Birth Settings and Health Outcomes: State of the Science

Kristi Watterberg, MD, Discussant
Professor of Pediatrics
University of New Mexico
Why me?

- I’m a member of the AAP Committee on Fetus and Newborn
- And lead author on the AAP policy statement in process, “Planned Home Birth”
  - With the possible exception of circumcision, may be the most emotional and least data-driven issue I’ve encountered
  - Seems at least partly due to conflict over control of the process, perceptions of beneficence vs. autonomy, and opinions of relative value
Why such limited/flawed data?

- What you look for may determine what you find
- Strongly held opinions regarding the value of interventions & outcomes → lack of equipoise
- Hard to gather reliable or complete data from splintered systems
- Conflicting vs. cooperative structures
  - Limited options for birth centers
  - Isolation of home birth providers
  - Highly variable credentialing
- Often difficult/impossible to randomize (e.g., home birth), so populations are unknowably different
Dr. Hodnett: Cochrane review

- Alternative birth settings and outcomes
  - Only one alternative with RCTs – ‘bedroom-like’
  - Less intervention, fewer maternal complications
  - High transfer rates: 29 - 67%
  - No Δ perinatal death rate
    - (n=11,206; RR 1.67, 95% CI 0.93-3.00)

- Difference between place of planned birth and the environment of the place

- Switch focus from changing individual behaviors to changing the environment
Dr. Sandall: Birthplace in England

- Studied home, free-standing, & “alongside” units, compared to hospital-based OB units
  - Decreased obstetrical interventions
  - Increased normal (non-intervention) births, but . . .
  - High transfer rates:
    - 21 – 26% overall
    - 36 – 45% of primiparous women
- Home birth had ↑neonatal risk for first pregnancies
  - *Not all ‘low-risk’ pregnancies are the same*
  - “Need to address higher intervention rates in obstetric units and low rates of normal birth.”
Dr. Sakala: The process of care

- Quality: “The degree to which care services increase the likelihood of optimal health outcomes and are consistent with current knowledge”
  - What are optimum principles and practices?
  - What settings best implement those?
  - What criteria to use to assess?

- The Precautionary Principle – “minimize deviation from mammalian heritage and exposure to interventions that do not offer a clear benefit…”

- Goal: an integrated system that provides for coordinated consultation, collaboration, or transfer
Dr. Sternberg: effects of the built environment on stress

- Clear biochemical effects of stress on the neuroendocrine immune axis and health
- Specific effects of birthing environments on stress, health and pain outcomes
- Question: Is childbirth a unique situation, where experience of pain might have positive, as well as negative, hormonal effects?
Common themes

- Alternative settings
  - ↓ interventions, but . . .
  - high transfer rates, and
  - ↑ neonatal risk with home delivery
Home birth: ↑ neonatal mortality

- Meta-analysis, heterogeneous studies:
  - ↑ non-anomalous neonatal death: 0.15% vs. 0.04%
    - Wax et al, AJOG 2010; 203:243.e1-8

- Midwife-attended home vs. hospital (>1.3 million births, linked birth-death certificates, USA):
  - 0.1% vs. 0.05%
    - Malloy, J Perinatol 2010; 30:622

- Independent midwife vs. National Health Service (UK): ↑ perinatal mortality – but no difference for low risk pregnancies
  - Symon BMJ 2009; 338:b2060
Why the increased neonatal mortality?

- Education, training, equipment?
- High-risk situation – not appropriate for home?
- Transport time?
- System failure?
Home birth in a unified system

- Canadian model (British Columbia)
  - Registered midwives are mandated to offer home or hospital care to women who meet safety criteria
  - Planned home birth (n=2899), matched to hospital birth with midwife (n=4752) or MD (n=5331)
  - 79% of women who planned home birth delivered at home
  - Fewer interventions, no ↑ baby morbidity/mortality (perinatal death 0.35/1000 vs. 0.57 vs. 0.64)
    - Janssen PA CMAJ 2009; 181:377
Major gap example: pain control

- “A major challenge in compiling this overview has been the variation in use of different process and outcome measures in different trials, particularly assessment of pain and its relief, and effects on the neonate after birth.”

- “Despite concerns for 30 years or more about the effects of maternal opioid administration during labour on subsequent neonatal behaviour and its influence on breastfeeding, only two out of 57 trials of opioids reported breastfeeding as an outcome.”
Epidural analgesia

- 61% (22 – 78%) of singleton vaginal deliveries in 27 US states in 2008 (Europe, generally <50%)
  - Ostermann & Martin, CDC NVSS 59 No. 5

- Relieves pain: “no other circumstances in which it is considered acceptable for an individual to experience untreated severe pain, amenable to safe intervention, while under a physician’s care”
  - ACOG. Obstet/Gyn 104:213, 2004

- But also ↑ maternal fever, hypotension, length of second stage, assisted vaginal delivery, C/S for fetal distress, and urinary retention
  - Anim-Somuah, Cochrane Rev 2011
How to assess interventions

- Two patients – myriad outcomes
  - What risk outweighs what benefit?

- Outcome measures:
  - Physiologic/biochemical measures
    - Compare home birth vs. hospital cortisol?
  - Short-term outcomes of importance to mothers
    - Successful breastfeeding?
  - Longer-term outcomes
    - “Developmental origins of health and disease?”
It’s important to distinguish “what is known, incompletely known, and completely unknown” (Sakala)

vs. what we are sure we already know....