis with hospital outcomes.

Pang, J. W., Heffelfinger, J. D., Huang, G. J., Benedetti, T. J., & Weiss, N. S. (2002). Outcomes of planned home births in Washington state: 1989–1996. *Obstetrics and Gynecology, 100*(2), 253–259. **Reason:** Poorly designed. Quality of study poor enough to invalidate results for the following reasons:

- includes unplanned and possibly unattended home births;
- includes unplanned home births with unqualified attendants;
- includes preterm births;
- although it reports a high perinatal mortality, 10 of the 20 babies who died had congenital heart disease; some home births may have been chosen with the parents knowing the prognosis; and
- selection criteria of home births studied never established.

FREESTANDING BIRTH CENTERS

For the purposes of this document, birth centers are defined as freestanding facilities that provide intrapartum and immediate postpartum care to low-risk women and their newborns. Studies of hospital-based birth centers were excluded for two reasons. The first reason is that freestanding birth centers provide a largely homogenous style of care aligned with the mother-friendly model (Rooks, 1992a, 1992b). For birth centers located within hospitals, the style of care and practice policies can vary greatly from one center to another and from that typical in freestanding birth centers, depending on the hospital's model of care and its influence on the birth center. The second reason is that a freestanding birth center's care involves the need to transfer women and/or babies to the hospital when indicated—an important difference from in-hospital care.

Freestanding Birth Centers

Rationale for Compliance	Evidence Grade	
The National Birth Center Study (Rooks, 1992a, 1992b) evaluated the care and outcomes of 11,814 women admitted in labor at 84 birth centers and found the following practice patterns:	**Quality:** **Quantity:** **Consistency:**	A B NA*
• 41% had nonclear fluids or solid food during labor (see Step 6 on pp. 32S–64S). • 80% did not have intravenous fluids during labor (see Step 6 on pp. 32S–64S). • 90% had fetal heart rate monitoring via intermittent auscultation (Doppler or fetoscope) instead of continuous electronic monitoring (see Step 6 on pp. 32S–64S). • 49% used hydrotherapy (22% tub, 27% shower) (see Step 7 on pp. 65S–73S). • 35% were given massages in labor (see Step 7 on pp. 65S–73S). • 13% chose to use systemic analgesia (see Step 7 on pp. 65S–73S). • 3% chose to have epidural analgesia (see Step 7 on pp. 65S–73S). • 79% gave birth in nonsupine positions (see Step 4 on pp. 25S–27S). • 90% initiated breastfeeding (see Step 10 on pp. 79S–80S).		
Birth center care results in a cesarean section rate (4.4%) significantly lower than national outcomes reported for the same time period (Rooks, 1992b).	**Quality:** **Quantity:** **Consistency:**	B A NA*
Birth center care results in a perinatal mortality rate (1.3 per 1,000 births overall; 0.7 per 1,000 births excluding congenital anomalies) significantly lower than national outcomes reported for the same time period (Rooks, 1992b).	**Quality:** **Quantity:** **Consistency:**	B B N *
When compared with similar populations, care in freestanding birth centers resulted in the following maternal outcomes:		
• similar antepartum hospital admission rates (Jackson, 2003 American Journal of Public Health [AJPH]).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• fewer inductions of labor (see also Step 6, pp. 42S–44S) (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• less frequent oxytocin augmentation of labor (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• increased intake of food and drink in labor (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• increased use of ambulation in labor (see also Step 4, p. 24S) (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B NA*
• less frequent use of intravenous fluids in labor (see also Step 6, p. 34S) (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A A A

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Freestanding Birth Centers

Rationale for Compliance	Evidence Grade	
• less use of amniotomy in labor (see also Step 6, p. 38S) (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• fewer episodes of abnormal fetal heart rate in labor (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• less use of continuous electronic fetal monitoring (external and internal) (see also Step 6, p. 39S) (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• more effective pain management in labor, including:		
○ less frequent use of analgesia in labor (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
○ less frequent use of epidural anesthesia in labor (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
○ more use of nonpharmacological pain relief measures in labor, including hydrotherapy, comfort measures, and other strategies (see also Step 7, pp. 65S–68S) (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• increased number of spontaneous vaginal births (David, 1999; Jackson, 2003 AJPH; Walsh, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• fewer vaginal instrumental deliveries (vacuum extraction and forceps) (David, 1999; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• fewer cesarean rates overall (David, 1999; Jackson, 2003 AJPH; Walsh, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	B
• fewer episiotomies (Fullerton, 1992; Jackson, AJPH 2003; Walsh, 2004).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• similar incidence of maternal infection or need for antibiotics after birth when compared with hospital births (Jackson, 2003 AJPH). No study found an increase in the infection rate with birth center care.	**Quality:**	A
	Quantity:	B
	Consistency:	NA*
When compared with similar populations planning hospital births, care in freestanding birth centers resulted in the following perinatal outcomes:		
• similar rates of preterm births (Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	B
	Consistency:	NA*
• similar rates of low–birth-weight infants (David, 1999; Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	A
	Consistency:	A
• similar incidence of thick meconium in the amniotic fluid (Fullerton, 1992; Jackson, 2003 AJPH).	**Quality:**	A
	Quantity:	B
	Consistency:	NA*
• lower incidence of fetal heart rate abnormalities (Fullerton, 1992; Jackson, 2003).	**Quality:**	A
	Quantity:	A
	Consistency:	A

(*Continued*)

(Continued)
Freestanding Birth Centers

Rationale for Compliance	Evidence Grade	
• similar rates of infants being admitted to intensive care units after birth (David, 1999; Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B A
• fewer infants requiring evaluation and treatment for infection (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B NA (only 1 study)
• similar incidence of neonatal readmission (Jackson, 2003 AJPH).	**Quality:** **Quantity:** **Consistency:**	A B NA*
Women delivering in birth centers reported that, compared with their prior experiences in hospitals, birth center staff (Coyle, 2000): • treated pregnancy and birth as a natural life event; • treated women as autonomous individuals and provided them with information that enabled them to make informed decisions; • actively encouraged women to listen to their bodies and trust their ability to give birth naturally; • had a noninterventionist approach to care; and • supported the mother's own belief in the normalcy of birth.	**Quality:** **Quantity:** **Consistency:**	B B NA*

A = good; B = fair; NA = not applicable
Quality = aggregate of quality ratings for individual studies
Quantity = magnitude of effect, numbers of studies, and sample size or power
Consistency = the extent to which similar findings are reported using similar and different study designs
*only one study

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Walsh, D., & Downe, S. M. (2004). Outcomes of free-standing, midwife-led birth centers: A structured review. *Birth, 31*(3), 222–229.

EXCLUDED STUDIES

Gottvall, K., Grunewald, C., & Waldenstrom, U. (2004). Safety of birth centre care: perinatal mortality over a 10-year period. *BJOG, 111*(1), 71–78. **Reason:** Not applicable. Birth center located within a hospital.

Schmidt, N., Abelsen, B., & Oian, P. (2002). Deliveries in maternity homes in Norway: Results from a 2-year prospective study. *Acta obstetricia et Gynecologica Scandinavica, 81*(8), 731–737. **Reason:** No data for comparison to similar population. Also, geographical obstacles require 2–3 hours for transport; not generalizable to other locations.

Swartz, W., Jackson, D., Lang, J., Ecker, J., Ganiats, T., Dickinson, C., et al. (1998). The BirthPlace collaborative practice model: Results from the San Diego Birth Center Study. *Primary Care Update for Ob/Gyns, 5*(4), 207. **Reason:** Data included in Jackson (2003).

Waldenstrom, U., & Nilsson, C. A. (1997). A randomized controlled study of birth center care versus standard maternity care: Effects on women's health. *Birth, 24*(1), 17–26. **Reason:** Not applicable. Birth center located within a hospital.

Waldenstrom, U., Nilsson, C. A., & Winbladh, B. (1997). The Stockholm birth centre trial: Maternal and infant outcome. *British Journal of Obstetrics and Gynaecology, 104*(4), 410–418. **Reason:** Not applicable. Birth center located within a hospital.

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Discussion

The Coalition for Improving Maternity Services:

Judith A. Lothian, PhD, RN, LCCE, FACCE

ABSTRACT

The *Ten Steps of Mother-Friendly Care* developed by the Coalition for Improving Maternity Services (CIMS) provides guidelines for caregivers, hospitals, birth centers, and home birth services that are committed to ensuring their services are "mother-friendly." The evidence basis compiled by the CIMS Expert Work Group for the *Ten Steps of Mother-Friendly Care* confirms that substantial support exists for the *Ten Steps*. Furthermore, the group's findings—along with the results from the *Listening to Mothers II* survey—support the relevance and continued importance of the *Ten Steps*, as well as the larger CIMS *Mother-Friendly Childbirth Initiative*, and suggest future direction for researchers, maternity caregivers, and childbearing women. Suggestions for ongoing research and effective advocacy on behalf of mother-friendly care practices are encouraged.

Journal of Perinatal Education, *16*(1–Supplement), 89S–92S, doi: 10.1624/105812407X173245
Keywords: The Coalition for Improving Maternity Services, Mother-Friendly Childbirth Initiative, Ten Steps of Mother-Friendly Care, normal birth

In setting out on this project, the goal of the Coalition for Improving Maternity Services (CIMS) Expert Work Group was to provide evidence to support the *Ten Steps of Mother-Friendly Care* that would be concise, precise, and widely available to the birth community—midwives, physicians, nurses, childbirth educators, doulas, hospital administrators, and childbearing women. The group has accomplished its goal.

The report presented in this publication confirms that substantial support exists for the *Ten Steps of Mother-Friendly Care*. The CIMS Expert Work Group's systematic review of the research published in the decade since the *Ten Steps of Mother-Friendly Care* was developed and launched provides compelling evidence for each of the *Ten Steps*. The systematic review of out-of-hospital birth is a significant contribution to the literature. The transparency of the group's methods (see pp. 5S–9S of this issue) and its willingness to evaluate evidence related to "no evidence of benefit" or "no evidence of harm" have resulted in a more all-encompassing and meaningful review of the evidence than many systematic reviews.

The CIMS Expert Work Group's findings confirm the relevance and continued importance of the *Ten Steps of Mother-Friendly Care*, as well as the larger *Mother-Friendly Childbirth Initiative* (CIMS, 1996), and suggest future direction for researchers, maternity caregivers, and childbearing women. It also

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the Mother-Friendly Childbirth Initiative *and accompanying* Ten Steps of Mother-Friendly Care, *log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.*

This project was made possible by a generous grant from a donor's advised fund of the New Hampshire Charitable Foundation.

Members of the CIMS Expert Work Group and supporting associates were:

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For a copy of the Listening to Mothers II *survey, call Childbirth Connection (formerly Maternity Center Association) at 212-777-5000 or visit the organization's Web site (www.childbirthconnection.org).*

raises the issue: Why, with this much support, has birth become more, rather than less, mother-friendly?

RESULTS OF THE LISTENING TO MOTHERS II SURVEY

The completion of the research presented here coincided with the publication of *Listening to Mothers II: Report of the Second National U.S. Survey of Women's Childbearing Experience* (Declercq, Sakala, Corry, & Applebaum, 2006). *Listening to Mothers II* was carried out by Childbirth Connection (formerly Maternity Center Association), in collaboration with Lamaze International, and was conducted by Harris Interactive, a market research company. The sample included a total of 1,573 women between the ages of 18 and 44 with a singleton birth in a United States hospital in 2005. There were 1,373 online participants and 200 telephone participants. The findings of *Listening to Mothers II* confirm that birth is increasingly ''intervention intensive'' and less mother-friendly (Declercq et al., 2006).

Of the surveyed women who had vaginal births, 80% had intravenous lines, and 55% had their labors augmented with pitocin. Ninety-four percent of the women had electronic fetal monitoring (93% of those women were monitored continuously). Only 15% of the women reported eating anything in labor, and only 40% reported that they had anything to drink.

The cesarean rate among the surveyed women was 33%, with half primary and half repeat surgeries. Most repeat cesareans were planned. The vaginal birth after cesarean (VBAC) rate was 11%. Eighty-nine percent of the women who have had a previous cesarean had a repeat cesarean. Although 45% of the women who have had a previous cesarean were interested in VBAC, 57% of them were denied that option. The unwillingness of the caregiver (47%) or hospital (26%) was the main reason reported as the basis for the denial. Forty-one percent of the respondents reported that their caregiver tried to induce labor; 84% of the time, this was successful. Only 1% of the women gave birth outside the hospital; less than 10% received care provided by midwives, and 3% were attended by a doula or professional labor attendant.

A significant proportion (86%) of the respondents used pain medication. Among the women having a vaginal birth, 71% received an epidural. Less than half of the women used nonpharmacological pain relief in labor: 49%, breathing; 42%, position change or movement; 25%, mental strategies such as relaxation, visualization, or hypnosis; and 29%, hands-on techniques such as massage, touch, or acupressure. Only 6% of the women reported using immersion in a tub during labor, and only 4% used showers. A quarter of the women reported walking after they were admitted to the hospital in labor, and 57% reported they were on their backs during pushing, with another 35% pushing in a semisitting position.

The women reported they wanted full, complete information about their choices. Eighty-one percent said they thought it necessary to know ''every complication associated with an intervention,'' and another 19% thought it important to know ''most complications.'' Most women were ''unsure'' of the adverse effects of interventions. Even those who actually experienced the intervention were unable to identify adverse effects of cesarean and induction. Only 11% of the women refused to accept care that was offered to them.

Only one third of babies were in their mothers' arms immediately after birth. Although 61% said they wanted to breastfeed exclusively, at one week only 52% were doing so. Babies of nearly half the mothers who intended to breastfeed were given formula or water ''supplements'' and a pacifier, and most of the mothers received formula samples or offers. Sixty-six percent of the women reported suffering some degree of depressive symptoms that would suggest a need for follow-up measures, but only 20% of these women consulted a health-care or mental health professional.

The *Listening to Mothers II* survey results confirm that standard maternity care in the United States is far from mother-friendly and provides further support that each of the steps of the *Ten Steps of Mother-Friendly Care* continue to be relevant.

ONGOING NEED FOR RESEARCH AND ADVOCACY

Why has the substantial body of research support for the *Ten Steps of Mother-Friendly Care* failed to create change in maternity care? Where do we go from here? Our suggestions fall into two, broad, equally important categories: research and advocacy.

Research

There are two underlying issues of concern related to research: factors that influence what does and

does not get studied, and the failure to change practice based on best evidence. Both issues have implications for mother-friendly care.

The dominant medical model of care exerts a powerful influence on what gets studied and what does not. The result is a scarcity of evidence to establish the benefit of many nonmedical measures that facilitate normal, physiological labor and birth and help women manage their labors. The systematic review points out the gaps in these areas.

A further problem is that the current standard demands conclusive proof of benefit before implementing change in practice related to nonmedical issues; however, no such demands are made for changing practices that show no benefit but are consistent with medical values. Two examples illustrate this point. First, no evidence shows any benefit for continued routine use of either intravenous fluids or continuous electronic fetal monitoring, although harm has been demonstrated for both. Second, in contrast, the freedom to walk during labor has not been shown to have a major effect on labor progress, but when given the choice women prefer it. In spite of the preferred choice, women continue to be confined to bed in labor. A critical need exists for an in-depth analysis of why this is so and for a more complete understanding of the barriers to change.

What is the most appropriate way to evaluate maternity care practices? In 2001, Murphy and Fullerton proposed using an optimality model to evaluate midwifery care and, then, suggested its value in evaluating maternity care. Optimality looks for the desired, best possible outcome rather than the occurrence of undesired, adverse (and often rare) events. Optimality replaces the focus on risk and adverse outcomes with a focus on measuring the frequency of ''optimal'' (good, desired) outcomes. This approach allows for the incorporation of a ''noninterventive'' philosophy in the model. The optimality model provides an appropriate framework for designing a study of mother-friendly care. We think it is time for a large-scale study of mother-friendly care compared to standard maternity care measuring optimal outcomes rather than just adverse effects.

Advocacy

Advocates can use this systematic review to advance the principles of the *Mother-Friendly Childbirth Initiative* and the *Ten Steps of Mother-Friendly Care.* For women, the birth environment and caregiver exert powerful influences on how their childbearing experience unfolds. The *Ten Steps of Mother-Friendly Care*—along with *Having a Baby? Ten Questions to Ask* (CIMS, 2000), which is based on the *Ten Steps*—provide guidelines for women as they attempt to untangle the web of modern obstetrics and make important decisions about their care and the birth of their babies.

W Having a Baby? Ten Questions to Ask *is available online at the following link to the Coalition for Improving Maternity Services's Web site: / www.motherfriendly.org/ resources/10Q/*

The *Ten Steps of Mother-Friendly Care* provides guidelines for caregivers, hospitals, birth centers, and home birth services that are committed to ensuring their services are mother-friendly. But these guidelines are only a first step. Ultimately, informed decision making must include the ability and the power to either consent or refuse specific care practices. Women need a deeper understanding of their right to informed refusal, especially in areas whereby disagreement occurs over what constitutes ''best practice.'' Informed refusal has the potential to exert pressure on a maternity care system that is resistant to change.

The CIMS is developing criteria for the designation of birth sites as mother-friendly. Additionally, grassroots organizations are working with CIMS to rate how mother-friendly individual care providers and hospitals actually are and, then, making this information widely available. The Institute of Medicine (2001) has this to say in its publication, *Crossing the Quality Chasm*:

> *Care must be delivered by systems that are carefully and consciously designed to provide care that is safe, effective, patient-centered, timely, efficient and equitable. Such systems must be designed to serve the needs of patients, and to ensure that they are fully informed, retain control and participate in care delivery whenever possible, and receive care that is respectful of their values and preferences.* (p. 36)

The evidence-based *Ten Steps of Mother-Friendly Care* is an important resource in helping that happen and in ultimately improving maternity care in the United States and globally.

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JUDITH LOTHIAN *is a childbirth educator in Brooklyn, New York, a member of the Lamaze International Board of Directors, and the associate editor of* The Journal of Perinatal Education. *She is also an associate professor in the College of Nursing at Seton Hall University in South Orange, New Jersey.*

Commentary

The Coalition for Improving Maternity Services:

Susan Hodges, MS
Sandra Bitonti Stewart
Barbara Hotelling, MSN, CD (DONA), LCCE, FACCE
Amy Romano, MSN, CNM

ABSTRACT

A consumer advocate, two childbirth educators, and a certified nurse-midwife each provide commentary on the effectiveness of and potential uses for the *Evidence Basis for the Ten Steps of Mother-Friendly Care*.

Journal of Perinatal Education, *16*(1–Supplement), 93S–96S, doi: 10.1624/105812407X173254
Keywords: The Coalition for Improving Maternity Services, Mother-Friendly Childbirth Initiative, Ten Steps of Mother-Friendly Care, normal birth, childbirth education, midwifery model of care

A POWERFUL RESOURCE FOR MOTHERS, ADVOCATES, HEALTH-CARE PROVIDERS

Evidence Basis for the Ten Steps of Mother-Friendly Care will be a tremendous resource for mothers and advocates of normal birth everywhere. To have all of the current evidence collected in one place, published in a recognized journal, and organized by the *Ten Steps* will be useful for many purposes.

Consumer advocates for normal birth likely will be involved in bringing this evidence to the attention of legislators and members of state agencies regarding legislation and/or rules and regulations for hospitals, birth centers, and midwives. Having the evidence in hand will strengthen the role advocates can play in these government processes.

A unique feature of the *Evidence Basis for the Ten Steps of Mother-Friendly Care* is the explanations for inclusion and exclusion of specific studies. Few individuals have the time and expertise to review and assess every study on a given topic. By including lists of excluded studies with the reasons for exclusion, the Expert Work Group of the Coalition for Improving Maternity Services (CIMS), who do have this expertise, have given us a resource for refuting erroneous conclusions or assertions that are based on bad science when it comes to maternity care.

Each of the steps is important, but perhaps one of the most useful will be the article on Step 6, which addresses the evidence concerning a list of interventions that are routine or common in most hospital-based maternity care (see pp. 32S–64S). The article will be useful for helping women to understand the lack of evidence or contrary evidence regarding many common hospital and obstetric practices. Although this kind of information will be useful in persuading hospitals to move toward being ''mother-friendly,'' the evidence can also be used by mothers to support informed refusal of unnecessary procedures and interventions, leading to a more mother-friendly birth experience.

For more information on the Coalition for Improving Maternity Services (CIMS) and copies of the *Mother-Friendly Childbirth Initiative* and accompanying *Ten Steps of Mother-Friendly Care,* log on to the organization's Web site (www.motherfriendly.org) or call CIMS toll-free at 888-282-2467.

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Another useful resource will be the evidence for Step 1 (see pp. 10S–19S). This step ensures that women have access to a wide variety of support in labor and during the pregnancy and postpartum periods: unrestricted access to birth companions of their choice, including family and friends; unrestricted access to continuous emotional and physical support from a skilled woman such as a doula; and access to midwifery care. The extensive rationale demonstrates the benefits of midwifery care in any setting and will lend strong support for increasing access to midwives and the Midwives Model of Care in and out of hospitals.

Existing government resources, such as the Consumer Bill of Rights and Responsibilities and the Conditions of Participation (for hospitals to participate in Medicaid), require that care be "appropriate"; reiterate that patients should be provided complete information about medical tests, treatments, and procedures; and reiterate their right to consent to or refuse these. The evidence presented for Step 1 in the *Evidence Basis for the Ten Steps of Mother-Friendly Care* will be invaluable as we learn to make use of these government resources for individual situations (one woman at a time) and for our work in affecting changes in maternity care at the hospital level.

Citizens for Midwifery is a national consumer-based group promoting the Midwives Model of Care. For more information, call toll-free at 1-888-236-4880 or visit the organization's Web site (www.cfmidwifery.org).

The evidence project will also be a powerful support for the Transparency in Maternity Care project of CIMS. This project will include pulling together all of the maternity care intervention rates, annually, for hospitals and birth centers nationwide and making them available on the Internet. To better help consumers utilize this information and evaluate their local institutions, the results of the *Evidence Basis for the Ten Steps of Mother-Friendly Care* could be presented alongside each of the hospital's intervention rates.

BirthNetwork National chapter leaders and volunteers plan to use the materials to create a presentation for college-level women's studies and nursing students. At the local level, BirthNetwork National chapters and other grassroots advocacy organizations will use the information in *Evidence Basis for the Ten Steps of Mother-Friendly Care* as they work to inform local hospitals and state health agencies about the CIMS *Mother-Friendly Childbirth Initiative* and the *Ten Steps*. Advocates will be able to use the *Evidence Basis for the Ten Steps of Mother-Friendly Care* to demonstrate persuasively how the steps are supported by the evidence and are fundamental to the "do no harm" principle of medical care.

BirthNetwork National is a national consumer-based organization supporting the work of local chapters to promote the Coalition for Improving Maternity Service's *Mother-Friendly Childbirth Initiative*. For more information, call toll-free at 1-888-45-BIRTH or visit the organization's Web site (www.birthnetwork.org).

To facilitate public knowledge about the *Evidence Basis for the Ten Steps of Mother-Friendly Care*, Citizens for Midwifery plans to create summary fact sheets that will put the information into terms easily understood by the public. The fact sheets will be freely available on the Citizens for Midwifery Web site for public education, childbirth education classes, community meetings and birth circles, and many other programs and events held by grassroots groups, such as Friends of Midwives organizations and BirthNetwork National groups. Summary fact sheets will help get the information to women and families who might not otherwise find or read the *Evidence Basis for the Ten Steps of Mother-Friendly Care*.

– Susan Hodges, MS
President, Citizens for Midwifery
– Sandra Bitonti Stewart, childbirth educator and cofounder of Birth Network National

TEACHING WITH CONFIDENCE

For approximately three decades, it has been amazing to me that I—a mother, childbirth educator, and doula—have spent countless dollars and hours attending evidence-based conferences, subscribing to evidence-based birth journals, and revising my teaching strategies and information to reflect the research. Parents in my classes still report to me that they would not be given anything but ice chips during labor and birth, their movements would be confined to the length of a monitor cord, and only two people would be allowed to attend to their emotional and physical needs at birth. These practices have not stopped in spite of the evidence that says routine use of interventions are not helpful and can be harmful. How can it be that practice does not reflect the evidence? Why is it important for me to continue examining the research if it will not be applied at the birth?

Being the low woman on the totem pole in the cadre of care providers, I absolutely *must* know that there is evidence to back my statements and my actions. As a doula, when I encourage mothers to ask care providers what foods they should not eat instead of what nourishment they can have, I am confident with my knowledge that women choose wisely for themselves what to eat and drink in labor and birth. Also, I have read the Cochrane systematic reviews that say withholding food and fluid in labor and birth can stall the labor and require more interventions with associated risks.

As a childbirth educator, I teach this information using the latest adult education techniques that I

have learned to foster retention and maximize use of what I have carefully chosen for parents in my classes. Knowledge of how adults learn information has changed over the past three decades. I no longer use outlines, videos, and lectures for most of my teaching; instead, I have found learning tasks to be more successful.

Staying abreast of the research has kept me from providing inaccurate information. I once distributed practice sheets for breathing techniques and encouraged parents to record every contraction in early labor. Breathing techniques now occupy their rightful place as one of many relaxation techniques, and going to the movies or baking cakes during early labor is now encouraged. I once taught with educators who felt conferences were too expensive to invest in. They taught breathing techniques with a metronome! Practice based on the Friedman curve—a reference to the "normal" duration of each stage based on an anecdotal study reported by Emanuel Friedman in 1954—has led to countless, unnecessary interventions because women's labor progress was not adhering to an average based on a small sample in a small hospital.

Let's look at the potentially harmful effects of a practice that does not reflect the research findings. The first goal of Healthy People 2010 is to help individuals of all ages increase life expectancy *and* improve their quality of life. Research tells us that some birth practices, such as separation of healthy mothers and babies after birth, can actually impose lifelong risks to infant health. The infant who is removed from his/her mother does not have mature temperature-regulating mechanisms. The mother can regulate the baby's temperature with her body temperature better than the warmers. Her temperature falls in response to a higher temperature in the infant, and her temperature rises when the infant needs more warmth. If the infant is placed in the warmer and his/her temperature is inadequate, even more separation happens. The infant has a long, quiet, alert state during that first hour and also begins nursing. Interfering with nursing can cause problems that the mother has difficulty overcoming and, so, her infant receives artificial milk, leaving the baby exposed to a list of health problems too long to include in this commentary. Thus, a simple and evidence-based practice of nonseparation of mother and infant after birth without a medical indication can improve the quality and length of a newborn's life, facilitate attachment, and, according to Healthy People 2010, improve our society as a whole.

The systematic reviews of the *Evidence Basis for the Ten Steps of Mother-Friendly Care* are a gift to doulas, educators, and me. We can teach with confidence, irrespective of local practices and hospital policies. We can inform women and men of the evidence, where they can find the evidence for future decision making, and how to speak so that care providers listen. We can compare the latest and greatest reports of a single research finding that the media reports in its biased ways with a systematic look at quality research and answer confidently the questions of parents wanting only the best for their children. Teaching with confidence means having the evidence to rely on.

– Barbara Hotelling, MSN, CD (DONA), LCCE, FACCE
Independent childbirth educator and doula

For more information on Healthy People 2010, a statement of national health objectives in the United States, log on to the Healthy People 2010 Web site (www.healthypeople.gov).

MIDWIFERY AND EVIDENCE-BASED PRACTICE

I stumbled into midwifery at a time when "evidence-based practice" was becoming the predominant credo. A large and growing body of research supported midwifery care, and the field of obstetrics was finally coming under fire for decades of providing ineffective and harmful care to women and babies. It was empowering to be part of a profession that was simultaneously ancient and at the vanguard of evidence-based practice. I knew the critical-thinking skills I developed in my training would serve me at least as well as my clinical skills. Under the mentorship of forward-thinking teachers, I learned to read and pick apart studies and built up the chutzpah to challenge my preceptors, nurses, and even some doctors when I saw them practicing in a way that was not evidence-based.

So I entered into clinical practice knowing that the standard package of maternity care was not supported by the research. But with all the stress of launching my career and so many facts and formulas to remember, I did not have the time or wherewithal to look up the evidence for every single practice I objected to. My mantra—"That's not evidence-based!"—quickly wore thin without any supporting details. I sure could have used a document that reminded me of the specific harms of, say, routine amniotomy, restricting oral intake, or elective induction.

Evidence Basis for the Ten Steps of Mother-Friendly Care provides a nuanced and robust review of the evidence while still being concise and easy to use. The reviewers provide evidence-based

For a description and discussion of the methods used to determine the evidence basis of the *Ten Steps of Mother-Friendly Care,* see this issue's ''Methods'' article by Henci Goer on pages 5S–9S.

rationales for adhering to each element of mother-friendly care, and they rate the quality, quantity, and consistency of the evidence for each rationale. Importantly, they also note when there is no evidence of benefit for care practices that are widespread (such as routine IVs) and when there is no evidence of harm for practices that women prefer but are routinely denied (such as ambulation in labor). The document's core message is clear and resounding: If it disrupts the normal process of labor and birth, the mother hasn't asked for it, and no evidence supports it, then don't do it! How different this is from the conventional obstetric zeal for the ''machine that goes 'ping'.''

It is no coincidence that the midwifery model of care is nearly identical to the *Ten Steps of Mother-Friendly Care*. At its best and purest, midwifery care is characterized by the appropriate use of interventions, cultural competency, and attention to the unique needs and concerns of the individual woman—all key elements of the *Ten Steps*. Therefore, the *Evidence Basis for the Ten Steps of Mother-Friendly Care* becomes an invaluable tool for developing midwifery clinical practice standards and benchmarking goals. Equipped with this succinct and compelling review of the relevant research, midwives can make the case for mother-friendly care to the consulting physicians and practice-privilege-review board members who often must approve our practice standards.

This document will also serve midwifery students and apprentices well. Student midwives need to master ''normal birth'' before they can move on to managing complications. Together with some hand skills and knowledge of birth physiology, the *Evidence Basis for the Ten Steps of Mother-Friendly Care* provides that foundation. As case-based learning becomes more ingrained in midwifery curricula, students will find greater use for succinct reviews of the evidence for midwifery care practices. As students then make the final leap into practice, finding the link between the care practice, the rationale, and the evidence to support it—as it is laid out in this document—will already come naturally. Our new generation of midwives will become practitioners of evidence-based care.

In the end, of course, midwifery is about providing optimal, individualized care to the childbearing woman and her family. What makes this document so extraordinary is its simultaneous utility both as a philosophical doctrine and as clinical practice guidelines. It describes *what* we do, *how* we do it, and *why* we do it. And, most importantly, it acknowledges that we do it ''with women.''

– Amy Romano, MSN, CNM
Lamaze Institute for Normal Birth

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