Clarification about sources of birth defects

- Genetic
- Gestational
- Both factors interacting

Example: Cleft palate
Clarification about sources of birth defects

- Example: Cleft palate
Babies Know: A Little Dirt Is Good for You
By JANE E. BRODY
Published: January 26, 2009, NYTimes

Module 1.3
Birth and the Newborn Infant
Looking Ahead

- What is the normal process of labor?
- What complications can occur at birth, and what are their causes, effects, and treatments?
- What capabilities does the newborn have?
Labor: The Process of Birth Begins

- Contractions
  - Braxton-Hicks
  - Labor initiation

Stages of Labor

Stage 1
- Uterine contractions initially occur every 8 to 10 minutes and last 30 seconds. Toward the end of labor, contractions may occur every 2 minutes and last as long as 2 minutes. As the contractions increase, the cervix, which separates the uterus from the vagina, becomes softer, eventually expanding to allow the baby's head to pass through.

Stage 2
- The baby's head starts to move through the cervix and birth canal. Typically lasting around 90 minutes, the second stage ends when the baby has completely left the mother's body.

Stage 3
- The child's umbilical cord (still attached to the placenta) and the placenta are expelled from the mother. This stage is the quickest and easiest, taking just a few minutes.
From Fetus to Neonate

- When is the moment of birth?
- What causes a baby to cry after birth?
- What cultural differences surround the birth of children worldwide?

APGAR SCALE

**Table 1-6**

A score is given for each sign at 1 minute and 5 minutes after the birth. If there are problems with the baby, an additional score is given at 10 minutes. A score of 7–10 is considered normal, whereas 4–7 might require some resuscitative measures, and a baby with an Apgar score under 4 requires immediate resuscitation.

<table>
<thead>
<tr>
<th>Sign</th>
<th>0 Points</th>
<th>1 Point</th>
<th>2 Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>A (Appearance) (skin color)</td>
<td>Blue-grey, pale all over</td>
<td>Normal, except for extremities</td>
<td>Normal over entire body</td>
</tr>
<tr>
<td>P (Pulse)</td>
<td>Absent</td>
<td>Below 100 bpm</td>
<td>Above 100 bpm</td>
</tr>
<tr>
<td>G (Grimace (reflex irritability))</td>
<td>No response</td>
<td>Grimace</td>
<td>Sneeze, coughs, pulls away</td>
</tr>
<tr>
<td>A (Activity (muscle tone))</td>
<td>Absent</td>
<td>Arms and legs flexed</td>
<td>Active movement</td>
</tr>
<tr>
<td>R (Respiration)</td>
<td>Absent</td>
<td>Slow, irregular</td>
<td>Good, crying</td>
</tr>
</tbody>
</table>

(Source: Apgar, 1953)
More About APGAR Scores

- Low scores
  - Existing fetal problems or birth defects
  - Difficulties related to process of birth
  - Temporary deprivation of oxygen (anoxia)
    - Wrapped umbilical cord
    - Pinched umbilical cord

You must have been a beautiful baby…or were you?

- Vernix
- Lanugo
- Puffy eyelids
- Blood/other substances
Initial Encounters

**True or false:**
Newborns who do not spend time bonding with their parent or parents immediately after birth will automatically suffer long-term social and emotional consequences.

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Massage

- Physical stimulation after birth
  - Stimulates production of brain chemicals that instigate growth
Approaches to Childbirth

- Variety of strategies and approaches
- No universally accepted single procedure
- No conclusive research evidence that one procedure significantly more effective than another

Alternative Birthing Procedures

- Lamaze birthing techniques
- Bradley Method
- Hypnobirthing
Childbirth Attendants: Who Helps?

- Obstetrician
- Midwife
- Doula

Use of Anesthesia and Pain-Reducing Drugs

- Kinds
  - Epidural anesthesia
  - Walking epidural or dual spinal-epidural

- Effects
  - Mother
    - Reduces/eliminates pain associated with labor
    - Sometimes slows labor
  - Neonate
    - Drug strength related to effects on fetus
    - May temporarily depress the flow of oxygen to fetus
    - Less physiologically responsive, show poorer motor control during the first days of life after birth, cry more, and may have more difficulty in initiating breastfeeding
And so…?

- Only minimal risks to the fetus and neonate
- Woman’s request for pain relief at any stage of labor should be honored
- Proper use has no significant effect on child’s later well-being

Do neonates feel pain during birth?

**Objective indications of neonate pain at birth:**

- Crying
- Facial expressions
- Body movement
- Vital signs
- Serum cortisol, tissue and blood oxygen levels
- Neurobehavioral assessments
Newborn Medical Screening

- American College of Medical Genetics recommendations:
  - All newborns be screened for 29 disorders, ranging from hearing difficulties and sickle cell anemia to extremely rare conditions such as isovaleric academia, a disorder involving metabolism
  - Permits early intervention and treatment

BIRTH COMPLICATIONS
What do you think?

Why is infant survival less likely in the United States than in other, less developed countries?

International Infant Mortality

[Bar chart showing infant mortality rates for various countries]

(Sources: The World Factbook, 2007)
Problems During Labor and Delivery

- Preterm infants
- Low birth-weight infants
- Small-for-gestational-age infants

Very low birth-weight infants

- Most vulnerable; immaturity of their organ systems
- Weigh less than 1250 grams (around 2 1/4 pounds)
What causes preterm and low-birth-weight deliveries?

- Half of births unexplained
- Difficulties related to mother’s reproductive system
- Immaturity of mother’s reproductive system
- General health of mother
Factors Associated with Increased Risk of Low Birth weight

- Demographic risk
- Medical risks predating pregnancy
- Medical risks in current pregnancy
- Behavioral and environmental risks
- Healthcare risks
- Evolving concepts of risks

(See Table 1-7)

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### Table 1-7

<table>
<thead>
<tr>
<th>Factors Associated with Increased Risk of Low Birthweight</th>
<th>Example</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demographic Risk</td>
<td>1. Age</td>
<td>1. Maternal problems such as Placenta previa, abruptio placentae</td>
</tr>
<tr>
<td>A. Age (less than 17 or over 44)</td>
<td></td>
<td>I. Severe anemia (aemia)</td>
</tr>
<tr>
<td>B. Race (minority)</td>
<td></td>
<td>J. Asthma/asthma disease</td>
</tr>
<tr>
<td>C. Low socioeconomic status</td>
<td></td>
<td>K. Severe anemia/asthma and diabetes</td>
</tr>
<tr>
<td>D. Unmarried</td>
<td></td>
<td>L. Fatal anomalies</td>
</tr>
<tr>
<td>E. Low level of education</td>
<td></td>
<td>M. Obstetric complications</td>
</tr>
<tr>
<td>2. Medical Risk Predicting Pregnancy</td>
<td></td>
<td>N. Spontaneous premature rupture of membranes</td>
</tr>
<tr>
<td>A. Number of prior miscarriages (0 or more than 4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Low weight for height</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Carbohydrate abnormalities/surgery</td>
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<td></td>
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<tr>
<td>D. Selected diseases such as diabetes, chronic</td>
<td></td>
<td></td>
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<tr>
<td>hyper tension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Selective use of the second trimester andrisms such as</td>
<td></td>
<td></td>
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<tr>
<td>rubella</td>
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<tr>
<td>F. Interessentials history, including previous low-birth</td>
<td></td>
<td></td>
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<tr>
<td>weight infant; multiple spontaneous abortions</td>
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<td></td>
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<tr>
<td>G. Maternal-genetic factors such as low-birthweight at</td>
<td></td>
<td></td>
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<tr>
<td>term or birth</td>
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<td></td>
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<tr>
<td>3. Medical Risk in Current Pregnancy</td>
<td></td>
<td></td>
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<tr>
<td>A. Multiple pregnancy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Poor weight gain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Short interval (interval)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Low birth pressure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>E. Hypertension/pericarditis/pericarditis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F. Selected infections such as asymptomatic bacterinwina</td>
<td></td>
<td></td>
</tr>
<tr>
<td>rubella, and rubella virus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G. First or second trimester bleeding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(continued)
Post-mature Babies: Too Late, Too Large

- **2 weeks or more overdue**
  - Blood supply from placenta may become insufficient
  - Blood supply to brain may be decreased, leading to the potential of brain damage
  - Labor becomes riskier for larger fetus to pass through birth canal

Cesarean Delivery

- Baby is surgically removed from uterus
- Occur most frequently when fetal stress appears
- More prevalent in older mothers
- Related to position in birth canal: breech, transverse
International Incidence Rate: Cesarean Deliveries

(Source: International Cesarean Awareness Network, 2004)

Developmental Diversity

Overcoming Racial and Cultural Differences in Infant Mortality

(Source: Child Health USA, 2005)
Moving From the Heights of Joy to the Depths of Despair

Postpartum Depression
- Incidence rate
- Symptoms and Causes
- Consequences

When Mothers Are Depressed

Depressed mothers
- Display little emotion and to act detached and withdrawn

Infants
- Display fewer positive emotions and withdraw from contact not only with their mothers but with other adults