Institute of Medicine
Research Issues in the Assessment
of Birth Settings:
Assessment of Risk in Pregnancy

Discussant

M. Kathryn Menard, MD MPH
Professor and Vice Chair for Obstetrics
Director, Maternal-Fetal Medicine
University of NC School of Medicine
No Financial Disclosures

My vantage point

• Mother of three
• MFM specialist and educator
• Work environment
  » Perinatal regional center with 3,700 deliveries
  » Freestanding birth center in town
  » 24/7 CNM practice within our department
Why assess risk?

• An attempt to predict those most likely to experience adverse health events
  » Focus resources for timely and effective care and prevention
  » Avoid overuse of technology and intervention
• Decrease amenable mortality (and morbidity) by improving health system performance

Amenable mortality = a measure of deaths due to complications of conditions that might be avoided by timely effective care and prevention
Risk Appropriate Perinatal Care

Preconception/Interconception
Antepartum
Intrapartum
Neonatal
1970 Reports from Canada showed the neonatal mortality was significantly lower in obstetrics facilities with NICUs.

- Emphasized importance of an integrated system that would promote delivery of care to mothers and infants based on level of acuity.

- 1976 TIOP I: a model system for regionalized perinatal care, including definitions of Levels of Perinatal Care.

- Advances in technology, combined with regionalized system led to improvement in neonatal survival rates.

- Initial emphasis on both maternal and neonatal care.
What we know: Neonatal

• Delivery of the smallest babies in subspecialty hospitals saves lives
  » Infants <1500 g born at Level I or II hospital had an increase odds of death (38% vs. 23%)
    • Adjusted OR, 1.62 (95% CI, 1.44-1.83)
  » Infants <32 weeks gestation born at Level I or II hospital had an increase odds of death (15% vs. 17%)
    • Adjusted OR, 1.55 (95% CI, 1.21-1.98)

Lasswell et al. JAMA Vol 304, September 2010
American Academy of Pediatrics Policy Statement Levels of Neonatal Care*
  » No reference to maternal care
Guidelines for Perinatal Care, 7th Edition
Value based health care
  » Increase quality; Decrease cost
Patient centered care
Greater recognition of a woman’s right to choose

*Pediatrics Vol 130, September 2012
What we know: Neonatal

- Delivery of term babies
  - Planned home birth
    - Less medical intervention with 2-3X neonatal mortality*
  - Free standing birth centers?
  - Alternative setting (co-located midwifery units)**
    - Ten RCTs, 11,795 women
    - More SVD (RR=1.03); more breast feeding at 6-8 weeks (RR=1.04), more positive views of care (RR=1.96); No difference in maternal or neonatal outcomes
  - Hospital environment
    - Delivery volume (high volume, lower rate of asphyxia)***
    - Care model?

**Hodnett et al. Cochrane review 2012
What we know: Maternal

• Maternal mortality is an uncommon event
• Maternal severe morbidity is not measured in a consistent manner
• Factors that predict need for higher level of care are not well defined
“Low obstetric risk”

• COSMOS randomized controlled trial, Australia
  » Singleton
  » Uncomplicated obstetric history (no stillbirth, neonatal death, consecutive miscarriages, fetal death, preterm birth<32 weeks, isoimmunization, gestational diabetes)
  » No current pregnancy complications (fetal anomaly)
  » No precluding medical conditions (cardiac disease, htn, diabetes, epilepsy, severe asthma, substance use, significant psychiatric disorder, BMI>35 or <17.
  » No prior cesarean

  » McLachlan et al BJOG 2012
  » Assessed effects of primary CNM continuity versus usual care within a tertiary care setting
“Low obstetric risk”

- RCT of simulated home delivery in hospital (midwife led care) versus usual care, UK
  - Nullip and multiparous women
  - No prior cesarean
  - No maternal illness such as diabetes, epilepsy and renal disease
  - No prior stillbirth, neonatal death or SGA
  - Singleton
  - No Rhesus antibodies or elevated MSAFPx2

  - MacVicar et al BJOB, 1993
  - 45% transferred to specialist care, 22% during labor or PP
“Low obstetric risk”

- RCT of three levels on in hospital units. Norway
  - Healthy, low-risk women without any disease known to influence pregnancy
  - Singleton
  - Cephalic
  - BMI<32
  - Smokes < 10 cigarettes/day
  - No prior operation on the uterus
  - 36 1/7 to 41 6/7 weeks gestation

Bernitz et al BJOG 2011
“Low obstetric risk”

- RCT of midwifery care versus consultant led ward, Ireland
  - ≥40 or ≤16 years old
  - Grand multiparity ≥5
  - Height <152cm (5 feet)
  - BMI <18 or >29
  - Medical history: any
  - Social: Current drug misuse, Smoking>20 cigs/day
  - Previous obstetric history: PTB<34 weeks, recurrent miscarriage, moderate to severe pre-eclampsia, stillbirth, cesarean, 3rd or 4th degree tear, neonatal death
  - Previous gyn history: Uterine surgery, cone biopsy, cerclage, uterine anomaly, perineal reconstruction

  - Begley et al BMC Pregnancy and Childbirth, 2011
Levels of Maternal Care

- Birth Center
- Level 1 (Basic)
- Level 2 (Specialty)
- Level 3 (Subspecialty)
- Level 4 (Regional Perinatal Center)
Research needed to describe “risk”

- Uniform definitions
  - Obstetric risk factors
  - Medical risk factors
  - Psychosocial risk factors
- Determine essential resources for every birth setting
- Determine predictors of neonatal complications to guide Level of Neonatal Care (beyond birth weight)
- Determine predictors of maternal complications to guide criteria for recommended Level of Maternal Care
- Determine predictive “triggers” that should prompt maternal transport
Research needs to describe “risk”

• Uniform definitions of outcomes
  » Maternal and neonatal morbidity
  » Family perceptions/satisfaction with care
• Role of care provider and continuity of care
• Role of care “system” -- interprofessional working relationship, consultation, hand offs, transfer of care
• Qualitative study of culture/threshold for intervention in high level care facility
• Qualitative study of patient’s perception of risk and influence on birth outcome and perception of care