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*Helping women and health professionals
make informed maternity care decisions*



Process of Care During Childbirth

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Childbirth Connection

- 95 years of maternity care quality improvement on behalf of women, newborns and families
- Mission: to improve the quality and value of maternity care through consumer engagement and health system transformation
- *Transforming Maternity Care* project, 2007-

Process of Care During Childbirth

- What intrapartum care principles and processes are optimal for healthy, lower-risk childbearing women and newborns?
- What settings most reliably implement these principles and processes?
- What criteria should be used to assess intrapartum care within and across birth settings?



What intrapartum care principles and processes are optimal for healthy, lower-risk childbearing women and newborns?

2020 Vision for a High-Quality, High-Value Maternity Care System

Methodology

- Multi-stakeholder, multi-disciplinary Vision Team
- Background resources: systematic reviews and other high quality research about effects of maternity system elements
- Facilitated meeting followed by email and phone work
- Consensus report peer reviewed by *Transforming Maternity Care* Steering Committee and 10 Workgroup Co-Chairs

2020 Vision for a High-Quality, High-Value Maternity Care System

Values and Principles

- 2001 *Quality Chasm* 6 quality aims, adapted for maternity care
- Life-changing experience
- Care processes protect, promote, and support physiologic childbirth
- Care is evidence-based
- Quality is measured, performance is disclosed
- Care includes support for decision making and choice
- Quality is coordinated
- Caregiver satisfaction and fulfillment is a core value

2020 Vision for a High-Quality, High-Value Maternity Care System

Quality

- The degree to which maternity care services provided to individuals and populations increase the likelihood of optimal health outcomes and are consistent with current knowledge (consistent with IOM *Quality Chasm*)

Value

- The optimal cost to quality ratio in the delivery of maternity care services

<http://download.journals.elsevierhealth.com/pdfs/journals/1049-3867/PIIS104938670900139X.pdf>

2020 Vision for a High-Quality, High-Value Maternity Care System

A Goal for Care Around the Time of Birth:

All maternity caregivers have knowledge and skills necessary to enhance the innate childbearing capacities of women. Each woman is attended in labor and birth in the manner that is most appropriate for her level of need and that of her baby and experiences only interventions that are medically indicated, supported by sound evidence of benefit, with least risk of harm compared with effective alternatives. Women and babies at high risk for complications for whom a higher level of specialized care is appropriate have specialty care available to them that adheres to the same basic values and principles.

<http://download.journals.elsevierhealth.com/pdfs/journals/1049-3867/PIIS104938670900139X.pdf>

2020 Vision for a High-Quality, High-Value Maternity Care System

Care System and Settings for Care Around the Time of Birth:

A full range of safe birth settings is available and receives system-wide support, so that each woman is free to choose the setting that is most appropriate for her level of need and that of her fetus/baby and that best reflects her values, culture, and preferences. This choice can be made with confidence because each setting assures her a consistent standard of safe, effective, risk-appropriate care, within an integrated system that provides for coordinated consultation, collaboration, or transfer in either direction should her level of need or that of her baby change.

<http://download.journals.elsevierhealth.com/pdfs/journals/1049-3867/PIIS104938670900139X.pdf>

Hormonal Physiology of Childbearing (2013)

When protected, promoted, and supported, endogenous hormone systems optimize physiologic adaptation of women and fetuses/newborns from before onset of labor through labor, birth, breastfeeding, and attachment, including:

- helping with stress and labor pain (oxytocin, beta-endorphin)
- providing fetal neuroprotection in labor (oxytocin, norepinephrine)
- preventing postpartum hemorrhage (oxytocin)
- optimizing breastfeeding initiation (oxytocin, norepinephrine, prolactin)

Common maternity care interventions can disrupt hormonal processes and interfere with these benefits

Buckley S. Hormonal Physiology of Childbearing. Forthcoming 2013.

Will be available at <http://transform.childbirthconnection.org/reports/physiology/>

Development Origins of Health & Disease

Exposures during sensitive periods of rapid development, notably pre- and perinatal periods, can have lifelong consequences for immune, metabolic, neurologic, and other body systems, including epigenetic effects

- medical
- nutritional
- environmental

Burgeoning literature, including multi-generational effects of DES; can vary by birth setting, mode of birth, infant feeding

Csaba G. Hormonal imprinting: phylogeny, ontogeny, diseases, and possible role in present-day human evolution. Cell Biochem Function 2007;26(1):1-10.

Hyde MJ et al. The health implications of birth by caesarean section. Biol Rev 2012;87(1):229-43.

Newbold RR et al. Adverse effects of the model environmental estrogen diethylstilbestrol are transmitted to subsequent generations. Endocrinology 2006;147(6):s11-s17

Penders J et al. Factors influencing the composition of the intestinal microbiota in early infancy. Pediatrics 2006;118(2):511-21.

Van Nimwegen FA et al. Mode and place of delivery, gastrointestinal microbiota, and their influence on asthma and atopy. J Allergy Clin Immunol 2011;128(5):948-55.e1-3.

Development Origins of Health & Disease

Mothers, too, may experience lasting or long-term effects of intrapartum care processes that often vary by setting, e.g.,

- reproductive and gynecologic effects of cesarean section(s)
- long-term effects of breastfeeding

Interconnection of mother-baby dyad will often be appropriate research focus

Buckley S. Hormonal Physiology of Childbearing. Forthcoming 2013. Will be available at <http://transform.childbirthconnection.org/reports/physiology/>.

Ip et al. Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries. AHRQ Evidence Report, 2007.

Kim P et al. The plasticity of human maternal brain: longitudinal changes in brain anatomy during the early postpartum period. Behav Neurosci 2010;124(5):695-700.

Silver RM et al. Maternal morbidity associated with multiple repeat cesarean deliveries. Obstet Gynecol 2006;107(6):1226-32.

Response to Emerging Mosaic?

Mosaic that is coming into view suggests that undisturbed, physiologic childbearing confers benefits to women and babies, and common intrapartum practices may have many consequential, sustained, unintended consequences

Concern for what is known, incompletely known, and completely unknown

Precautionary principle is prudent: minimize deviation from mammalian heritage and exposure to interventions that do not offer a clear benefit whenever possible

Kriebel D and Tickner J. Reenergizing public health through precaution. Am J Public Health 2001;91(9):1351-5.

Tickner JA et al. A compass for health: rethinking precaution and its role in science and public Health. Int J Epidemiol 2003 32(4):489-92.



What settings
most reliably
implement these
principles and
processes?

Evidence-Based Maternity Care

“Milbank Report” (2008) compared

- systematic reviews of best available evidence about maternity practices impacting large proportion of women, newborns
- results of *Listening to Mothers II* survey of women who gave birth in U.S. hospitals in 2005 and other data sources

Found many evidence-practice gaps, overuse, underuse

Update due, and *Listening to Mothers III* report will soon be released

Sakala C and Corry MP. *Evidence-Based Maternity Care: What It Is and What It Can Achieve*. 2008.

Available at: <http://transform.childbirthconnection.org/resources/datacenter/>

Evidence-Based Maternity Care

Overused practices in U.S. hospital-based maternity care include:

- labor induction
- epidural analgesia
- cesarean section
- continuous EFM
- rupturing membranes
- episiotomy

Sakala C and Corry MP. Evidence-Based Maternity Care: What It Is and What It Can Achieve. 2008. Available at: <http://transform.childbirthconnection.org/resources/datacenter/>

Evidence-Based Maternity Care

Underused practices in U.S. hospital-based maternity care include:

- family practice maternity care, midwifery care
- smoking cessation interventions for pregnant women
- external cephalic version for breech presentation fetuses
- vaginal birth after cesarean
- continuous labor support
- measures for comfort, pain, relief, and labor progress

Sakala C and Corry MP. Evidence-Based Maternity Care: What It Is and What It Can Achieve. 2008. Available at: <http://transform.childbirthconnection.org/resources/datacenter/>

Evidence-Based Maternity Care

Underused practices in U.S. hospital-based maternity care (continued):

- non-supine positions for giving birth
- delayed cord clamping in term and preterm babies
- early skin-to-skin contact
- breastfeeding and interventions to support initiation, duration
- practices to foster women's satisfaction with childbirth experience
- interventions for postpartum depression

Sakala C and Corry MP. Evidence-Based Maternity Care: What It Is and What It Can Achieve. 2008. Available at: <http://transform.childbirthconnection.org/resources/datacenter/>

Hospital Compared with Birth Center Care

1. Secondary analysis of 1st National Birth Center Study vs. hospital care (11,814 and 2,256 women)
 - Both groups: no medical or ob risk factors; no AP or IP complications; predominantly midwifery care
 - Interventions and care practices that favored birth centers (95% CI)
 - external fetal monitoring: 7% vs. 50%
 - IV fluids: 8% vs. 24%
 - amniotomy: 41% vs. 51%
 - more than 4 vaginal exams: 44% vs. 53%
 - solid food during labor: 15% vs. 11%
 - shower or bath during labor: 40% vs. 24%
 - episiotomy: 21% vs. 34%
 - cesarean section: 4% vs. 10%

Fullerton JT and Severino R. In-hospital care for low-risk childbirth: comparison with results from the National Birth Center Study. J Nurse Midwifery 1992;37(5):331-40.

Hospital Compared with Birth Center Care

2. Birth center women with midwifery care compared with hospital women eligible for birth center with physician care (1,808 & 2,957 women)
- ITT analysis; adjusted for race/ethnicity, parity, cesarean history, age, marital status, country of origin, smoking, height
 - Interventions and care practices that favored birth centers (95% CI)
 - labor induction: 8% vs. 15%
 - labor augmentation: 16% vs. 27%
 - IV fluids: 67% vs. 97%
 - amniotomy: 53% vs. 57%
 - continuous EFM: 48% vs. 94%
 - walking in labor: 75% vs. 67%
 - tub or shower in labor: 37% vs. 3%
 - epidural analgesia: 30% vs. 69%
 - episiotomy: 13% vs. 38%
 - assisted delivery: 8% vs. 18%
 - cesarean section: 11% vs. 19%

Hospital Compared with Birth Center Care

Birth center women with midwifery care compared with hospital women eligible for birth center with physician care (continued)

- Outcomes were not different (95% CI)
 - positive pressure ventilation
 - NICU admission
 - major complication composite measures: maternal IP & PP, neonatal
 - preterm birth, low birthweight
 - intrapartum maternal febrile morbidity
 - maternal and newborn readmissions
- Outcomes favored birth center (95% CI)
 - fetal heart rate abnormalities: 11% vs. 19%
 - spontaneous vaginal birth: 81% vs. 63%
 - maternal length of stay greater than 72 hours: 10% vs. 16%

Jackson DJ et al. Outcomes, safety, and resource utilization in a collaborative care birth center program compared with traditional physician-based perinatal care. Am J Public Health 2003;93(6):999-1006.

Hospital Compared with Birth Center Care

3. Birthplace in England study

- See Dr. Sandall's presentation
- Birth center compared with obstetric unit: 3.86 odds ratio for “normal birth” (without labor induction, epidural/spinal analgesia, general anesthesia, forceps or vacuum extraction, cesarean, episiotomy)

For recent summary of these and many smaller studies, see Goer and Romano

Birthplace in England Collaborative Group. Perinatal and maternal outcomes by planned place of birth for healthy women with low-risk pregnancies: the Birthplace in England national prospective cohort study. BMJ 2011;343:d7400.

Goer H and Romano A. Optimal Care in Childbirth: The Case for a Physiologic Approach. Seattle: Classic Day Publishing, 2012.

Hospital Compared with Home Birth

Wax et al. meta-analysis

- Interventions favor home birth (95% CI)
 - epidural analgesia: 9% vs. 23%
 - EMF: 14% vs. 63%
 - episiotomy: 7% vs. 10%
 - assisted delivery: 4% vs. 10%
 - cesarean section: 5% vs. 9%
- Morbidity favors home birth (95% CI)
 - 3rd or 4th degree laceration: 1% vs. 3%
 - infection: 1% vs. 3%
 - postpartum bleeding/hemorrhage 4.9% vs. 5.0%
 - vaginal laceration: 8% vs. 22%
 - retained placenta: 1% vs. 2%

Hospital Compared with Home Birth

Wax et al. meta-analysis (continued)

- Morbidity favors hospital birth (95% CI)
 - perineal laceration: 43% vs. 37% (in literature, intact perineum favor home)
- Morbidity was not different (95% CI)
 - cord prolapse

Wax JR et al. Maternal and newborn outcomes in planned home birth vs planned hospital births: a meta-analysis. Am J Obstet Gynecol 2010;203(3):243.e1-8.

Hospital Compared with Home Birth

Wax et al. meta-analysis (continued)

- Outcomes favor home birth (95% CI)
 - prematurity: 1% vs. 5%
 - low birthweight: 1% vs. 2%
 - postpartum bleeding/hemorrhage 4.9% vs. 5.0%
- Outcomes not different (95% CI)
 - newborn ventilation
 - perinatal death: all and nonanomalous
- Outcomes favor hospital birth (95% CI)
 - total neonatal death: 0.20% vs. 0.09%
 - nonanomalous neonatal death: 0.15% vs. 0.04%

Wax JR et al. Maternal and newborn outcomes in planned home birth vs planned hospital births: a meta-analysis. Am J Obstet Gynecol 2010;203(3):243.e1-8.

Hospital Compared with Home Birth

Wax et al. meta-analysis (continued)

- Neonatal mortality results highly controversial in literature, including concerns about inclusion of studies that could not remove high-risk unplanned home births → NMR results difficult to interpret
- perinatal mortality, based on a much larger number of babies, was not different
- For safety in birth center & home birth settings, U.S. needs to create integrated maternity care system, including
 - licensure of all providers
 - routine care collaboration and coordination
 - electronic sharing of records
 - performance measurement and reporting across all settings
 - routine quality improvement practices in all settings

Hospital Compared with Home Birth

Birthplace in England study

- See Dr. Sandall's presentation
- Home birth compared with obstetric unit birth: 4.47 odds ratio for “normal birth” (without labor induction, epidural/spinal analgesia, general anesthesia, forceps or vacuum extraction, cesarean, episiotomy)

For recent summary of many individual studies, see Goer and Romano

Birthplace in England Collaborative Group. Perinatal and maternal outcomes by planned place of birth for healthy women with low-risk pregnancies: the Birthplace in England national prospective cohort study. BMJ 2011;343:d7400 (see data supplement).

Goer H and Romano A. Optimal Care in Childbirth: The Case for a Physiologic Approach. Seattle: Classic Day Publishing, 2012.



What criteria should be used to assess intrapartum care within and across birth settings?

Outcomes of Interest

Need to measure outcomes that are important to women and families but often overlooked, e.g.,

- quality of life
- physical and emotional functioning, recovery
- breastfeeding
- adaptation to parenthood and family functioning
- new-onset maternal morbidity
- payer and out-of-pocket cost of intrapartum care

Give attention to both ends of spectrum: optimal outcomes (e.g., “normal birth” equivalent, spontaneous vaginal birth, exclusive breastfeeding) and harms

Potential Harms

Harms are understudied. Priority harms of interest include

- effects of unneeded interventions
- disruption of hormone systems, short- and longer-term
- perinatal origins of disease; impact on immune, metabolic, and other systems
- new-onset maternal morbidity
- child morbidity
- mortality

Buckley S. Hormonal Physiology of Childbearing. Forthcoming 2013.

Will be available at <http://transform.childbirthconnection.org/reports/physiology/>

Csaba G. Hormonal imprinting: phylogeny, ontogeny, diseases, and possible role in present-day human evolution. Cell Biochem Function 2007;26(1)1-10.

Declercq ER et al. New Mothers Speak Out: National Survey Results Highlight Women's Postpartum Experiences. New York: Childbirth Connection, 2008.

Available at: <http://www.childbirthconnection.org/listeningtomothers/>

Physiologic Childbearing

Are policies, protocols, and systems in place to *promote* physiologic childbearing? E.g.,

- personnel have the skills and knowledge to support physiologic childbearing

Do personnel *protect* physiologic childbearing? E.g.,

- personnel ensure a quiet, private environment
- mothers and babies are not disturbed by routine early separation

Do personnel *support* physiologic childbearing? E.g.,

- personnel routinely promote comfort and labor progress through rest, hydration, positioning, comfort measures, encouragement

Research Follow-up to at Least 1 Year

Many studies of intrapartum care do not measure outcomes after hospital discharge/intrapartum period

We know little about how different settings compare with respect to longer-term effects, e.g.,

- maternal morbidity, including mental health, pelvic floor outcomes
 - child morbidity, including childhood infectious and chronic diseases
 - family functioning and relationships
 - breastfeeding
- ➔ Uncontrolled experimentation impacting entire population at beginning of life and 85% of women over (mostly) multiple episodes of care

Teune MJ et al. Long-term child follow-up after large obstetric randomised controlled trials for the evaluation of perinatal interventions: a systematic review of the literature. BJOG 2013;120(1):15-22.

Experience of Care

CAHPS generic Hospital — and Clinician and Health Plan — surveys are poorly suited to assess maternity experiences

Maternity CAHPS surveys are needed to measure

- experience of intrapartum care across the various settings and types of care providers
- newborn care (hospital survey for single patient; many questions on child survey do not apply to newborns)
- diverse dimensions of pain (versus whether pain is “controlled”)
- shared decision making, informed choice and autonomy
- care coordination and care transitions
- relevant episode of care (e.g., versus “last 12 months”)

CAHPS: Consumer Assessment of Healthcare Providers and Systems, at <https://www.cahps.ahrq.gov>

Access to Core Skills and Services

Many women have difficulty finding ready and willing access to skilled essential maternity care services, including

- vaginal birth after cesarean
- external cephalic version
- vaginal breech birth
- vaginal twin birth
- skillful, judicious assisted delivery
- measures to foster comfort and labor progress
- tubs and showers

Do settings provide essential maternity care services appropriate to their level of care and genuinely support women's shared decision making and informed choices?

Summary Points

The Precautionary Principle is a prudent consideration when assessing processes of care during childbirth.

Hospitals are much more likely to provide the type of childbirth care needed by women and babies at higher risk or with significant established problems than by most lower-risk childbearing families.

Care around the time of birth in birth centers and home births appears to be more closely aligned with needs of lower-risk childbearing families, but our broader health care system needs to better integrate and support these settings, and to hold all settings accountable.

Current research cannot answer many priority questions about the comparative effectiveness of childbirth care in birth settings. We need to expand the questions, measures, outcomes, and designs.

Thank You

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