Identifying Low Risk Pregnancies
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Maternal Mortality

Decline in maternal and neonatal mortality are two of the 10 great public health achievements since 1990

- Maternal mortality 1900-1990
- Infant mortality 1900-1990

**FIGURE 1–2.** Maternal mortality rate per 100,000 live births by year—United States, 1900–1997. (From the Centers for Disease Control, 1999a.)

**FIGURE 1–1.** Infant mortality rate per 1000 live births, United States 1915–1997. (From the Centers for Disease Control, 1999a.)
Maternal Mortality

Presumed explanations

1933: White House Conf, Child Health, Maternal M&M (6/1000)

1930-1940: state, hospital Maternal Mortality Reviews

1940-1950: shift from home to hospital births 55-90%

1950’s: Abx. Oxytocin, safe transfusion, management PIH

1960: legalized abortion (fewer septic deaths)

1980: MMR essentially unchanged, or increased since 1982 7.2/100,000
Maternal Mortality Rate, California and United States; 1991-2008

HP 2010 Objective – 4.3 Deaths per 100,000 Live Births

Year

Task: Identify low risk pregnancies

- What is low risk?
- Literature search
  - Ovid, medline 1996- current; English language, abstracts
  - Low risk and pregnancy; risk assessment and pregnancy; levels of care and pregnancy; all terms also crossed with midwifes, family practice, birth centers, home births
  - Developed countries
    - Reviewed abstracts, articles; references
  - **Conference call: “think about maternal transfers”**
    - Focused considerations (a little);
    - updated search to include maternal transfers
  - Consensus statements, Society websites (ACOG, ACNM, AAFP, AABC)
    - References as noted
    - Comprehensive reference list available on request
What is low risk?

- "Risk comes from not knowing what you are doing"  Warren Buffet
- Long history of risk assessment in obstetrics
  - 1929 Dr. Janet Campbell (UK)
  - "the first requirement of a maternity service is effective supervision of the health of the woman during pregnancy"
  - UK Ministry of health set antepartum exams
    - Begin at 16 weeks, 24, 28 weeks
    - Monthly to 36 weeks
    - Weekly thereafter
    - Check height, FHT, test urine
    - Week 32 and 36 should be by medical officer
  - Forms basis for current care; over time added screening interventions to identify ‘high risk’

Dowswell, T., et al. Cochrane Reviews 2010

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What is low risk?

- Meade et al defined the “standard primip” eligible for midwifery care in the UK
  - Caucasian
  - 20-34 years old
  - Height >155 cm
  - Singleton, vertex
  - >37 weeks
  - Delivered in unit as “booked” (intended site of care)
  - No medical complications


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What is low risk?

- US a little more complicated
- Question arises: low risk, or “at risk” for what?
  - Preterm birth
  - Perinatal morbidity & mortality (PNMR)
  - Cesarean Delivery
  - VBAC, uterine rupture
  - No risk assessment tool specifically address risk of **maternal** morbidity/mortality
    - Teleological approach:
      - Assumed candidates for homebirths, birth centers were “low risk”
      - Looked for criteria
Candidates for home birth: Exam and lab tests must be within normal limits which is defined as NO evidence of the following:

- Chronic hypertension
- Epilepsy or seizure disorder
- HIV positive
- Severe psychiatric disease
- Persistent anemia
- Diabetes
- Heart disease
- Kidney disease
- Endocrine disease
- Multiple gestation
- Substance abuse

http://www.opendoormidwifery.com/criteria.html

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Candidates for Birth Center

- APHA Guidelines for Licensing and Regulating Birth Centers, 1982
- Policy and procedure manual of the center should specify criteria by which risk status will be established. The medical and social risk factors which **exclude** women from the low-risk intrapartum group should be clearly delineated and annually reviewed. Only those mothers for whom prenatal and intrapartum history, physical exam and lab screening procedures have demonstrated a normal, uncomplicated course of pregnancy and labor should be accepted in the center for childbirth.

- References
  - Lubric Health Policy & Practice, 1980 (Aiken ed)
  - Aubry & Pennington Clin Obstet Gynecol 1973
  - Committee on Perinatal Health TIOP, 1976
  - Hobel et al AJOG 1973; Hobel et al AJOG 1979
  - Sokol et al AJOG 1977
Candidates for Birth Center

- Integrated summary of early literature:
  — determine “sick from well”
- All models focused on predicting PNMR not maternal risk
- Continuum of risk assessment: prenatal, intrapartum, postpartum
- Specified specific “high risk conditions”
Candidates for Birth Center (excluded if…)

- Recurrent miscarriage, history of stillbirth
- History preterm birth
- Hypertension
- Diabetes
- Cardiac disease (congenital, rheumatic)
- Anemia, Rh disease
- Renal disease
- Thyroid disease
- Toxemia
- Macrosomic infant
- Multiparity
- “multiple problems”
- Misc systemic conditions
  — Sarcoid
  — Epilepsy
  — Sickle cell disease
- Drug, alcohol +VDRL
- Age>35, <=15

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Candidates for Birth Center (excluded if…)

- Aubrey & Nesbitt,
- High risk patient “consistently poor past pregnancy performance or clearly significant medical or obstetrical illness”
- NY urban demographics, supplemented above risk
  - Bactiuria
  - Chronic pulmonary disease/TB
  - Severe obesity
  - Psychiatric problems
  - Uterine anomaly


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Integration into a “system” or geographic region provides timely access to care at the appropriate level for the entire population.

- Goal 1: Early and ongoing risk assessment
- Goal 2: Improve referral and consultation among institutions that provide different levels of care.
Guidelines for Perinatal Care 7th ed
Recommended High Risk Consultations

- Cardiac disease
  - Cyanotic, prior MI, pulmonary hypertension, Marfans, prosthetic valve, Class II AHA
- Pulmonary disease
  - Severe asthma, obstructive disease
- Renal disease
  - Cr >=3.0
- Pregestational diabetes
- Hemoglobinopathy
- Family hx genetic disorder
- Prior structural abnormality
- Prior DVT/PE
- Chronic anticoagulation
- Severe systemic disease
- HIV, low CD4 count
- Rh disease (CDE)

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Summary: What is low risk?

- Opposite of “high risk” (1-high risk)
- Paraphrase a supreme court justice

"...I imply no criticism of the court (the literature) which in those days was faced with the task of trying to define what may be undefinable...I shall not today attempt further to define the kinds of material I understand to be embraced within that short hand description; concluding perhaps, I could never succeed in intelligibly doing so. But, I know it when I see it.”

— Justice Potter Stewart
Task: Given low risk, what happens to you?

- Depends on where you deliver and who takes care of you
- Villar et al evaluating patterns of prenatal care
- No difference between midwife, GP care and Ob care re: cesarean, anemia, UTI, PPH
- Trend toward lower preterm birth, antepartum hemorrhage, and PNMR with midwife and GP care
- Significant decrease in PIH/eclampsia with midwife/GP care
- Significant increase in failure to diagnose malpresentation with midwife/GP care
- Satisfaction same or higher with midwife/GP care

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Task: Given low risk, what happens to you?

- Wider variation in care in healthy women, more consistent care with complicated deliveries
  — Baruffi et al 1984

- Care dictated by structure, process, culture

- Evidence low risk women midwife led care do better in free-standing, or integrated birth centers where midwives have autonomy, small scale settings

- Midwives in integrated centers incorporate “risk culture of environment”: units with high intervention rates—midwives perceive intrapartum risks to be higher, underestimate progress/likelihood to progress normally and are more likely to “risk out” a patient compared to midwives working in units with low intervention rates


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Given low risk, what happens?

- Based on systematic reviews—20% of laboring women are transferred out of midwifery led care
  — Hodnett Cochrane Syst Rev 2010

- Canadian study reported intrapartum transfer rate of 9.5-12% at two separate institutions without cesarean delivery capability
Given low risk, what happens in the US?

- Stapleton et al
- Birth center outcomes: singleton, term, vertex, with no medical or obstetrical risk factors precluding a normal vaginal birth or requiring interventions such as continuous EFM or induction of labor
- 22,403 records; 18,089 accepted for birth center care, pass first trimester
- 2474 (13.7%) referred to MD for medical/obstetrical complications
  - Postdates
  - Malpresentation
  - PIH
  - Nonreassuring FHT
- 15,514 planned/eligible for birth center care
- Fetal/neonatal mortality rate consistent with those of birth from low risk women reported elsewhere in previous settings including hospital births
Graph outcomes from Stapleton et al


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Any other info to guide us?

- Maternal transfer for critical care from free standing birth unit
- 24 year period (1982-2005); 117 transfers/122,000 deliveries (1/1000)
- 95/117 (79.5%) for ICU care
- 24/117 (20.5%) other med/surg care not available at OB unit
  - 16/117 (13.7%) antepartum transfers
  - 101/117 (86.3%) postpartum transfers
  - Hemorrhage and hypertension accounted for 56.4% of indications for transfer
- Deaths
  - 5 deaths (4.1/100,000)
  - Death to transfer rate 1/23
- Baskett et al J Obstet Gynaecol Can 2009; 31:218-21
Any other info to guide us?

- “are there other obstetrical emergencies...that could similarly benefit from the immediate availability...should be subject to same standard” Minkoff et al
- Guidelines/data suggest 30 min rule not good enough
  — (risk of fetal compromise is time dependent)
- Placenta previa/accreta; Abruption
- Cord prolapse
- Uterine rupture
- Time dependent on “golden minutes” comparable to “golden hours” (stroke, MI, sepsis)
- “most emergent cesarean deliveries develop during labor in low risk women and can not be anticipated by prelabor factors
  — Lagrew et al AJOG 2006; 194:1638-43
Conclusions: Take home points and things to ponder….

- Low risk = singleton, term, vertex, no other medical surgical conditions (but can also be defined regionally or locally re: collaborative care models)

- Dynamic condition, subject to change
  - antepartum, intrapartum, postpartum;
  - change can be acute, unexpected

- Overall absolute rates are low re: maternal/neonatal adverse events if triaged appropriately, with skilled clinicians
Conclusions: Take home points and things to ponder….

- 39% of deliveries occur in hospitals <500 deliveries/yr
  — (< 2 deliveries/day [1.4])
- All hospitals can not provide the same standard of care
  — known relationship with hospital volume and outcome
    (more volume associated with better outcomes) that is
    counterintuitive to data regarding midwifery led care (small
    scale associated with better outcomes).
  — What can be learned here?
Conclusions: Take home points and things to ponder….

- Risk appropriate care should be evaluated in the context of both high risk and low risk:
  - High risk women and/or conditions need to be cared for in appropriate facilities with appropriate resources
    - Need more data re: conditions most appropriate for higher level care; separate and distinct from “alternate birth sites”
    - What maternal conditions require delivery at Level III (specialty) or IV(regional site)?
  - Low risk women may also need to be cared for in appropriate facilities with appropriate resources; (e.g increased adverse events if low risk women cared for in high risk/high intervention sites)
Ultimate impact on maternal mortality

Primary Prevention!

SEE WHAT KISSING CAN LEAD TO?