Research Issues in the Assessment of Birth Settings

Workshop Reflections and Future Research Needs

Zsakeba Henderson, MD
Maternal & Infant Health Branch, Division of Reproductive Health
National Center for Chronic Disease Prevention and Health Promotion
Centers for Disease Control and Prevention
“Learning without reflection is a waste. Reflection without learning is dangerous.”
– Confucius
Childbirth Trends and Statistics

What have we learned?

- There have been substantial increases in births to women age ≥ 30, births to Hispanic women, and women with >40 lb gestational weight gain.

- Cesarean births rose nearly 60% from 1996-2009, followed by a small decline (32.9% to 32.8%).

- The preterm birth rate fell for the 5th straight year to 11.72%.

- There have also been substantial decreases in the low birth weight rate and the number and rate of triplet and higher order multiple births.

Source: CDC/NCHS, National Vital Statistics System
Women Giving Birth in Various Settings
What have we learned?

- The percentage of births outside of the hospital has increased rapidly from 2004-2010 (1.2% in 2010), mostly due to increases among non-Hispanic white women.
- More out-of-hospital births occurred among older, multiparous women with lower risk profiles.
- In 2010, 67% of out-of-hospital births were home births, 28% birthing center.
- In 2010, 88% of home births were planned.

Source: CDC/NCHS, National Vital Statistics System
Birth Statistics
Knowledge Gaps

- **Intended place of delivery**
  - Planning status of home birth reported by only 31 states and DC (60% of US births)
  - States are in varying stages of implementing the 2003 revised birth certificate (required by 2014)

- **Reporting of transfers from alternative birth settings**
  - Home birth patients who were transferred to a hospital may not be determined from birth certificate
  - Reporting of patient transfers not required in all states
  - Oregon has added transfer of births from home to birth certificate

- **Reporting of birth attendant**
  - Categorization of “other midwife”, “other” birth attendant, level of training/certification not known
Assessment of Risk in Pregnancy
What have we learned?

- Complex, involves determination of what is considered “low risk”
  - Singleton, term, vertex, no other medical/surgical conditions, other factors?
- Risk is dynamic and subject to change
- Risk to the mother must be balanced with risk to the fetus
- Risk perception varies between provider and patient
- Cultural views, women’s views and structural conditions affect risk and risk perception
- Overall absolute risk of adverse events is low
Assessment of Risk in Pregnancy
Knowledge Gaps

- Uniform definitions of outcomes
- Risk assessment tools for maternal morbidity and mortality
  - Consistent “low-risk” criteria
  - Descriptors for maternal resources, levels of maternal care
- Predictors of neonatal and maternal complications
- Predictive triggers for elevation of care or transport
- Role of providers and care system
  - Interprofessional working relationships
  - Consultation/transfer of care
  - Thresholds for intervention in high level care facilities
Birth Settings and Health Outcomes
What have we learned?

- **Alternative birth settings associated with***:
  - Less intervention, fewer maternal complications, high transfer rates, no difference in perinatal death rate

- **Home, freestanding, and “alongside” midwifery units associated with****: 
  - Decreased obstetrical interventions, increased normal births, high transfer rates, increased neonatal risk for first pregnancies with home births
  - Other studies have shown association of home births with increased neonatal mortality

- **The process of care has an impact on health outcomes**

- **The built environment has an impact on neural immune connections and on health**
Birth Settings and Health Outcomes
Knowledge Gaps

- Evaluation of all birth settings, comparing women of equal risk in all settings
  - No trials of freestanding birth centers
- Studies with consistent process and outcome measures
  - Assessment of pain relief
  - Effects of pain management on neonate
  - Effects on successful breastfeeding
  - Physiologic/biochemical measures
- Studies with longer-term outcomes
  - Developmental origins of health and disease
- Optimal process of care
Workforce Issues
What have we learned?

- Supply trends are variable by profession
- There are increasing numbers of midwife-attended births (in and out of hospital)
- State variability of who is licensed to do what
- Competent nursing staff contribute to improved patient outcomes
- Collaborative teams of care improve outcomes
Workforce Issues
Knowledge Gaps

- Role of education and certification in quality of care
- Ideal staffing model to optimize care quality
  - Collaborative teams
  - Provider ratios
- Impact of “missed nursing care” in out-of-hospital settings
- How nurse staffing affects quality, safety, and cost of hospital-based care
- Impact of technology on workforce training needs and demand
Data Systems and Measurement
What have we learned?

- Data sources to inform outcomes for birth settings include:
  - Linked birth certificate data sets (PDD, Medicaid)
  - Registries (MANA Stats, AABC)
  - Payers
  - State/Regional Perinatal Quality Collaboratives
  - Professional organizations

- CMMI Strong Start Initiative
  - Measurement of outcomes in preterm birth and cost of care, along with other outcomes of interest
Data Systems and Measurement
Knowledge Gaps

- Birth Certificate does not capture planned home birth transferred to hospital
- Intended place of birth is not captured for Hospital or Birthing Center births on the birth certificate
- Very large numbers are needed to detect differences in perinatal mortality (No RCTs of sufficient size)
- No uniform data platform to adequately compare birth settings
Cost, Value, and Reimbursement Issues
What have we learned?

- Medicaid is payer for 40% of US births
- CMMI is realigning incentives to reward providers for lower cost, high quality care
- Medicaid, in some states, does not cover home births
  - State-state variability limits the ability to create a national agenda around this issue
- Washington state Medicaid expenditures for hospital-based cesarean and vaginal births were higher than birth center or home births
Cost, Value and Reimbursement Issues
Knowledge Gaps

- Not a lot of data from Medicaid MCOs
- Cost-comparison data may not include all costs associated with each birth setting
- National-level cost data is not available
  - Variability in reimbursement from state-state
  - Variability in linkage of Medicaid claims to vital records data
FUTURE RESEARCH NEEDS

Where do we go from here?
Future Research Needs: Where do we go from here?

- **Randomized controlled trials**
  - Freestanding birthing centers
  - Other birth settings (Snoezelen room, Ambient room)
  - Impact of interventions in the hospital setting

- **Other studies**
  - Evaluation of organizational models of care in all settings
  - Most effective methods of transitioning care from out-of-hospital settings to the hospital
  - Impact of transfer on women and care providers
  - Determination of predictors of neonatal and maternal complications
  - Evaluation of potential unintended impact of intrapartum care processes
Future Research Needs: Where do we go from here?

- **Other Studies**
  - Cost assessment of birth settings
  - Cost-effectiveness analyses of birth settings
  - Access to care in various birth settings
  - Evaluation of continuity of caregiver
  - Evaluation of the experience of maternity care in different settings (Consumer Assessment of Healthcare Providers and Systems)
  - Environment and neuroendocrine immune interactions/physiologic responses
Other Needs: Where do we go from here?

- Maintenance and support of the National Vital Statistics System
  - Measurement of transfer to hospital care

- Measurement and reporting of perinatal morbidity and mortality for all birth settings
  - Passive/Active surveillance
  - State-based review committees

- Development of clear protocols for consultation and transfer of care

- Development of risk assessment tools for maternal morbidity and mortality
Other Needs: Where do we go from here?

- Development of consistent policies for education, certification and licensing of care providers
- Address cost/reimbursement issues for care provided out-of-hospital
- Increase efforts for interprofessional education, communication, and interaction
- Involve patients in every step of the process
“Life can only be understood backwards; but it must be lived forward.”

- Soren Kierkegaard